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On April 1, 2009, AHS brought together 12 formerly separate health entities in the province: nine geographically based health authorities (Chinook Health, Palliser Health Region, Calgary Health Region, David Thompson Health Region, East Central Health, Capital Health, Aspen Regional Health, Peace Country Health and Northern Lights Health Region) and three provincial entities working specifically in the areas of mental health (Alberta Mental Health Board), addiction (Alberta Alcohol and Drug Abuse Commission) and cancer (Alberta Cancer Board).

HEALTH SYSTEMS INTEGRATION

DEFINITIONS, PROCESSES & IMPACT:
A RESEARCH SYNTHESIS

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EXECUTIVE SUMMARY

The **Health Systems Integration** systematic literature review provides comprehensive coverage of the topic of health systems integration, including its conceptualization (e.g. an inventory of definitions), structures, processes and measures to serve as tools for planning, implementing and evaluating integration strategies. The main findings of this systematic review are:

1. The lack of a universal definition or concept of integration making the development, implementation and evaluation of successfully integrated health systems more challenging. The Canadian Council on Health Services Accreditation (2006) offers a definition of integration which encapsulates the many definitions found in the literature, **“services, providers, and organizations from across the continuum working together so that services are complementary, coordinated, in a seamless unified system, with continuity for the client”**.
2. There is no one definitive model that is appropriate for all organizations and situations because the delivery of health care is too complex for a one-size-fits-all solution. System level models focus on change management and key system dimensions. Program level models focus on case management, co-location, home care, population health management, and primary care. Progressive or sequential models were most often cited. These models propose several steps to achieve increasing levels of integration which are adaptable to both system level and program level integration.
3. Despite the lack of a definitive model, decision makers can use the following relatively universal principles in the development of appropriate strategies for planning and implementing successfully integrated health care systems:
 - i) Comprehensive services across the continuum of care recognizing the importance of providing seamless health care despite the multiple points of access,
 - ii) Patient focus encouraging active participation by the patient and their family or informal caregivers while focusing on population-based needs assessment,
 - iii) Geographic coverage and rostering to maximize accessibility and minimize duplication,
 - iv) Standardized care delivery through interprofessional teams and use of provider-developed, evidence-based clinical care guidelines and protocols,
 - v) Performance management by evaluating the process of integration and measuring system, provider, and patient outcomes,
 - vi) Appropriate information technology and communication mechanisms such as electronic patient records and data collection systems to effectively track utilization and outcomes,
 - vii) Cohesive, organizational culture with strong leadership and shared vision of an integrated health care delivery system,
 - viii) Physician integration, particularly primary care physicians, by a variety of methods such as compensation mechanisms, financial incentives, and non-financial ways of improving quality of life,
 - ix) Strong governance structure that includes community and physician representatives, and
 - x) Sound financial management.
4. In order to successfully integrate health care systems, equal attention must be paid to the processes. Integration takes time and careful planning. Processes need to target all organization levels from administration, financial, organizational, clinical and service delivery. The level, type, and combination of strategies should be contextual and consider patient needs. The importance

of a shared vision and a strong organizational culture that embraces integration demands that staff is supported in their effort to adapt to changes through education or incentives. Strong management strategies further increase the likelihood of successful integration.

5. Measuring the impact of integration on system, provider and patient levels is essential. However, there is a lack of standardized, validated tools that have been systematically used to evaluate integration outcomes. Similarly, there is a scarcity of indicators that can be used to monitor level of integration over time. Nevertheless, some of the positive system level outcomes reported include: reduction in non-emergency cases using the emergency room; reduction in the average length of stay in hospital; better financial performance; and a flatter organizational structure (fewer management tiers). Some of the positive program/provider level outcomes include: increased job satisfaction; increased cooperation with other agencies; and a blending of professional cultures into one shared culture.

Integration is an ongoing process which must be developed and implemented within the context of population needs and focused on the goals of improved health outcomes and higher quality of care. Decision makers are encouraged to commit the time and resources necessary to this process while ensuring that all stakeholders participate in clearly defining and working towards the successful attainment of a common goal. It is essential that consensus amongst all stakeholders is established early and revisited regularly thus increasing the likelihood of success.

*Your field does seem to surmise that to integrate would appear quite wise.
But what to push together or pull apart seems less a science than an art.
The concept sounds nice, even refined but to integrate – how is it defined?
And as you work with coordinated intent, will your board deem the effort well spent?*
(Gillies, Shortell, Anderson, Mitchell, & Morgan, 1993, p.468)

1.0 INTRODUCTION

Health care delivery in Canada, and in particular its structure and financing, has had unprecedented scrutiny by all levels of government in recent decades (Marriott & Mable, 2000; Penning, Roos, Chappell, Roos, & Lin, 2002). Increasing service costs and utilization, attributable to the aging population, new health technologies including drugs and consumer demands have necessitated health care expenditure cuts and calls for greater accountability. A set of Federal and Provincial policy reports in recent years (Commission on the Future of Health Care in Canada, 2002; Premier's Advisory Council on Health, 2001; Saskatchewan Commission on Medicare, 2001) have emphasized the need for innovation and new service delivery models. Most recently, staff shortages, continuing cost inflation and service demand have intensified the call for more effective and efficient use of scarce resources (Fleury, 2004; Powell Davies, 1996; Ross-van Dorp, 2004). Health system redesign initially focused on cost containment and system development through collaboration, partnerships and networks. A movement towards patient-centered care has been central to many new Canadian health care delivery strategies (Albrecht, 1998; Leatt, 2002; Smith & Austin, 2000; Southeast LHIN, 2006) as well as increased emphasis on enhancing primary care and community health. A sequential but dramatic change toward regionalized delivery of services is nearly complete across Canadian provinces (Fleury, 2004; Golden-Biddle, Hinings, Casebeer, Pablo, & Reay, 2006; Marriott & Mable, 1998; New Brunswick Department of Health, 2001). Regionalization is characterized by single organization responsibility for delivery of virtually all health services to a geographically defined population (Marriott & Mable, 1998, 2000). Regionalization of services has, for the first time, afforded an opportunity to design and manage a full spectrum of care which was historically delivered by multiple separate providers and in multiple separate locations. Integration of health systems has been seen as a critical necessity for improving efficiency as well as a unique opportunity for improving quality of care.

While many definitions of health systems integration exist, the Canadian Council on Health Services Accreditation (2006) defines integration as “**services, providers, and organizations from across the continuum working together so that services are complementary, coordinated, in a seamless unified system, with continuity for the client.**” This definition implies that fully integrated health systems cover all levels of care i.e., primary, secondary, tertiary, restorative/rehabilitative, and long term care (Leatt, Pink, & Guerriere, 2000; Shortell, Gillies, Anderson, Mitchell, & Morgan, 1993b; Shortell, Gillies, & Anderson, 1994).

Integrated health systems are widely considered to provide superior performance in terms of quality and safety as a result of effective communication and standardized protocols, although these results have not been fully demonstrated (Gillies, Chenok, Shortell, Pawlson, & Wimbush, 2006). Further purported benefits of integrated health systems include increased patient satisfaction through improved access to care, improved care coordination across the continuum, and an emphasis on preventive health practices (Alberta Health and Wellness, 2000). Sharing physical and human resources may also save on resources lost to duplicated services in a disconnected system (D'Amour, Goulet, Labadie, Bernier, & Pineault, 2003).

Although other countries including the U.S., Australia, and the U.K. have been ahead of Canada in integrating health systems, we have made considerable progress in the last two decades (Marriott et al., 2000). There is widespread support for the development of integrated health systems with many new initiatives evolving across jurisdictions. (For a more detailed description of international and national trends see Appendix 1.0.) Despite the growing enthusiasm for integration, information related to implementing and evaluating integration-related initiatives is dispersed and not easily accessible. With evidence-informed decision making as a new standard in health care management and policy (Cookson, 2005), there is a need to seek out and apply current knowledge on health systems integration, as well as for further research on integrated health systems formation, implementation and outcomes, to advance effective service delivery.

The purpose of this review was to systematically search, review and summarize the current research literature on health systems integration with a focus on definitions, processes and impact of integrated health service delivery systems in publicly funded health care systems for use by policy makers and managers who plan and implement integrated health systems.

**THE PURPOSE OF THIS REVIEW WAS TO SUMMARIZE THE CURRENT
RESEARCH LITERATURE ON HEALTH SYSTEMS INTEGRATION WITH
A FOCUS ON DEFINITIONS, PROCESSES AND IMPACT OF
INTEGRATED HEALTH SERVICE DELIVERY SYSTEMS IN PUBLICLY
FUNDED HEALTH CARE SYSTEMS.**

**THE PRIMARY AUDIENCES FOR THIS RESEARCH SYNTHESIS ARE
POLICY MAKERS AND MANAGERS WHO ARE CHALLENGED WITH
THE TASK OF PLANNING AND IMPLEMENTING
INTEGRATED HEALTH SYSTEMS.**

2.0 RATIONALE FOR THE REVIEW

Integrating health care has been recognized by the Commission on the Future of Health Care in Canada (2002) as a necessary means for maintaining the accessibility and integrity of health care for Canadians. Motivation for change is coming from a variety of stakeholders such as health care providers, managers, government and consumers. Because the current knowledge base on integration is diverse and scattered, planners and decision makers are challenged to find evidence-based information on best models that could guide planning and implementation of integrated health systems. For the same reason, measuring the effectiveness of integrated programs is not a small task for health planners and researchers. Accountability for decisions and outcomes related to integration initiatives is even more difficult without specific information on measurement approaches as well as general evidence on how integrated health systems can improve service delivery and, ultimately, population health.

This review was conducted in response to the need for such key information as expressed by health system managers and administrators in the Calgary Health Region who are charged with the mandate to plan for and implement integrated service delivery models. They were challenged to find reliable sources on definitions of integration, processes for implementing integrated service delivery systems, and outcomes indicators that could inform their initiatives (Suter, Hyman, & Oelke, 2007). There is mounting evidence of the potential of systematic reviews to serve as a tool for evidence-based decision making for health planners and policy makers (Cookson, 2005; Fox, 2005; Lavis, Posada, Haines, & Osei, 2004; Moynihan, 2004). This research used systematic review methods that were modeled after methods for clinical research questions and adapted for broader policy questions (Adair et al., 2003). The review covers a diverse array of integration models in Canada and elsewhere, with an emphasis on publicly funded health care systems. It also includes unique aspects of integration relevant to services for special patient populations: children and youth, the elderly, Aboriginal peoples, those with mental illness, chronic diseases or HIV/AIDS.

The review provides comprehensive coverage of the topic of health systems integration, including its conceptualization (e.g. an inventory of definitions), its structures and processes, and measures to serve as tools for planning, implementing and evaluating integration strategies. A summary of the current evidence for the outcomes of integration such as impact on emergency room use and provider job satisfaction is included. This information may also help enhance accountability around the delivery of health services by serving as a reference for best practice processes and quality measurement which is in direct response to the needs expressed at recent national consultations for governance and accountability (Canadian Health Services Research Foundation, 2004).

3.0 REPORT STRUCTURE

The remainder of this report is presented in three main sections: Methods, Results, and Summary and Recommendations.

The **Methods** section details the steps of the systematic literature review, which focused on **systems level** integration. As a result, patient or program level integration approaches such as care plans or critical care pathways, were not included. This review focused primarily on the health sciences literature, with a secondary focus on the business literature. Within these subject areas, a very similar set of research questions were used to guide organization of the information extracted.

The **Results** of the review are presented in the following sections:

The **Health Sciences** Literature

This section looks at the definitions, types, principles, and outcomes of integration. Models of integration identified in the literature and international health systems integration initiatives are also discussed.

The **Business** Literature

Organizational integration information from the business literature that was found to be relevant to the health care field is summarized.

A section focusing on **Special Topics in Health Systems Integration** including:

Physician integration is discussed in Section 5.3.1.

Integrating conventional and complementary / alternative medicines (**CAM**) is included in Section 5.3.2.

The unique challenges to integrated health care systems for populations in **rural and remote areas** are discussed in Section 5.3.3.

In Section 5.3.4, health care integration for several **special populations** is discussed including children and youth, the elderly, Aboriginal groups, those with chronic diseases, HIV/AIDS, and the mentally ill.

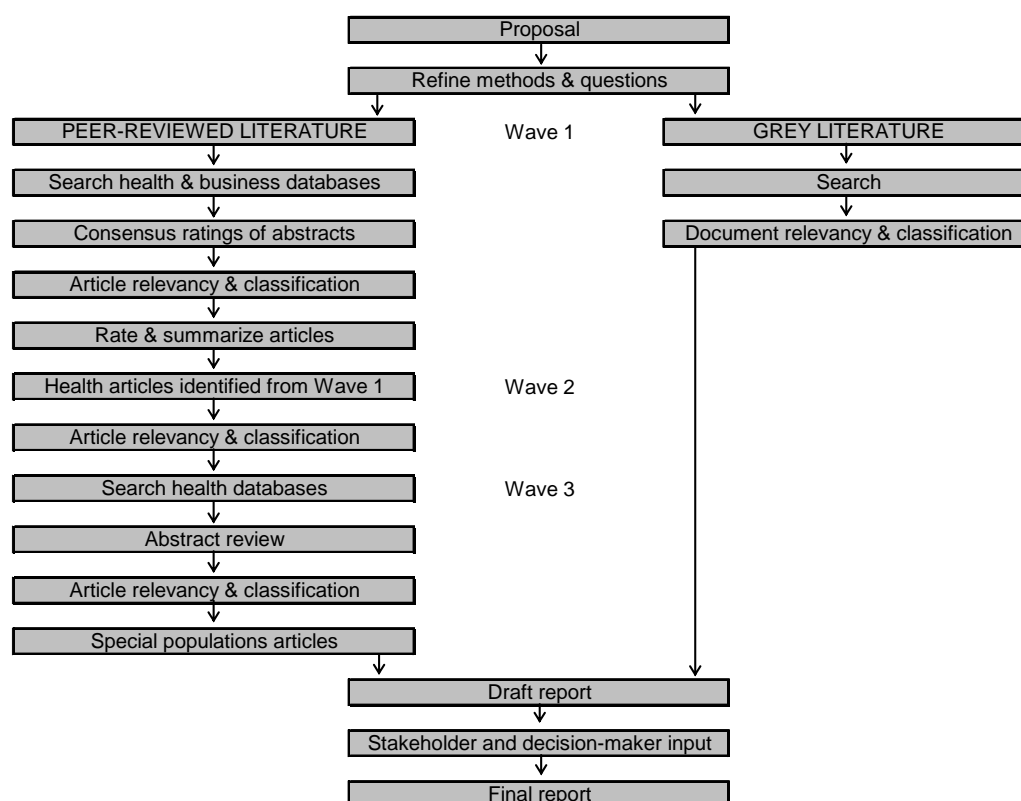
The **Summary and Recommendations** section provides a **synthesis of key points**; discusses the potential **limitations** and recognized **strengths** of the review; suggests **opportunities for future research**; and offers **recommendations for health systems decision makers**.

4.0 METHODS

The methods of this review were based on recommendations for systematic review for evidence-based clinical practice (Higgins & Green, 2006; Khan, Biet, Glanville, Sowden, & Kleijnen, 2001) with adaptations for the review's broader health systems and policy-related questions (e.g. Adair et al., 2003; Lavis et al., 2004; Wilczynski, Haynes, Lavis, Ramkissoonsingh, & Arnold-Oatley, 2004), and the overall principle of replicability. Many of the methods for this review were modeled after an earlier systematic literature review undertaken by one of the co-investigators (Adair et al., 2003).

There were four major components to the review: a) developing and validating the research questions; b) searching for, selecting, rating, and summarizing the peer-reviewed health sciences and business literatures; c) searching for and selecting grey literature; and d) report writing. These steps are illustrated in Figure 4.1.

Figure 4.1: Methods Overview



4.1 Research Questions

Nineteen decision makers in the Calgary Health Region completed a questionnaire regarding information needs related to health services integration. The most highly rated topics were definitions of integration; conceptual frameworks/models; characteristics of successfully integrated models; and outcomes of integration. Also of interest were descriptions of demonstration projects; identification of research gaps and future research; and the growth and evolution of integrated systems. The respondents' comments were the basis for two focus group discussions held in March, 2005. The results of the survey and focus group discussions provided direction for the research questions. In April 2006 initial drafts of the questions were sent to 96 decision makers at various levels of the health system in the Calgary Health Region, David Thompson Health Region, East Central Health, Capital Health, Peace Country Health, Chinook Health Region, and Alberta Health and Wellness. Twenty-one (21.9%) of these managers/decision makers responded with specific and general comments. The research questions were refined based upon these comments (Box 4.1).

Box 4.1 – RESEARCH QUESTIONS

Health Sciences Literature

1. What are the definitions of integration and other definitions relevant to organizational and services integration from these sources (e.g. integration, collaboration, coordination, integrated delivery systems, Health Maintenance Organizations, physician alignment)?
2. What are the predominant or promising models/frameworks for integration of health services in privately funded health systems, other publicly funded health systems, nationally and internationally?
3. What characteristics, barriers or facilitators of successful integration are identified and, if from the privately funded sector, are they relevant to a publicly funded system?
4. What processes of integration are recognized in the literature?
5. What are the outcomes and impacts of integration on the stakeholders? What is the evidence for effectiveness of integration?
6. How have the outcomes been measured (i.e. tools)?

Business Literature

1. What definitions were found that are relevant to health care (e.g. supply chain management, enterprise resource planning, customer relationship management)?
2. What are the predominant or promising models/frameworks that have relevance for a publicly funded health care system?
3. What characteristics, barriers or facilitators of successful integration are identified that are transferable to the health care context?
4. What processes of integration are recognized in the literature which can be transferable to a publicly funded health care system?
5. What are the outcomes and impacts of integration on the stakeholders? What is the evidence for effectiveness of integration?
6. What outcomes measurements (tools) identified in the business literature have relevance for health care context?

Special Populations

1. What are the predominant or promising models/frameworks discussed that specifically relate to special populations?
2. What characteristics, barriers or facilitators of successful integration are identified that specifically relate to special populations?
3. What processes of integration are recognized in the literature that specifically relate to special populations?
4. What are the outcomes and impacts of integration on the stakeholders? What is the evidence for effectiveness of integration for special populations?
5. How have the outcomes been measured (tools)?

4.2 *Searching for, Selecting, and Rating the Literature*

The main focus of the search was the peer-reviewed health sciences literature. However, peer-reviewed business literature, as suggested by focus group participants, was also searched in order to identify recent innovations in the planning and implementation of integrated systems in areas other than health care but which may be applicable to the health care context. A search of the grey literature was also undertaken to capture information that has not been published in the peer-reviewed literature but which may have relevance to the review.

4.2.1 Peer-reviewed Literature

The review process focused primarily on peer-reviewed literature because it has gone through a rigorous quality control process intended to maximize the trustworthiness of the published information.

Search and Selection

Professional librarians in the University of Calgary health sciences and business faculties were consulted to assist with the search strategy including recommendations for databases and terms. A preliminary test of the initial search strategy, using a date range of 1996-2006 in the health sciences databases and 2001-2006 in the business literature databases, resulted in yields of 104,252 and 48,229 items respectively. In order to reduce the yield results, the search strategy was narrowed by refining the terms and reducing the date range in the health sciences databases to the period of 1998-2006. The business database search terms were refined but the date range was not changed. See Appendix 2.0 for details of the databases, search terms and yields. The search strategy focused on health systems integration and included search terms such as “organizational integration” and “integrated service delivery systems” to yield articles discussing system level rather than patient level integration.

The health sciences database searches yielded 3,518 initial abstracts and the business database searches yielded 1,135 abstracts. After removal of duplicate records, books and dissertations, 3,234 health science abstracts and 1,134 business abstract records remained for relevancy ratings. All abstract records were assigned a unique identifying number.

Prior to relevancy ratings for this set of abstracts inter-rater reliability was established through pre-testing. Fifty abstracts from each of the health sciences and business search initial sets were rated by 3 research team members as follows: “Y*” = seems extremely relevant to the research questions; “Y” = informs the research questions; “M” = might inform the research questions; and “N” = does not inform the research questions. The abstract rating instructions can be found in Appendix 2.0. In order to maximize rating consistency, there were several debriefing sessions amongst the research team members to clarify the rating criteria. The rating system and instructions were considered useful for application to the full set of abstracts. For abstracts that received conflicting ratings, both “Y” and “N”, a consensus decision was made amongst the reviewers, during both the pre-test and the rating of the full set of abstracts, to determine inclusion or exclusion. Three research team members blind-rated all health sciences and business abstracts, extracting additional duplicates (77 and 3, respectively). In addition to rating the abstracts, reviewers noted whether it was a ‘title only’ abstract and if the abstract focused on a special population as identified in the research questions. Numbers were assigned to ratings (Y*=3, Y=2, M=1, N=0) to compute summary scores and full-text articles for abstracts with summary score ratings ≥ 5 were ordered. This resulted in a first wave of 266 health sciences articles and 60 business articles to be reviewed to determine inclusion or exclusion in the final write-up.

The initial abstract search results rated ≥ 5 yielded very few records which focused on special populations (e.g. chronic disease=3, mental health=15, elderly=12, children & youth=5). For these groups, articles with abstract ratings of 3 and 4 were also ordered for review. This resulted in an additional 141 articles which were reviewed to determine relevancy to the report.

Article Relevancy and Classification

The health sciences and business articles which were identified in the abstract rating (described above) were reviewed to determine relevancy and inclusion/exclusion in the full review process. This further refinement resulted in 190 health sciences and 29 business articles totalling 219 articles for inclusion (plus the special population articles rated 3 and 4, N=141; many of which were included in the final write-up). Each article's key characteristics were noted: year of publication, country in which the research was conducted (if applicable), type of research (empirical, non-empirical, systematic literature review), level of integration (organizational or services/programs), whether the article included definitions or models for health systems integration; and the topics discussed in the article. Appendix 2.0 includes the rating sheet used for this process.

The articles which focused on special populations were initially set aside for in-depth review at a later stage in order to identify information that was unique to health services integration for those groups.

Article Quality Ratings and Summaries

The 219 relevant health and business articles were then sorted into main topics, as identified during the relevancy and classification step, and assigned to two readers who rated and summarized each article. Rating sheets were modified from an earlier systematic literature review (Adair et al., 2003). The primary (first) reader noted major points and assigned an empirical or non-empirical quality rating to each (Appendix 2.0). The second reader also rated the article and added to the summary sheet focusing on both the research questions and where and how the article would fit into the overall review.

During this step of the review, readers also identified articles from the wave one article reference lists that were considered critical to the review. A list of those articles (N=157) was compiled and circulated to all team members who highlighted those they considered relevant based on author and title (N=129). Two of the team members then used several criteria to evaluate inclusion or exclusion of an article in the second wave: prominent authors in the field of integration were given greater weight than lesser known authors; more recent articles were assigned greater weight; and the number of times the article was chosen by the different team members (one article was cited seven times by the team members). Books and grey literature were excluded. This process resulted in 36 second wave articles. All but one of these articles was retrieved. These second wave articles were read for relevancy and classification and assigned by subject to the primary reader of that topic for inclusion during the write-up step.

In order to ensure the most current published articles were included in the review, a third wave search was conducted of the health sciences databases in January 2007 using the first wave health search terms (Appendix 2.0). This resulted in an additional 148 abstracts which were rated for relevancy. From these, 29 articles were retrieved and read to determine inclusion in the analysis, 22 of which were included in the review.

4.2.2 Grey Literature

Since material about health systems integration can be found in sources beyond the traditional peer-reviewed research literature, selected grey sources were included in the review process. A focused search of the grey literature included conference proceedings and, as identified by research team members, select government websites, health associations' and agencies' websites. A Google™ search was also conducted using the same search terms as were used for the health systems literature search. Approximately 142 documents were identified, 120 were judged to be relevant to the review.

4.3 Report Write-up

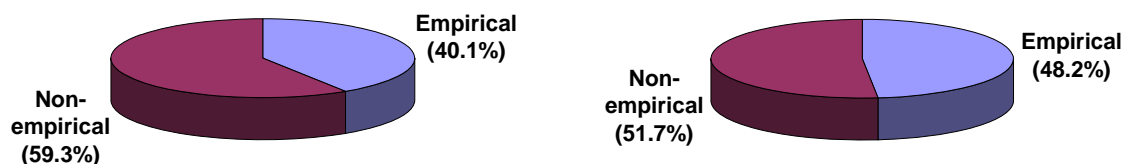
The primary reader wrote the initial draft of the applicable topic section. The complete first draft of the report was reviewed for consistency by one of the principal investigators. The subsequently revised draft report was edited by all research team members. This final draft document was circulated to stakeholders for input and, based upon their comments, additional revisions made to produce this final report.

5.0 RESULTS

Documents which were rated as relevant to this review ranged in years from 1992 to 2007. The health sciences literature included documents from several jurisdictions including the United States (46.5%), Canada (18.5%), United Kingdom (10.0%), Australia/New Zealand (7.3%), and Europe (5.8%). As with the health sciences literature, the business literature reported the most findings from the United States (43.5%), with 13% from each of the UK, Europe and Australia, and followed by Canada (8.7%).

In both the health sciences and business literature, the majority of documents did not present empirical evidence to substantiate the findings (Figures 5.1 and 5.2). The quality of the documents was moderate. The mean rating for empirical documents from the health sciences literature was considerably lower than from the business literature (15.1 vs. 22.8, out of 30, respectively). This was also the case for non-empirical documents, though not as disparate (10.1 vs. 13.8, out of 20, health sciences and business, respectively). This may be a reflection of the advancement of research in the business sector relative to health sciences. However, it may be a result of the focus on more current research in the business sector literature compared with health sciences literature.

Figure 5.1: Peer-reviewed Health Documents Empirical vs Non-empirical **Figure 5.2: Peer-reviewed Business Documents Empirical vs Non-empirical**



5.1 The Health Sciences Literature

5.1.1 Concepts and Definitions of Health Systems Integration

Most authors in the literature support health systems integration as a general positive value and attest to its potential benefits for clients, providers and the health system. Few authors define the term precisely and there is a lack of understanding of what the concept **health systems integration** means (Marriott & Mable, 1998; Kodner, 2002; Simoens & Scott, 2005); there is no one model or shared conceptual framework for health systems integration (Boon, Verhoef, O'Hara, & Findlay, 2004a; Coster, 1998; Marriott & Mable, 1998;) and the diversity of terminology used in the literature is overwhelming (Boon, Verhoef, O'Hara, Findlay, & Majid, 2004b). This diversity makes searching the literature for relevant articles more challenging, especially across nations. Typical terms used in the context of health systems integration are collaborative care, shared care, cooperation, care consolidation, continuity of care, care coordination, concerted action, mutual adjustment, alliance, partnership, and network. The definitions of integration vary as much as the terms used to describe it.

More than 70 definitions were retrieved from the articles reviewed (Appendix 3.0), which is a further reflection of an ill defined concept. Reference has been made to health systems integration as a modern 'Tower of Babel' (Kodner, 2002).

Health systems integration is not a new concept and Canada and other countries have experimented with early models of integration since the 1980's (Marriott et al., 2000). In general terms health systems integration is understood as a continuum from informal to formal arrangements with an increasing intensity of governance in the relationship between providers or agencies (Konrad, 1996). More fully integrated systems coordinate more information, activities and resources, and consolidate organizational structures. While the notion of integration as a multi-stage process is shared by many authors the number and description of integration stages varies (Hill, 1998; Leutz, 1999; Shortell et al., 1994). Billings used a European initiative to explore what integration means to participating front-line staff in nine countries (Billings, 2005). A wide range of definitions and meanings emerged; however, staff most often described integration from the service provision perspective (i.e., care coordination, team work). Aspects of person-centeredness and holistic care were intrinsic to integration as was the inclusion of unpaid or informal care providers in the care team. There was also the notion that integration cannot exist without some form of seamless care or multi-professional approach that values the roles of all professionals. In his conceptualization, Kodner (2002) refers to health systems integration as "the glue that bonds complex systems together" or a step in the process of health systems becoming more complete and comprehensive (Kodner, 2002). He strongly advocates for a patient-centred view and definition of health systems integration where the needs of complex patients with chronic illnesses, in particular, are considered.

The following are some of the more commonly discussed integration concepts. **Virtual integration** refers to arrangements in which health care organizations exist within a network of organizations working towards a common goal of providing health care to a given population. They are managed through contractual relations with no common ownership (Leatt et al., 2000). **Vertical integration** involves sharing of human and physical resources and is highly structured, with a hierarchal system of governance, usually under one management (Conrad & Shortell, 1996; Shortell & Hull, 1996). Typical examples of vertically integrated systems are integrated service networks (also known as organized delivery systems, integrated delivery systems or disease management) which consist of a continuum of coordinated services delivered to a defined population by an affiliation of organizations (Shortell et al., 1994, 1996). Such organizations share financial and clinical responsibilities, and in many cases, encompass health-related disciplines beyond medicine. Vertically integrated systems offer more potential for coordination than virtually integrated systems (Leatt et al., 2000). **Horizontal integration** labels the cooperation and collaboration between health care providers of the same level of service, such as two general practitioners from different health centres (Queensland Health, 2002). **Functional integration** is defined as the extent to which key support functions and activities (such as financial, management, human resources, strategic planning, information management, marketing and quality improvement) are coordinated across operating units (Gillies et al., 1993; Leatt et al., 2000). **Clinical integration**, which may be enhanced by functional integration, involves organizing functions and activities around patient care and services (Leatt et al., 2000; Shortell et al., 1994, 1996). The focus is on continuity and coordination of care, disease management, good communication among caregivers, smooth transfer of information, and the elimination of duplicate testing and procedures (Leatt et al., 2000). Clinical integration requires a central system of patient records, service delivery and best practice protocols (Durbin, Rogers, Macfarlane, Baranek, & Goering, 2001) to deliver care successfully as an integrated system. **Physician integration** denotes the extent to which physicians are economically linked to a system, use its facilities and services and actively participate in planning, management and governance (Leatt et al., 2000).

Other forms of integration were identified in the review. For example, integrating health care therapies that are not generally classified as conventional such as complementary and alternative medicine (CAM) with conventional treatments. There is increasing interest in CAM (Coates & Jobst, 1998; Featherstone, Godden, Gault, Emslie, & Took-Zozaya, 2003; MACCAH, 2004; NIH, 2006; Smeeding & Osguthorpe, 2005) reflected in the prevalence of CAM use (Eisenberg et al., 1998; Kelly et al. 2005; Kessler et al., 2001; Launsø, 2001; Rössler et al., 2006; Wootton & Sparber, 2001). Consumer demand has pushed for integration of conventional and complementary/alternative systems and new practice models have emerged (Boon et al., 2004a).

Increasing interest in health systems integration models by diverse governments, health systems and providers prompts the need for a unified understanding of the concepts related to integrated health systems. The lack of clarity around health systems integration and its meaning may hamper the promotion of health systems integration in theory and practice (Kodner, 2002). It also impedes the conduct of rigorous research and evaluation on the effectiveness and efficiencies of integrated health systems.

Box 5.1 – CONCEPTS AND DEFINITIONS KEY POINTS

- Authors generally support health systems integration as a desirable value.
- A generally agreed upon conceptual model of health systems integration is currently missing; there are overlaps in concepts and definitions.
- Multiple definitions of integration and related terms exist, further confusing the issue.
- The lack of clarity around health systems integration terminology and definitions jeopardizes progress towards fully integrated health systems.
- The lack of clearly defined terms and concepts also impedes research and evaluation of integrated systems.

5.1.2 Health Systems Integration Models

Having a conceptual model or framework to guide health system integration would be extremely useful for planners and decisions makers. Given the diversity of factors that impact the delivery of health care services, such as multiple stakeholders, existing policies, geographical issues, the philosophy of care, advances in biotechnology, and financial mechanisms (Conrad et al., 1996; King & Meyer, 2006; Wulsin, Sollner, & Pincus, 2006), it is unlikely that one model will be appropriate for all organizations and situations. The complexity of health care delivery systems, the diversity of populations served, and the levels of care required add further challenges to the development of a unified model.

In the absence of an agreed-upon model, existing models from the articles reviewed have been summarized here to provide some insight and guidance. The models are organized into three groups: system level, progressive or sequential, and program/service level. System level models are those which attempt to achieve integration of many components on many levels of the organizations. The progressive or sequential models focus on a continuum of stages or levels of integration. Health care integration models at the program or service level focus on a particular population group such as patients with chronic pain. While it appears that these three types of models are distinct the

boundaries between them are not precise. Table 5.1. summarizes key aspects of the models, and is followed by discussion.

Table 5.1: Health Systems Integration Models

| System Level | |
|--|---|
| Burke & Litwin, 1992 | A Model of Organizational Performance and Change |
| Conrad et al., 1996 | Key Dimensions of Integrated Health Systems |
| Lukas et al., 2002 | Integrated System Scorecard |
| Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005 | Relational Systems Change Model |
| Miller, 2000 | Burke-Litwin Change Model |
| Progressive or Sequential | |
| Boon et al., 2004a | Parallel - Consultative - Collaborative - Coordinated - Multidisciplinary - Interdisciplinary - Integrative |
| Conrad et al., 1996 | An Evolutionary Typology of Management Models and Clinical Integration Approaches |
| Fleury, 2006 | Continuum of Inter-organizational Relations |
| Konrad, 1996 | Levels of Integration |
| Leutz, 1999, 2005 | Levels of Integration |
| Program/Service Level | |
| Batterham et al., 2002 | Physician integration |
| Byrnes, 1998 | Population Health Management |
| King et al., 2006 | Service integration for children with disabilities |
| O'Connell, Kristjanson, & Orb, 2000 | Shared Care, Case Management, Home Care, Collaborative Practice, Clinics, Cancer Centres |
| Weiss, 1998 | Prevention-focused Model |
| Wulsin et al., 2006 | Hospital based models, Primary care based models |

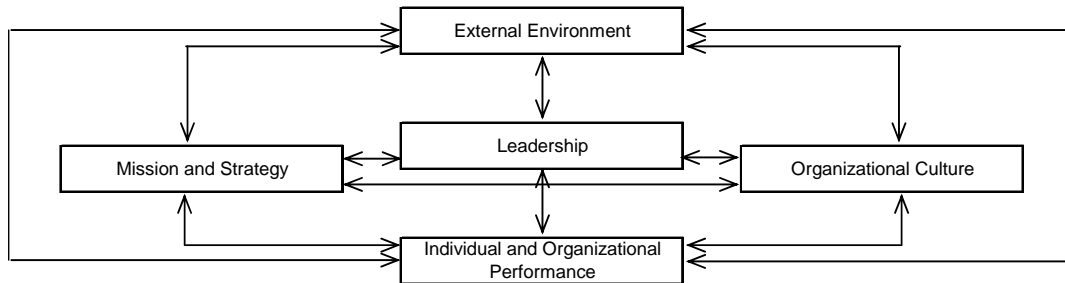
System Level Models

The system level models vary considerably ranging from a focus on the key dimensions of a system to an emphasis on relationships as a model for effecting change.

In the early 1990's, a causal model of **organizational performance and change** was developed by Burke & Litwin (1992). It encompassed both the organizational dimensions that were key to successful change and how those dimensions were linked to achieve change (Burke & Litwin, 1992). This model was adapted by Miller (2000) (Figure 5.3) and focuses on health care integration as a

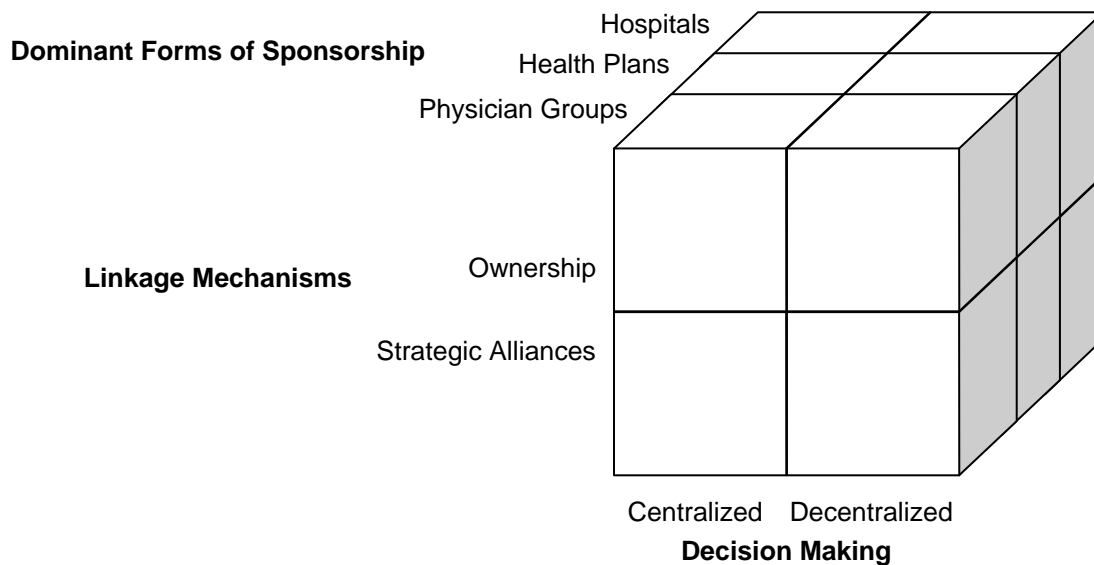
“transformational change by which specific attention needs to be paid to strategy, leadership behaviour and culture” (p.9). The key assumptions of this model are that change is driven by external factors, and that cultural shifts in the values and norms of an organization, which are systemic and transformational, will change the organization’s climate, that is, how individuals feel about their organization. These cultural shifts are achieved by the organization’s leadership making leadership the central component of this model and one which positively or negatively impacts all the other variables of integration.

Figure 5.3: Burke-Litwin Change Model (Abbrev) adapted by Miller (2000, Figure 3, p.9)



Within the context of the United States health care system, Conrad et al. (1996) proposed a 3-dimensional model based on what they consider to be **key dimensions** of an integrated health system. One dimension is the predominant form of decision making: centralized or decentralized. The second dimension is the linkage mechanism: ownership or strategic alliances. The last dimension is comprised of the dominant forms of sponsorship: hospitals, health plans, or physician groups (Figure 5.4). This model allows organizations to use the various combinations of these dimensions in such a way as to “respond to the different forces in its own market” (Conrad et al., 1996, p.31).

Figure 5.4: Key Dimensions of Integrated Health Systems (Conrad et al., 1996)



Lukas et al. (2002) discussed a model which was used to measure the outcomes of the U.S. Veterans Affairs Midwest Health Care Network. This was a linear model comprised of three components. The first component, integration structures, included the structures, functions and processes of the network. These were expected to increase system-level integration (second component) which was the coordination amongst the parts of the system. This component, in turn, was expected to result in improved system performance, the third component. Lukas et al. (2002) also discussed the indicators used to evaluate these components of the health systems integration network.

The **Relational Systems Change Model** described by Markoff et al. (2005) was based on the relational model of psychological development pioneered by Stone Center, Wellesley College and a model of systems change derived from relational theory used by the Institute for Health and Recovery. Markoff's model recognized that the system, at any level, was comprised of people and that people were relational. They develop, grow, and change in the context of their interactions with others. Therefore, systems change when the environments and structures of the system encourage, facilitate, and inspire people to change. The model entails four strategies that will promote change: 1) build connections at multiple levels of the system to facilitate the flow of information between levels; 2) bring together the diverse constituencies affected by the proposed change in order to form a collective understanding of potential impacts, foster cooperation, and engage stakeholders in developing relevant plans for systems change; 3) identify and discuss potential sources of conflict, disagreement or tension; and 4) create a collaborative and mutually empowering environment in which all members have input into the findings and outcomes.

Progressive or Sequential Models

There were several models based on a progressive or sequential order of care. While not explicitly stated by all the authors proposing these types of models, a common attribute was that health system integration was not considered a final destination but rather a means of achieving improved health care performance which was defined by the "system's ability to add value to itself, the community, patients, and purchasers" rather than by increasing the financial payoff (Gillies et al., 1993, p.470). The ability to integrate functions and services was the key ingredient to achieving a transition from focusing on acute care to coordinating care across the continuum (Gillies et al., 1993). While the progressive or sequential models identified by this review focused on health services integration, they are adaptable to system level health care integration and are therefore discussed in this section.

The model proposed by Konrad (1996) categorized health services integration along a continuum from **informal to formal arrangements** with an increasing intensity of governance in the relationship between providers or agencies. At the initial level there is simple information sharing and communication between partners or agencies. Cooperation and coordination, collaboration, and consolidation are consecutive levels where an increasing amount of activities and resources are shared and organizational structures consolidated. Health services integration is the highest level where a single authority comprehensively addresses patients' needs.

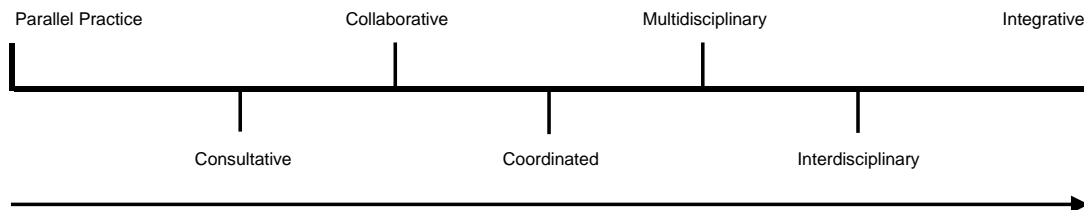
Conrad et al. (1996) proposed a typology of management models and clinical integration approaches. In the traditional stage of the model (Stage 1), care within a given unit is coordinated for a given condition and is organized around individual operating units. Stage 2, the transitional stage, sees care coordinated across operating units for a given stage of illness. In the advanced stage (Stage 3), care is coordinated based on clinical service lines across all sites within a given episode of illness such as an acute cardiovascular event. Stage 4 is the final and breakthrough stage. This stage is organized around processes and capabilities to serve multiple needs of populations and community groups. Health

maintenance and disease prevention are integral aspects of this stage in order to improve the health of populations across the continuum of care.

Leutz (1999, 2005) proposed three levels of health services integration based upon a set of dimensions which included the **patients' needs** in terms of the stability, severity, and duration of their conditions; and the urgency, frequency, and complexity of the need for intervention and services. The least integrated of these dimensions is linkage (Level 1) which will serve the greatest number of people. Patients' needs can be met by identifying their requirements and providing them with accurate information and good referrals. Coordination (Level 2) is midway in terms of severity and number of people who require this level of care. Formal structures and care managers coordinate benefits and care across the systems of care. In Level 3, full health services integration, patients who require services from two or more systems of care will benefit from an individual who coordinates these services; ensures clinical information is shared among providers in a timely manner; and provides assistance with transitions between care settings. This level of health services integration will be appropriate for a relatively small number of people, those with the greatest needs.

Boon et al. (2004a) conceptualized **integrative** health care and identified key components based on a review of approximately 200 articles. Four key themes emerged: philosophy and/or values, structure, process and outcomes. Based on these themes, these authors described seven different levels of health care practice that denote increasing integration (Figure 5.5). As one progresses from parallel practice to integrative practice, emphasis is on the whole person and promotion of health and wellness rather than treatment of disease. The structure of the team becomes more complex and communication and consensus decision making become more important. Reliance on the biomedical scientific model, hierarchical structure, and practitioner autonomy decreases. However, with the increasing number of disciplines associated with multidisciplinary and interdisciplinary health care teams which are characteristic of more integrated models, the complexity and diversity of outcomes increases.

Figure 5.5: Team Health Care Practice Models (Boon et al., 2004a)



Fleury (2006) adapted Whetten's (1981) structural forms of coordination to health services integration. This continuum model is based on the **intensity of inter-organizational relations** and organized into three levels: mutual adjustment (least formal), alliance, and integration (most formal). The model uses five criteria to differentiate the levels: governance, formalization, sanctions, scope, and types of problems. Governance represents decision making and control within the system. Formalization considers the strategies used (informal e.g. telephone call vs. extensive e.g. service contract) amongst the system's organizations. Sanctions indicate the organizations' accountability (e.g. oversight by peers, management by objectives). The scope encompasses the number of partners, the different sources of interaction (e.g. financial, clients, knowledge), and the geographic area or market share covered by the organizations within the system. The type of problem refers to the intensity of care provided by the system: care that requires little coordination (e.g. isolated events), services for chronic, non-complex health problems, and/or care of patients with complex, chronic health problems.

The systems models discussed above are readily adaptable to the Canadian health care system. The focus on the importance of change agents, either by virtue of their interactions throughout the organization or in leadership roles, is relevant no matter which model or combination of models are used to frame the process of health systems integration. Additionally, the recognition that organizations are organic and that change will most likely occur in stages rather than simultaneously is a key component of several of these models. While Conrad et al.'s model (1996) focuses on components of the United States health care system which have little relevance within the Canadian context, their diagram (Figure 5.4) is a useful illustration of the complexity and diversity of health care systems and could serve as a basis for a similar understanding of Canada's health care system.

Program/Service Level Models

The majority of models identified by this review focused on health services integration which aimed to improve patient outcomes by better coordination of services at the program level. These models can be categorized by their key components: case management, co-location, home care, population health management, and primary care. While many of these models were discussed within the context of a specific population or jurisdiction, they are transferable to other patient groups and to the Canadian health care system, particularly for those who require concomitant care.

The **case management** model (King et al., 2006; O'Connell, Kristjanson, & Orb, 2000; Weiss, 1998; Wulsin et al., 2006) uses a case manager as a facilitator for achieving the integration of health care services. Typically, this individual coordinates the patients' care from the time they are admitted to hospital to the time they are discharged into the community. The transferability of this model was illustrated by several authors. Weiss (1998) discussed a prevention-focused model with a case manager who assisted patients as they transitioned through the three levels of care: wellness management which included health promotion and self-management; disease management which included risk reduction, early detection, and intervention of chronic illness; and illness management which comprised prevention of recurrence of illness and acute episodic illness management. A case management model for integrating health care services for children with disabilities and their families was presented by King et al. (2006).

A second recurring model for integrating health care services was the **co-location** of services and information. This model was also easily transferable to a variety of populations including cancer patients (O'Connell et al., 2000) and mental health patients (Wulsin et al., 2006). This model depends upon a central location with a range of health care professionals who work collaboratively to provide a variety of services. Ideally, these centres also include information resources such as support meetings, telephone help lines, and presentations or speakers.

A health services integration model that focuses on **home care** after discharge from hospital was discussed by O'Connell et al. (2000). A team of health care personnel shared the responsibility for transitioning patients from hospital to home and was especially effective for palliative care.

A **population health management** approach was the cornerstone of the model presented by Byrnes (1998) because of its ability to improve population health and patient outcomes while at the same time delivering cost-effective care. The proposed model had three components: health status assessment where high risk groups, conditions and associated costs were assessed and used for service planning; care management where patient care was coordinated in a proactive way to enhance patient satisfaction and outcomes; and disease management that integrated knowledge from public health, disease history, health economics and outcomes research to deliver the most cost-effective, high quality care.

Batterham et al. (2002) developed and tested a model for general medical practitioners' (GP) integration through a concept mapping process and confirmatory factor analysis. The model focused on two forms of integration, **patient care** and **public health**, which were facilitated by various factors: holistic patient care, GP flexibility, patient information (GP as a patient's guide to the health care system), teamwork, liaison (GP communication on behalf of patients), care coordination, and hospitals (GP involvement with patients during hospitalization). Other **primary care** based models were discussed by Wulsin et al. (2006) including those which incorporated behavioral health care into primary care settings or provided primary health care in centres which delivered health care to those requiring psychiatric care. This later model was especially effective for individuals with serious behavioral disorders.

In addition to primary care based models, Wulsin et al. (2006) provided a brief overview of hospital based models for the integration of general medical and psychiatric care. These models included psychiatric units with medical consultants or liaisons who took part in case conferences and ward rounds, and specialist intervention in high risk clinical fields such as HIV/AIDS units, burn units, and transplantation units. The inclusion of medical care facilities within centres that provide assistance to the mentally ill can easily be transferred to those programs that focus on patient populations with substance or abuse problems.

Most of the models identified in this literature review were developed and discussed in the context of jurisdictions other than Canada; however, many of them are adaptable to Canada's publicly funded health care delivery system.

While the lack of a single dominant model for the implementation of health care systems integration may be indicative of a process in its earliest stages, it is more likely that the delivery of health care is too complex for a one-size-fits-all solution. Therefore, it is important for decision makers to understand the principles and processes of successfully integrated health care systems in order to customize a model which is the best fit for their particular organization or to choose an optimal set of complementary models according to patient needs across the system.

Box 5.2 – MODELS KEY POINTS

- There is no single best model for health systems integration.
- Multiple models have been proposed at the system level as well as the program level that might guide practice.
- System level models focus on change management and key system dimensions.
- Program level models focus on care processes such as case management, co-location, home care, population health management, and primary care.
- Progressive or sequential models are adaptable to both system level and program/services level. These models propose several steps to achieve increasing levels of integration.

5.1.3 Principles of Successfully Integrated Health Systems

Given the lack of a unified conceptual model for health systems integration, it is hardly surprising that integrated health systems come in many forms and shapes. Despite the variety in integrated health systems, it appears that a full model of integration entails a consistent set of parameters,

commitments and responsibilities while allowing for perpetual innovation. The literature reviewed from a diverse range of health care jurisdictions revealed several principles and values that acted as either facilitators of, or barriers to, successful health systems integration. From the many principles described, 10 were frequently and consistently presented in the review. These have been summarized in Table 5.2. By focusing on these 10 universal, core areas, which are neither dependent upon any one type of model nor health care context, structures can be created that facilitate the integration of services. The 10 key principles are discussed below.

i) Comprehensive Services across the Continuum of Care

The first principle of integrated health systems is the **comprehensive** scope of clinical and health related services that are covered. Integrated health systems assume the responsibility to plan for, provide/purchase, and coordinate all core services along the continuum of health for the population served (Leatt et al., 2000; Marriott & Mable, 1998, 2000). This includes services from primary care through tertiary care as well as cooperation between health and social care organizations to coordinate services across sectors (Simoens et al., 2005). A population health focus is considered essential by some authors to achieve a fully integrated health system (Byrnes, 1998) further underlining the need to coordinate across systems and sectors.

While the breadth (number of different functions and services provided) and the depth (number of different operating units within a system) may vary, all services are meant to add value with a main focus on wellness and primary care. The degree of integration is determined by factors such as the extent to which providers assimilate to the larger system (reflected by similarities of goals, vision and mission) and the proportion of health services that are fully integrated in the system (Simoens et al., 2005). As a result of health system integration, patients have access to a continuum of services that are seamlessly coordinated.

ii) Patient Focus

Rogers & Sheaff (2000) remind us that “justification for integrated delivery systems is to meet patients’ needs rather than providers’” (p.53). Truly integrated health systems have the mandate to put the **patient/client at the centre** of their operations. In the United States, leaders of integrated health care organizations report that focusing on the patient is a main lesson learned from their integration experiences (Coddington, Ackerman, Jr., & Moore, 2001a). Integrated health care systems should be easy for patients to navigate (Linenkugel, 2001), and improve quality of care and outcomes for patients by ensuring the patient receives the “right care at the right place at the right time” (Shortell, Gillies, Anderson, Erickson, & Mitchell, 2000, p.36).

The patient focus is reflected by population-based needs assessments that drive service planning and information management, and the desire to redesign internal processes to improve patient satisfaction and outcomes. Services demonstrate market sensitivity and responsiveness to changing needs of the population (Roberts, 1996). This requires a thorough understanding of “the way in which patients move within and between different health and social care agencies. The complexity of patient action is often not considered by those concerned with designing the configuration of services” (Rogers & Sheaff, 2000, p.54). Self-care and care provided by families and friends are further considerations for integrating services that meet the needs of patients. “A truly integrated model of health care needs to respond to the actual types of self-care undertaken by people prior to and in addition to contacting services; and to the reasons for and ways in which people actually access formal health care” (Rogers et al., 2000, p.56).

Furthermore, integrated health systems with a strong focus on public health stress the importance of involving and being representative of the communities served (Marriott & Mable, 1998). Patient engagement and participation is desired and consumers are presented with opportunities for input on various levels (Hunter, 1999; Wilson, Rogowski, & Popplewell, 2003). It has also been argued that consumers who are informed about health plans and treatment options are more likely to seek integrated care (Shortell et al., 1994).

Successful integration results in combined synergy in patient care and a balance between costs and quality (Miller, 2000). However, organizations that fail to place the patient at the centre of their integration efforts are unlikely to succeed (Coddington et al., 2001a). It may be challenging for large integrated systems to retain a patient focus, prompting one author (Linenkugel, 2001) to recommend that smaller systems may have better chances at success.

iii) Geographic Coverage and Rostering

Many integrated health systems provide **geographic coverage** to maximize patient accessibility to the services they provide and to minimize duplication (Coddington, Fischer, & Moore, 2001c; Leatt et al., 2000; Marriott & Mable, 1998, 2000). In conjunction with the geographic coverage, rostering is often employed. This means that the system takes responsibility for an identified population in a geographic area, with clients having the right to exit if they wish to seek services from other providers (Leatt, Pink, & Naylor, 1996; Marriott & Mable, 1998, 2000).

The rationale for regionalization in most provinces in Canada was predicated on this concept of geographic coverage. However, Canada's relatively small, widely dispersed population has often been viewed as a barrier to the implementation of fully integrated delivery systems in all regions. Studies in the United States suggest that a minimum of 1,000,000 clients are needed to support the development of efficient integrated delivery systems (Shamian & LeClair, 2000, p.67). Only in Canada's most populous areas is this patient base achievable; integration is difficult or indeed impossible to achieve in the rural and remote northern areas (Leggat & Walsh, 2000). Further research on rostering and geographic coverage is needed to better understand how this might work in a Canadian context.

iv) Standardized Care Delivery through Interprofessional Teams

Care in an integrated health system is ideally **standardized** and delivered by **interprofessional teams** to ensure continuity of the care process. All professionals are considered equal members of the team; professional autonomy is maintained and incentives are provided to meet performance and efficiency standards (Robinson & Casalino, 1996). Procedures are implemented that define roles and responsibilities of all team members and ensure smooth transitions of patients from one type of care to another (Robinson et al., 1996). Team members review service delivery for the targeted population and propose changes as needed (Hunter, 1999; Wilson et al., 2003). Decisions on clinical aspects and financial resources are made jointly. There is a whole body of literature describing integrated care pathways for specific populations. Rather than providing a comprehensive summary of integrated care pathways (also known as clinical protocols, practice guidelines, or similar terms), the focus here will be to highlight the utility of these standardized processes for health system integration.

Shared protocols based on evidence, such as **best practice guidelines** and **clinical care pathways**, are essential to the functioning of interprofessional teams and constitute an important component of integrated health systems. Practice guidelines are often supplemented by decision making tools and are meant to standardize care across services and sites, with the view to enhancing quality of care. These are similar to disease management and clinical pathways of care since they all strive to

coordinate resources across the health care system, integrate care across the continuum, and are underpinned by evidence-based medicine (Hunter, 1999).

While an interprofessional team approach is considered a basic tenet of integration (Coddington et al., 2001a), barriers to team collaboration are plentiful. Confusion or lack of understanding of their roles and the roles of other providers within the health care system (Appleby, Dunt, Southern, & Young, 1999; Stewart, Petch, & Curtice, 2003), professional self-interest, competing ideologies and values, and conflicting views about client interests and roles (Burns & Pauly, 2002; Coxon, 2005; Hardy, Mur-Veeman, Steenbergen, & Wistow, 1999) prevents effective collaboration. Provider resistance to change, and a lack of mutual trust, willingness, time, and expertise further challenge the collaborative process (Mur-Veeman, van Raak, & Paulus, 1999; Stewart et al., 2003). The dispersion of decision making power amongst the physician, other health care providers, and the patient in the collaborative teamwork approach may also result in a slower process and restrict successful integration (Hawkins, 1998).

Interprofessional training is seen as a possible solution to address many of these challenges (Appleby et al., 1999). Recognition of interdependence (Clague, 2004) and a willingness to pursue integration and potentially give up some level of autonomy at a professional and organizational level is required to achieve integration (Hardy et al., 1999). While interprofessional training can help staff to recognize the abilities and skills of other health care professionals (Coxon, 2005) it also creates a more flexible work force which further facilitates integration (Shortell et al., 1994).

Closely related to the issue of interprofessional collaboration is communication. Lack of communication amongst various stakeholders may hinder achieving a successful patient-centred integrated health system (Appleby et al., 1999; Coburn, 2001; O'Connell et al., 2000; Stewart et al., 2003). Governments, health delivery organizations, providers, the community, and users must be consulted and involved during the integration process and afterwards to facilitate its maintenance (Appleby et al., 1999; Friedman & Goes, 2001; Miller, 2000). Failing to solicit and heed feedback from stakeholders will jeopardize integration (Miller, 2000; Stewart et al., 2003). Barnsley, Lemieux-Charles, & McKinney (1998) emphasize the importance of “an organic structure with diverse communication channels that efficiently transfer information across organizational boundaries” (p.19). Lack of timely communication from decision makers and organization executives to staff may result in rumours, and impede integration efforts (Friedman et al., 2001). Co-location of services (Appleby et al., 1999; Coburn, 2001; Kolbasovsky & Reich, 2005) with frequent team meetings (Baxter, Levin, Legaspi, Bailey, & Brown, 2002) or informal sharing of information (Hurst, Ford, & Gleeson, 2002) will enhance communication. If co-location is not possible or practical, the use of electronic information systems may facilitate effective communication (Coburn, 2001; Coddington, 2001; Hurst et al., 2002; Lin & Wan, 1999). However, communication alone will not guarantee integration; the content must stress the benefits and importance of integration and must be endorsed throughout the system (Coddington, 2001).

v) Performance Management

Integrated health systems demonstrate well developed performance **monitoring systems** including **indicators** to measure outcomes at different levels. Performance management involves a structured approach to analysis of performance issues and how they might be addressed (Hunter, 1999; Wilson et al., 2003). There are protocols and procedures that reflect the importance of measuring care processes and outcomes and using the information for service improvement. The focus is often on cost-effectiveness. Ongoing measurement of care outcomes and reporting are important parts of the quality improvement process. Many integrated health systems have mechanisms in place that link

compensation to indicator based performance; reward systems may be redesigned to identify, measure and reinforce achievement of organizational priorities and promote the delivery of cost-effective high quality care (Coddington, 2001; Leatt et al., 2000).

vi) Information Systems

Many of the processes previously discussed are felt to be possible only with the support of state of the art **information systems** that allow effective tracking of utilization and outcomes. Quality information systems also enhance communication capacity and information flow across integrated pathways (Coddington, Ackerman, Jr., & Moore, 2001b; Hunter, 1999; Leatt et al., 2000; Wilson et al., 2003). Data management through a system-wide computerized system is considered by many commentators to be critical to integration. **Electronic health records** ensure that providers have the information necessary to assist patients in making informed health care decisions. The information system should also enable system-wide patient registration and scheduling coordination as well as management of clinical data. It should allow the collection, tracking and reporting of activities such as population demographics and care needs, use of services, and client satisfaction.

The information system links consumer, payer and providers across the continuum of care and provides relevant information to these stakeholder groups. This electronic relationship amongst health care providers is often known as virtual integration (Shortell et al., 2000). Faxing and emailing information and electronic patient records ensure timely access to a patient's history (Appleby et al., 1999; Coburn, 2001; Conrad et al., 1996; Grazier, Hegedus, Carli, Neal, & Reynolds, 2003; Hunter, 1999). It is essential that information can be accessed from anywhere in the health system, even in remote locations, to facilitate seamless communication between care providers. The ability to integrate clinical and financial information is viewed as important for monitoring cost-effectiveness and facilitating service planning (Leatt et al., 2000; Marriott & Mable, 1998, 2000). A well functioning information system is also viewed as enhancing opportunities for communication and learning.

However, developing and implementing integrated electronic systems is time consuming, complex, and costly. Poorly designed electronic information systems, systems that are not used by providers, lack of a clear business plan, lack of common standards, fear of diminished personal privacy, inadequate training and incentives for providers to participate, poor technology solutions, and ineffective leadership are all challenges to integrated electronic systems (Closson, 2000; Drazen & Kueber, 1998; Hurst et al., 2002).

vii) Organizational Culture and Leadership

There is general agreement in the literature that implementation and operation of an integrated health system requires **leadership with vision** as well as an **organizational culture** that is congruent with this vision. The need to instil a strong, cohesive culture among all the providers and staff that reflect the values inherent in integration has been stressed. This is of particular importance when services across the continuum, which do not necessarily have the same organizational culture, are brought together into a new organizational structure. Clashing cultures is one of the reasons named for failed integration efforts. These clashes include conflicts between medical centres arising from competition (Drazen et al., 1998; Friedman et al., 2001; Hardy et al., 1999), or differences in professional cultures (Hardy et al., 1999) such as between providers of medical services and long-term care services (Coburn, 2001) or between physicians and other service providers within the health care system (Friedman et al., 2001; Hawkins, 1998).

Another cultural barrier to integration is an acute care mindset, which places the hospital at the centre of the integration process (Shortell et al., 1993b). This runs counter to the concept of integrated, population-based health care delivery (Coddington et al., 2001c; Shortell et al., 1994). In the United States, the majority of integration efforts have been instigated by hospitals which acquired physician practices upstream and nursing homes downstream with a goal to expanding the pool of rostered patients from which to draw with the anticipation of improved financial performance (Burns, 1999; Shortell et al., 2000). Within the U.S. context, the focus of the larger system is often in direct conflict to the focus of the hospital. Systems are interested in decreasing the length of stay for patients and the number of patients being hospitalized, while hospitals are interested in increasing patient utilization of its services. These mergers often do not work as well as intended (Burns, 1999). The motivation for integration in these instances (i.e. as a competitive financial strategy) has little applicability to the Canadian health care system but the lesson of recognizing the values of all organizational and individual participants in the units involved in integration is highly pertinent in the context of regionalization.

Culture clash can be conveyed in a lack of trust between governing boards, executives, and senior clinical staff. This can infiltrate to the lower levels of an organization and cause individuals to second guess decisions, motives and behaviours, perhaps leading to hostility, animosity, low productivity and dissatisfaction (Friedman et al., 2001). Ways to mitigate culture clash include merging slowly, involving staff from all departments, agencies, or organizations early in the process (Drazen et al., 1998), a well-communicated and understood single corporate mission statement and strategy (Shortell et al., 1993b), and an atmosphere of trust achieved through communication (Coddington et al., 2001a). Organizations need to be fluid and “have an excellent understanding of the different roles and languages of partner agencies” (Clague, 2004, p.20). Group culture, the acknowledgement of different viewpoints during the decision making process, and the empowerment at all levels to promote quick decision making, support integration (Shortell et al., 2000).

Bringing different cultures together demands committed leadership with clear communication processes as well as front line staff that is willing to take ownership in the process (Hunter, 1999; Wilson et al., 2003). Leaders can facilitate the integration process by promoting the new vision and mission of integration amongst their staff (Drazen et al., 1998; Friedman et al., 2001; Miller, 2000; Shortell et al., 2000). If leaders fail to share the vision of integration, put their personal desires ahead of the health care system (Coddington, 2001), or try to use force to achieve integration (Miller, 2000), barriers are created. Leaders who help staff understand the organization's mission and vision in terms of what it means for their own job can move integration forward (Shortell et al., 1993b). Mergers place substantial stress on staff (Drazen et al., 1998); it is essential that leaders assist staff to accept a significant amount of uncertainty and ambiguity as loss of promotion opportunities or deviation from an envisioned career path under a new streamlined, integrated structure may result in sabotage to integration efforts (Friedman et al., 2001; Hawkins, 1998; Hurst et al., 2002). Staff loyal to their former manager may be reluctant to change possibly jeopardizing integration (Drazen et al., 1998; Miller, 2000). Strong leaders who communicate clearly with stakeholders may minimize this impact. Good communication to keep the information flowing and clear project management structure such as reporting arrangements are thus essential (Hunter, 1999; Wilson et al., 2003). Similarly, system-wide learning and the rapid dissemination of new knowledge within an organization is an important facilitator of integration (Barnsley et al., 1998). Successful leaders recognize the importance of learning and how it contributes to the overall integration goal (Barnsley et al., 1998). They ensure opportunities, resources, incentives, and rewards for staff learning and enable providers to take the time to obtain additional training (Hurst et al., 2002). The need to specifically engage physicians as

leaders in the development of integrated health systems will be further discussed in the following section and in Section 5.3.1.

viii) Physician Integration

Many have argued that **physicians need to be effectively involved and integrated** at all levels of the system and play a key leadership role (e.g. CEOs or other leadership roles) in the design, implementation and operation of an integrated health system (Appleby et al., 1999; Burns, 1999; Coddington et al., 2001b; Hawkins, 1998). Burns (1999) suggests that there is a push-pull relationship between physicians and the system, impacting physician-system alignment. In the United States, experiences with physician integration have highlighted several challenges. For example, several hospitals obtained physician practices and put the physicians on payroll. In addition to financial losses to the hospital (Coddington et al., 2001b), the loss of power, prestige, income, or change in practice style resulted in physician discontent, resentment and resistance to change which jeopardized successful integration (Appleby et al., 1999; Anderson, 1998; Budetti et al., 2002; Coddington et al., 2001b; Hawkins, 1998). For physicians who view themselves as the only appropriate decision maker for patient care (Friedman et al., 2001), working in a multidisciplinary, integrated care system with shared decision making responsibility was “unpalatable” (Hawkins, 1998, p.22). Rogers and Sheaff (2000) suggest that informal relationships between physicians and other health care professionals was an important component of facilitating or hindering horizontal integration. Sometimes a physician who was more aligned with the system was able to recruit colleagues and convince them of the value of an integrated system. In other instances, physicians’ past experience and competition amongst health care professionals put them at odds thus creating a situation that prevented constructive dialogue (Rogers et al., 2000). These authors suggest that integration of all forms is often facilitated “by creating ad hoc informal working relationships to tackle specific tasks including ... clinical integration at patient level, and then gradually consolidate and formalize these relationships over time” (Rogers et al., 2000, p.53). Taking advantage of existing networks and informal linkages between practitioners further facilitated integration of physicians with the wider system as did a strong patient focus (Gillies et al., 2001; Lester, Hundert, Dilworth, Blair, & Crawford, 1998).

In many primary care models physicians are the gateway to the integrated system. They are expected to undertake the necessary evaluations and paperwork that will be pivotal in the creation and maintenance of the single point of entry or universal electronic patient record which are viewed as instrumental in making integration a successful reality. Physicians may be getting pulled in different directions by all these integrators and experience a fragmentation of their jobs (Leutz, 2005). Protecting general practitioners’ time to perform necessary duties such as communicating with other disciplines will assist integration (O’Connell et al., 2000). Integrating primary care physicians economically and ensuring recruitment and retention through compensation mechanisms, financial incentives and other ways to improve quality of working life is also critical. Physician integration is further impacted by environmental context. Factors such as urban versus rural, market size, market share, competition, occupancy rates of hospitals, and diffusion of managed care all influence the degree of physician system integration as well as the type of integration models employed (Burns et al., 2001a). In the United States, the degree to which primary care physicians are engaged and integrated in the larger system is often used as criteria for successful integration (Simoens et al., 2005).

While challenges with physician integration are thoroughly discussed in the literature, there is little mention of integration of other health providers. This may be related to physicians’ gate keeper role, their private practice status and associated risks as well as other factors that make integration of this

professional group more challenging. It is important to highlight potential benefits of integrated health systems for physicians such as reduction in transaction and production costs and the potential ability to obtain additional resources (e.g., financial, human resources), and improvement of quality of care, income and worklife balance (Simoens et al., 2005). Despite the number of barriers to physician integration, it is believed “stronger physician-system alignment is desirable and worthy of time, attention, and resources” (Gillies et al., 2001, p.I-100).

Readers are referred to Section 5.3.1 for a more detailed discussion of the literature regarding models for, factors affecting, characteristics of, and outcomes of physician integration.

ix) Governance Structure

Several authors discuss the importance of **strong, focused governance** for successful integration. A poorly designed governance structure (Hawkins, 1998), a competition based system of governance (Hardy et al., 1999), or too many management levels (Hurst et al., 2002) have been found to hinder the integration process. To facilitate integration, governance must be diversified ensuring that there are representatives from a variety of stakeholder groups including physicians and the community (Coddington, 2001). Diverse governing bodies, which bring a wide range of knowledge to the board and are able to understand the delivery of health care along its continuum, are essential (Hawkins, 1998; Shortell et al., 2000). Seasoned executive directors and physician board members help ensure consistency between management and board visions (Baxter et al., 2002). They provide a clear vision for integration (Friedman et al., 2001; Hawkins, 1998; Miller, 2000; Shortell et al., 2000) and act as a bridge amongst various stakeholders (Friedman et al., 2001) thus facilitating a successful integration process.

Bringing together organizations and services into an integrated health system through contractual relationships or networks typically requires development of new **organizational structures that promote coordination**. It has been suggested that a flatter, more responsive organizational structure that uses the skills and talents of employees to a larger degree are more consistent with an integrated vision. Many of the successfully integrated systems are autonomous not-for-profit corporate organizations that are independent of government and accountable to its rostered members, providers and the government (Marriott & Mable, 1998, 2000). Strategic alliances with external stakeholders, government and the public are essential as are financial incentives that influence providers' attentiveness to costs and quality of services rendered. Integration of leadership and management facilitates coordination of care across settings and levels of care. Development of care management mechanisms is necessary for assuring patient-centred care, care quality, and the appropriate mix and use of resources or services (Coster, 1998; Hunter, 1999; Wilson et al., 2003). In addition, system-level strategic planning and decision making which encompasses both the financing and delivery of medical services are needed. The complexity of these systems requires effective mechanisms for accountability and decision making (Friedman et al., 2001). Having physician and community representation on management and decision making committees has been strongly recommended (Baxter et al., 2002; Friedman et al., 2001; Hawkins, 1998; Miller, 2000; Shortell et al., 2000).

In addition, Conrad et al. (1996) list the external market, legal, and regulatory environments as barriers to integration in the United States. In California there was a lack of clear direction at the federal and state government levels which was described as resulting in a partially integrated system which did not maximize the possible benefits of integration (Smithline, 2000). This circumstance resulted in less profitable hospitals and medical groups, the demise of independent practice associations, and declining quality of service (Smithline, 2000). The existing legal and political

frameworks in Michigan were cited by Grazier et al. (2003) as barriers to integration of mental health, substance abuse, and primary care services. While organizational structures are important for the development of integrated health systems, consideration will need to be given to the policy context within which integration takes place.

x) Financial Management

Cost control was one of the major original incentives for health systems integration in the United States. It was believed that integrated health systems would result in economic benefits because of economies of scale and cost reductions in both administrative and clinical areas (Coburn, 2001). However, this claim is disputed (Durbin et al., 2001; Hernandez, 2000). While cost savings are typically realized in administration and group purchasing, improved access to services can result in increased treatment costs. Also, by focusing on profit margins, earnings per share, and debt ratios, some integrated systems in the United States lost sight of the more important goal of integration, which is improved patient care (Friedman et al., 2001). When these organizations were unable to meet profit expectations, pressure was applied to reduce costs in order to regain lost stock value, investor confidence and the value of executives' and physicians' stock options.

Ultimately, integration may result in increased cost before it provides savings (Coburn, 2001). The way services are being funded is therefore an important consideration of integrated models (Leatt et al., 2000). This includes **funding at the various levels** from the macro level (integrated delivery system) to the micro level (physicians). A major barrier to integration in several jurisdictions is differentiated service funding. In the Netherlands, separate financial sources for home care/long term care and acute care is a barrier to integration and cooperative teamwork (Mur-Veeman et al., 1999). In the United Kingdom, mental health and social care are funded differently than acute hospital care (Clague, 2004). Australian funding mechanisms do not promote cooperative teamwork, integration, or health promotion. For instance, GP remuneration discourages integration since funding is not provided for time spent in multidisciplinary practice only for time spent attending directly to patients (Appleby et al., 1999). New Zealand has also faced challenges integrating under its financial management system (Coster, 1998). Ensuring a financing mechanism that allows pooling of funds across services facilitates integration (Hardy et al., 1999; Lin et al., 1999). In addition to economic incentives which promote collaborative teamwork and integrated systems, a common benefit package for consumers which will establish the parameters of services to be provided to everyone will promote integration (Shortell et al., 1994). In Canada, debate regarding **remuneration for physicians** under an integrated delivery system has become a challenge to integration. Options include risk or needs-based capitation formulas (Leatt et al., 2000), and blended base funding with prorated fee-for-service (Marriott et al., 2000).

Global capitation (e.g. population needs-based funding) is one common form of funding. It is system funding that will pay for all insured health (and specific social) services required by the enrolled population for a predetermined period of time, for example one year (Leatt et al., 2000). The amount of money per enrollee is set prospectively and incentives are provided to deliver services efficiently and effectively. The US, UK, the Netherlands and New Zealand have the most experience with capitation funding models. Formulas have been implemented that include a wide range of need and risk adjustments such as gender, age, standardized mortality rates, welfare status, disability and geography to ensure just distribution of funds. However, it is unclear from the research evidence what the best funding formula is. The literature suggests that, at the minimum, age and gender should be included as well as additional adjusters based on local situations (Leatt et al., 2000; Marriott et al., 1998). Some Canadian provinces have adopted capitation as the funding model for regional health authorities.

In integrated health systems, financial management is closely linked to performance monitoring. Some systems have put clinical and financial decision support tools in place at the point of service to assist with financial management. The focus is on providing care in the most cost-effective manner and in the most appropriate location. Risk diversification is also considered by examining the strategic role to be played by each service unit in the system.

Funding, while not the only solution to many of the barriers to integration, can alleviate some of them. For instance, investment in information technology assists with communication amongst stakeholders and the public (Coddington et al., 2001c), and the development and maintenance of electronic patients' records both of which facilitate integration.

Implications

Integrated health systems should be approached both enthusiastically and cautiously (Rogers et al., 2000). Integration of health systems requires much planning and often a redirection of resources. While integrated health systems may not be the answer to all health care issues, they do provide opportunities to solve some of the problems in health care today. Paying close attention to the development of the 10 areas discussed above is deemed essential for the successful establishment of an integrated health system. However, there is little evidence to demonstrate which of those principles, if any, are more relevant or if a certain combination leads to more successful integration.

Wan & Wang (2003) developed a conceptual framework of predictor variables (structural and operational characteristics and some integration strategies) that he linked with better performance. His data, based on the Dorenfest and Associates database of over 4,000 hospitals, suggested that predictors for well-performing systems may change over time and that strategies to maintain performance may need to be adjusted. An interesting theory was brought forward by Dubbs and Mailman (2002) who argued that organizational design consistency is a critical success factor. Design consistency was defined as the steady pursuit of a single preferred configuration strategy across key elements of design. Those four elements were governance structure (i.e. integration mechanisms used for establishing control), organizational culture (values, styles, and attitudes), strategic planning processes, and decision making procedures. Each characteristic can be viewed as either "loose" or "tight". While both loose and tight configurations have benefits and no single best configuration exists, Dubbs et al. (2002) propose that consistency across the organization is key to ensure compatibility between different departments or units. Two case studies are presented to support their claims.

Although the features discussed above identify a set of fixed areas of responsibility that define an integrated health system, they allow for organizational flexibility in terms of structures and processes as well as adaptation to local context (Marriott et al., 2000). As Leatt et al. (2000) points out "one size does not fit all, and that different models will be required for different populations" (p.105). It is understood that integrated health systems should be designed across the boundaries of various health systems and professionals in a way that leads to higher quality of care and better health outcomes. Shortell et al. (2000) suggested that "integration requires an interactive, interdependent relationship to be formed among the various 'integrated' entities. Simply aggregating a system's operating units into a common reporting structure will not create a seamless, well-coordinated health care system" (p.37). Furthermore, the numerous levels of government involved in legislating, providing, and/or delivering health services must demonstrate the political will to finance and support integration with consistent policies and sufficient funding (Stewart et al., 2003). Seeking consensus among stakeholders on which of the principles are of importance for a specific integration initiative would be a helpful starting point.

Box 5.3 – PRINCIPLES KEY POINTS

Successfully integrated health systems typically show a combination of the following 10 principles:

- Comprehensive service offered across the continuum of care
- Patient focus
- Geographic coverage and rostering
- Standardized care delivery through interprofessional teams
- Performance management
- Appropriate information technology and communication mechanisms
- Organizational culture with strong leadership and shared vision
- Physician integration
- Strong governance structure
- Sound financial management

Table 5.2: Principles of Successfully Integrated Health Systems

| Principles | Detailed points | Authors |
|---|--|--|
| 1. Care across the continuum | <ul style="list-style-type: none"> ○ Comprehensive scope of clinical and health related services; integration of services along the continuum to provide seamless patient care ○ Ability to link organizations to provide services at different stages of the health care delivery process; streamlined processes ○ Cooperation between health and social care organizations ○ Integrated health systems vary according to their breadth (number of different functions and services provided along the continuum of care), depth (number of different operating units within a system that provide a given function or service) and degree of integration (proportion of health services integrated) ○ Access to a continuum of care with multiple points of access ○ Emphasis on wellness, health promotion and primary care with family physician as “gatekeeper” to secondary services ○ May be made up of only primary care groups or primary care physicians and specialists; often hospitals and physicians working together | <p>--, 1998; Anderson, 1998; Coburn, 2001; Coddington et al., 2001c; Drazen et al., 1998; Feachem & Sekhri, 2005; Leatt et al., 2000; Leggat & Leatt, 1997; Marriott et al., 1998, 2000; Qudah, Brannon, & McDougall, 1998; Roberts, 1996; Robinson et al., 1996; Shortell et al., 1993b, 1994, 2000; Simoens et al., 2005; Souliotis & Lionis, 2004</p> |
| 2. Patient focus | <ul style="list-style-type: none"> ○ Patient-centred philosophy; focusing on patients’ needs ○ Patient/consumer engagement and participation, i.e. consumers provide input on various levels ○ Population-based needs assessment; focus on defined population ○ Focus on meeting community’s health needs; needs-based planning and information management ○ Internal processes are redesigned to improve service to the ultimate customers (patients) ○ Market sensitivity and responsiveness; customer driven | <p>Coddington et al., 2001c; Hunter, 1999; Hurst et al., 2002; Leatt et al., 2000; Leggat et al., 1997; Marriott et al., 1998, 2000; Miller, 2000; Qudah et al., 1998; Roberts, 1996; Shortell et al., 1993b, 2000; Triska et al., 2005 ; Wilkin, 2002; Wilson et al., 2003</p> |
| 3. Geographic coverage and rostering | <ul style="list-style-type: none"> ○ Geographic coverage of service area or region to maximize accessibility and minimize duplication ○ Roster: responsibility for identified population; right of client to choose and exit ○ Geographic concentration: operating units of a system are located in proximity to each other | <p>Coddington et al., 2001c; Leatt et al., 2000; Marriott et al., 1998, 2000; Shortell et al., 1993b, 1994</p> |

| Principles | Detailed points | Authors |
|--|--|---|
| 4. Clinical care (teams, best practice guidelines, protocols) | <ul style="list-style-type: none"> ○ Interdisciplinary teams across the service pathway; clearly defined roles and boundaries of each team member; maintenance of professional autonomy; people trained to perform multiple functions ○ Integration of clinical expertise with all professionals being equal members of multidisciplinary teams; jointly made decisions and control of financial resources ○ Procedures and activities that enable individuals and teams to work together; incentives for performance and efficiency ○ Processes and structures to ensure smooth transitions from one type of care to another ○ Review of service delivery for the targeted population and development of evidence-based clinical practice guidelines with automated tools to support their use ○ Provider-developed, evidence-based care guidelines and protocols to enforce one standard of care regardless of where patients are treated; quality management protocols | <p>--, 1998; Coburn, 2001; Drazen et al., 1998; Feachem et al., 2005; Hunter, 1999; Hurst et al., 2002; Lester et al., 1998; McQueen, Mittman, & Demakis, 2004; Robinson et al., 1996; Shortell, Anderson, Gillies, Mitchell, & Morgan, 1993a; Souliotis et al., 2004; Triska et al., 2005; Wilkin, 2002; Wilson et al., 2003</p> |
| 5. Quality improvement/ performance measurement | <ul style="list-style-type: none"> ○ Committed to quality of services, evaluation and continuous care improvement ○ Diagnosis, treatment and care interventions linked to clinical outcomes; well-developed performance system with criteria for measuring and monitoring; continuous improvement process ○ Structured approach to analysis of issues and how they might be addressed ○ Scrutiny of user demand and utilization of services, with attention to relative costs and benefits of services; service utilization analysis capabilities throughout the system and by discrete member populations; tracking episodes of care, and determine care outcomes in all care settings ○ Cost-benefit analysis to ensure that changes to clinical practice are cost-effective ○ Performance-oriented governance; ongoing measurement and public reporting of key health care process and outcome indicators ○ Measurement and reward systems are designed to identify, measure and reinforce achievement of a new set of organizational priorities; linkage between senior management compensation and indicator-based performance | <p>Coburn, 2001; Coddington et al., 2001c; Drazen et al., 1998; Hunter, 1999; Hurst et al., 2002; Leatt et al., 2000; Leggat et al., 1997; Marriott et al., 1998, 2000; McQueen et al., 2004; Miller, 2000; Qudah et al., 1998; Shortell et al., 1993b, 2000; Wilson et al., 2003</p> |

| Principles | Detailed points | Authors |
|---|---|---|
| 6. IT and communication | <ul style="list-style-type: none"> ○ State of the art information systems to collect, track and report activities (including population demographics and care needs, use of services, client satisfaction) ○ Centralized system-wide computerized patient record system; data accessibility from anywhere in the system; enterprise wide patient registration and scheduling coordination; common patient statements and billing capabilities ○ A common and integrated clinical/financial management information system and the development of inter-unit financial incentives ○ Incorporation of health services data with financial data; information system links consumer, payer and providers across the continuum of care and provides relevant information to these stakeholder groups ○ Efficient information systems that enhance communication and information flow across integrated pathways and provides opportunities for learning; seamless communication between care providers, even at remote locations | <p>--, 1998; Burns, Morrissey, Alexander, & Johnson, 1998; Coddington et al., 2001c; Drazen et al., 1998; Glendinning, 2003; Hunter, 1999; Leatt et al., 2000; Marriott et al., 1998, 2000; McQueen et al., 2004; Newhouse & Mills, 1999; Qudah et al., 1998; Roberts, 1996; Rosser & Kasperski, 1999; Shortell et al., 1993a, 1993b; Simoens et al., 2005; Souliotis et al., 2004; Wilson et al., 2003</p> |
| 7. Organizational culture and leadership | <ul style="list-style-type: none"> ○ Collective culture that reflects the new vision and values of the integrated organization; strong system culture instilled into all staff ○ Organizational support, i.e. organization demonstrates willingness to take this route; executive leadership and support; committed managers that are willing to lead the process; committed front line staff that take ownership; good communication to keep the information flowing ○ Clear project management structure such as reporting arrangements; project and change management skills to enable practice change ○ The organization fosters continuous learning whereby further changes can be quickly incorporated and adopted by the organization ○ Ability to foster innovation | <p>Anderson, 1998; Feachem et al., 2005; Glendinning, 2003; Hunter, 1999; Leggat et al., 1997; Miller, 2000; Newhouse et al., 1999; Qudah et al., 1998; Roberts, 1996; Robinson et al., 1996; Shortell et al., 1993a; Wilson et al., 2003</p> |

| Principles | Detailed points | Authors |
|---|---|---|
| 8. Physician engagement | <ul style="list-style-type: none"> Physicians are well integrated in the system and play a key leadership role (e.g. CEOs or other leadership roles); effective physician involvement at all levels of the system Primary care physicians are economically integrated and recruitment and retention is ensured through compensation mechanisms, financial incentives and other ways to improve quality of life; risk sharing Physicians and other health care professionals work in salaried positions Cooperation between hospital and physicians; physician alignment Operational support for physicians; sharing of cost information Clinician-led change, i.e. medical specialists taking key role in identifying best practice, working with general practitioners and interdisciplinary teams; clinical leadership across integrated care pathways | Budetti et al., 2002; Burns et al., 1998; Coddington et al., 2001c; Hunter, 1999; Leatt et al., 2000; Marriott et al., 1998, 2000; Newhouse et al., 1999; Robinson et al., 1996; Rosser et al., 1999; Simoens et al., 2005; Triska et al., 2005; Wilkin, 2002; Wilson et al., 2003 |
| 9. Governance structure and management | <ul style="list-style-type: none"> Strong governance structure that includes community and physician representatives; members have input to planning and operations Autonomous not-for-profit corporate organization that is independent of government and accountable to its rostered members, providers and government System-level strategic planning and decision making which encompasses both the financing and delivery of medical services Flatter and more responsive organizational structure that utilizes the skills and talents of employees to a greater degree Centralization of only those functions that offer substantial savings or coordinate advantages Accountability for the health status of the defined population Strategic alliances, networks and other forms of partnering; contractual relationships; linkages with external stakeholders, government, the public Organizational structure promotes coordination; integration of leadership and management; single care-management structure which manages care across settings and levels of care; clear communication processes Introduction of management structures and financial incentives to influence providers' attentiveness to the costs and quality of services rendered; performance oriented | Anderson, 1998; Coburn, 2001; Coddington et al., 2001c; Feachem et al., 2005; Glendinning, 2003; Hurst et al., 2002; Leatt et al., 2000; Leggat et al., 1997; Marriott et al., 1998, 2000; Miller, 2000; Newhouse et al., 1999; Robinson et al., 1996; Shortell et al., 1993b; Simoens et al., 2005 |

| Principles | Detailed points | Authors |
|---------------------------------|---|--|
| 10. Financial management | <ul style="list-style-type: none"> ○ Organization makes critical decisions regarding funding distribution, purchase of services ○ Risk is shared by system and providers; diversification of risks in each market by focusing on the strategic role to be played by each provider in the system; pooling of resources; blended funding models ○ Information-based decision making; clinical and financial decision support tools available at the point of service; care is delivered in the most cost-effective manner and in the most appropriate location ○ Development of financing arrangements that encompass medical and long-term services and provide incentives for cost control across both services ○ Weighted capitation: per person amount of funding adjusted to reflect organization's membership (e.g., minimum of age and gender adjustment) ○ Funding to ensure adequate resources to implement sustainable change | Coburn, 2001; Coddington et al., 2001c; Drazen et al., 1998; Glendinning, 2003; Hunter, 1999; Leatt et al., 2000; Marriott et al., 1998, 2000; Newhouse et al., 1999; Rosser et al., 1999; Shortell, 2000; Simoens et al., 2005; Wilkin, 2002; Wilson et al., 2003 |

5.1.4 Health Systems Integration Processes

Many authors have argued that the primary focus has been on structures for health system integration while processes have been neglected (Burns et al., 2001b; Fawcett & Cooper, 2001). Comparative case studies suggest that processes are equally important and need to be aligned with the principles/structures previously discussed (Burns et al., 2001b). Others have claimed that integration is a powerful tool for system development, and when used as a business strategy, has the potential to create economies of scale (Zuckerman & Spallina, 2001).

There is agreement that integration strategies need to be employed at multiple levels (de Jong & Jackson, 2001; Dodds et al., 2004; Kodner, 2002; Zuckerman et al., 2001). Kodner (2002) proposes to use a continuum of strategies from the macro to the micro that span funding, administration, organizational, service delivery and clinical areas. de Jong (2001) suggests that integration strategies should target 1) communication and access, 2) culture, values and teamwork, and 3) commitments and incentives to deliver integrated care. Communication focuses on setting clear strategies and protocols and establishing integrated information management tools, clinical pathways and guidelines. Integration culture is reflected by collaborative interprofessional relationships, trust and respect among providers, and policies and procedures that support an integrative approach. Finally, commitments and incentives to deliver integrated care include collaborative involvement in planning, policy development and decision making. Conrad's suggestions (1993, cited in Hill, 1998) were aimed at information provision, care management strategies, common clinical culture, and common educational programming and payment incentives. Burns and Pauly (2002) suggested strategies that target case management programs for patients who are at high risk of hospitalization and adverse health outcomes; co-location of care services; integration of information technology such as electronic patient records, remote patient monitoring, and robotic surgery; and patient-integrated health care, where the patient is in charge of their own health care and coordinating their own health information. The Toronto East General Hospital adopted vertical integration to improve patient services. A product line management approach facilitated clinical integration and promoted interprofessional teams by breaking down traditional department boundaries. Functional integration was achieved by combining key corporate and operational processes. Physician integration was considered critical to the success of the restructuring and their participation was accomplished through a medical advisory committee to the governing board, and by involvement in key positions on councils and planning committees (Aikman, Andress, Goodfellow, LaBelle, & Porter-O'Grady, 1998).

Other authors also highlight the need to develop processes that specifically facilitate physician integration (e.g. Burns et al., 2001a) which should focus less on structural components (e.g., contract vehicles, models, financial and organizational structures) and emphasize the processes of integration. These include acquiring or partnering with physicians; physician involvement in strategic planning, leadership, and governance; financial risk-sharing arrangements and joint ventures to create new services; and providing added value to health care delivery (Burns, 1999; Burns et al., 1998, 2001a, 2001b; Dynan, Bazzoli, & Burns, 1998; Gillies et al., 2001).

While the proposed strategies for integration differ, there is consensus that multiple processes have to be present to ensure successful integration. Suggestions made by Dodds et al. (2004) seem to be helpful in differentiating between strategies on the system level and strategies on the service level. System level strategies relate to administrative linkages between partners, shared philosophy statement, and role enhancement of certain provider groups. Service level integration targets implementation of specialty teams, clinical activities including screening, case staffing and treatment planning, and patient documentation and charting.

System Level Strategies

Many authors have proposed processes on the system level that support successful integration (---, 2003a; Bilynsky, 2002; Burns et al., 1998; Coddington et al., 2001c; Coddington, Fischer, & Moore, 2000; Dodds et al., 2004; Egger, 1999; Hunter, 1999; Hurst et al., 2002; Labb, 1999; Nilson, 1998; Shortell et al., 1993a, 1996; Wilson et al., 2003). A synthesis of the key strategies follows.

- ❖ Well integrated health systems have processes in place that facilitate **patient engagement** and participation at multiple levels to ensure a better understanding of their needs and preferences, and the facilities required to fulfill those needs. Similarly, strategies should consider community participation to understand the needs of the larger community and it is recommended to forge strong community ties.
- ❖ Grounded in a well-developed **performance management system**, ongoing cost-benefit analysis strategies need to be implemented to ensure that changes to clinical practice are cost-effective. Conducting relevant population-based health status and needs assessment enables mass customization (i.e. identification of market segment and developments of programs for those offering the best fit) and overall more efficient use of resources. Some have suggested focusing on management of chronic diseases; others have stressed the importance of strategies for increasing health and wellness. Documenting improvements in outcomes, benchmarking and the use of continuous improvement processes clearly signal a focus on quality improvement and reinforce the vision of integration.
- ❖ The notion that a well-functioning **information system** is the foundation for an integrated health system implies the importance of investing in strategies that allow effective use of the information system infrastructure. These include appropriate training for staff in the use of new data systems and functional strategies that integrate financial, operational, clinical and managerial data.
- ❖ The importance of creating a cohesive organizational culture across the integrated health system has been discussed in the previous section. Implementing processes that support a system-wide **organizational culture** is thus critical. Change management strategies need to be in place as well as incentive systems that reward contributions to overall system performance. Consideration needs to be given to physician support in the form of leadership training and project management to enable practice change.
- ❖ Particular attention will need to be placed on processes that foster **physician integration**. Structures and contracts cannot substitute the importance of relationship development. Traditionally physician integration was accomplished through administrative and management appointments (mostly through specialists) via salary or contract. Currently the most prevalent strategy is the sharing of cost information. Other strategies employed are economic integration (salaries and ownership of practices), physician liaison programs, the amalgamation of financial and clinical data, Clinical Practice Guideline programs, administrative services for physicians' practices, and remunerated administrative roles.
- ❖ Some authors speak to the fact that right sizing and **controlled growth** are important strategies for successful integration. They point out that bigger is not necessarily better (relating to size and net revenue) and propose to slowly increase growth through improved market positioning, managed care plans, and building of regional networks. It is suggested to focus on core business competencies and partnering with other organizations if needed.
- ❖ Moving towards an integrated health system is cost intense and requires sound **financial management** and dedicated resources to design, plan and implement sustainable change. While project budgets typically focus on hard structures, funding for processes is often limited. Having funds available to hire a skilled project manager to work with key stakeholders, for change

management strategies, educational workshops, communication processes or back fill time for health professionals involved in the redesign process will facilitate implementation of an integrated health system.

Service Level Strategies

To achieve clinical integration or seamless provision of care, strategies need to be in place to consolidate services and align programs and functions. Furthermore, processes are needed that encourage collaboration and help develop and maintain managerial and clinical competence through accountability and supervision incentives. It has been suggested that managers focus strongly on relationships, in particular the relationship between primary care and specialist physicians.

Several studies have also outlined strategies that specifically foster clinical integration. The development of **standardized care delivery** programs for specific patient populations is a strategy that has been successfully used to integrate activities between disciplines, professionals, departments and organizations and to standardize the care approach (Berg, Schellekens, & Bergen, 2005). These care programs consist of multidisciplinary protocols that encompass tasks, decision criteria, and work procedures for the professionals involved in the care of such a patient population (Vanderbent, 2005). Development of care programs entails a careful review of current work processes, a restructuring and delegation of tasks, if needed, and an integrated planning approach to optimize patient flow and the use of scarce resources. Well-designed feedback systems using appropriate indicators to monitor impact of care programs as well as information technology that support the processes are key building blocks of care programs. Benefits of care programs have been recognized. They make care more evidence-based, effective and efficient, and ensure smooth coordination of care (Vanderbent, 2005).

Similarly, Hill (1998) proposes care management as a mechanism to foster clinical integration. The four core components outlined in her care management approach are development of clinical pathways/Care Map tools, collaborative working group practices with accountability for fiscal and clinical outcomes of a defined group of patients, integrated case management, and integrated information systems. Clinical pathway system tools are developed by a multidisciplinary team and are designed to challenge traditional practice patterns, help strategize creative interventions and identify key variances to be tracked and monitored. Outcomes management is a fundamental component of the care management process. Characteristics of successful collaborative practice groups are the commitment to identify and improve performance measures; a demonstration of focused, collaborative communication and patient care management; as well as creative problem solving. Many of the components of care management show resemblance to the care management process outlined by Vanderbent (2005).

Parker, Charns, & Young (2001) have explored implementation of clinical service lines as a mechanism to ensure consistent, high quality integrated service delivery. Based on the product-line management model, clinical service lines allow for the grouping of jobs and responsibilities into a coherent organizational structure based on outputs rather than inputs. Within this model, interprofessional teams provide, in a coordinated fashion, a full range of services to a patient population. Clinical service lines have been organized around mental health, long-term care, and women's health but also around more narrowly focused services such as specific cardiac procedures. Advantages to clinical service lines are improved focus on planning and decision making, reduced inter-facility friction, improved accountability, reduced costs and improved focus on clinical areas. Despite these advantages, implementing clinical service lines has been met with challenges related to stakeholders' differing expectations of service line objectives, reluctance to give service line managers sufficient authority, and difficulties in implementing the change.

Brickman, Axelrod, Roberson, & Flanagan (1998) describe a clinical process improvement program to achieve system-wide integration across five hospitals, physicians, home health, hospice, long-term care facilities, and ambulatory medical care. An outcomes management team was charged with developing performance measurement tools and case management programs for high profile, high volume/cost diseases. The management team reviewed data for 11 diseases and then worked with project teams to determine best evidence, identify operational barriers, develop recommendations with clinical pathways, and case management protocols. The programs were implemented either system-wide or on pilot sites (depending on cost and education required), and compliance with the new programs was tracked with indicators. Initial results showed great improvements in patient outcomes, reduced length of stay, complications and readmissions. Overall the clinical process improvement program served as an organizational culture change agent.

Barriers to process improvements noted by Brickman et al., (1998) were:

- ❖ Physicians are not likely to believe the data if it reflects unfavourably on their performance
- ❖ Lengthy process to have new processes approved by all committees
- ❖ Policies and procedures were not standardized across settings and even departments in each setting
- ❖ Transfer of ownership is critical which means that some processes might have to be modified if applied in different settings where other professional groups take on responsibilities

Overall the authors suggest that managerial support and buy in at all levels is essential for making such a reorganization work.

Summary

The importance of implementing sound processes for health systems integration has been recognized with a general consensus that strategies need to target all organization levels from administration, financial, organizational, clinical and service delivery (Dodds et al., 2004; Kodner, 2002; Shortell et al., 1996; Zuckerman et al., 2001). Strategies need to be closely related to the principles discussed in the previous section to achieve better systems and patient outcomes. The level, type and combination of strategies used should be contextual and must consider patient needs (Kodner, 2002).

Decision makers may wish to consider some of the lessons learned so far by several health care organizations (Bilynsky, 2002; Dodds et al., 2004):

- ❖ Change requires time, sufficient resources and a defined, multi-model intervention. A formal strategic plan with measurable objectives, time lines, responsibilities, and outcomes is essential.
- ❖ Formal structural changes and resource sharing are required at both the administrative and service levels of the collaboration.
- ❖ Structural changes will be incomplete if there is insufficient attention to relationships among stakeholders.
- ❖ Leadership must be flexible to adapt to changes.
- ❖ Sustainability must be planned from the outset.
- ❖ Execution, execution, execution – determine what is important to success, develop strategies focusing both on structures and processes, and execute the strategies.
- ❖ Never expect to “finish” the integration – it is an ongoing process.

Box 5.4 – PROCESSES KEY POINTS

- Processes and structures are equally important to successful health systems integration.
- Processes need to target all organization levels from administration, financial, organizational, clinical and service delivery.
- Processes need to be aligned with and support the principles and structures previously discussed.
- The level, type and combination of strategies used should be contextual and consider patient needs.
- Sufficient attention needs to be paid to relationships among stakeholders.
- Integration is an ongoing process.

Exemplary Cases of Health Systems Integration

Reviewing exemplary cases is helpful for understanding how organizations have successfully managed the integration of health systems. The following cases were chosen because their integration processes were documented comprehensively in one or more articles or reports found in the review. The level of detail permits assessment of applicability to other systems.

Box 5.5 CASE STUDY
THE LONDON HEALTH SCIENCES CENTRE (LHSC) –
ONTARIO, CANADA

The London Health Sciences Centre (LHSC) is an academic health sciences centre charged with patient care, research, and medical and allied health education. The goal of the LHSC relevant to integration was to develop an integrated academic health care system for Southwestern Ontario in partnership with other key stakeholders. Patient Networks and Alliances were the chosen integration models with the overarching goal of integrating clinical care while at the same time fostering academic medical bonds with the university. A Four Phase Approach to development of Strategic Alliances was implemented. The first phase focused on establishing collaborative and trusting relationships and discussing strategic directions, culture/style/values, patient-centred philosophy, organizational needs, level of stakeholder involvement and potential alliance opportunities and processes. A set of criteria were established to help assess the fit of an alliance and contributions to enhancing patient care, clinical resources, teaching and research. Phase two consisted of the development of a joint business plan with appropriate alliance partners. This step was followed by the implementation of the alliance initiative (Phase 3) and an evaluation phase (Phase 4), where key indicators and evaluation criteria were identified. The author considered selection of appropriate partners as key to successful integration as well as trust and commitment and clearly outlined expectations and responsibilities (Adamson, Crook, Girotti, & MacLean, 2000).

Box 5.6 CASE STUDY

INTEGRATED CARE IN IRELAND

Tucker, Larkin, & Martin (2004, 2005) describe the Integrated Care One Network (ICON) which is a structured approach for developing integrated health services in Ireland. The model is based on best practices identified in the literature and was first implemented in the Midlands, Dublin area for all populations across primary and community care.

Project development and implementation included creating the vision, stakeholder consultation through surveys, use of the 7S model for assessing balance in organization, staff and client feedback on vision and proposed model, and eventually roll-out of the program. The model consisted of four components, i.e., information, care providers, one care management system, and national and local values. Several tools and systems were developed to support integrated care (IT system, protocols for all parts of the integrated care process, referral systems). IT based measurement tools, check lists of good practices, and a database for auditing integrated care development further supported delivery of integrated services. The author reports that the use of this model has led to practice changes such as early intervention for children with disabilities. She further suggests that supporting factors included strong leadership with a clear vision, a designated project manager, transparent and inclusive project design, and formal recognition of good practice. Ongoing support for the project teams including IT support was considered critical. Culture change (through team building etc.) and sharing of learnings through regular communication/dissemination, the use of story-telling and vignettes further supported implementation of the integrated care model. Issues occurred around building consistent teams, professional boundaries, identifying and protecting resources needed by the teams; communication; and around incorporation of integration in HR (hiring process etc.) (Tucker, Larkin, & Martin, 2004, 2005).

5.1.5 Indicators and Outcomes of Health Systems Integration

There is a scarcity of literature relating to the performance of integrated health systems as a whole (Leatt et al., 2000). Some authors have suggested that the lack of consistent terminology and accepted conceptualization of integration makes it difficult to agree on and measure outcomes (Boon et al., 2004b) which may also be a barrier to the development of tools and indicators. Other challenges in evaluating outcomes of integrated health systems include the number of players and the diversity of goals and objectives of different program or system components that need to be considered; negotiating agreement on what and how to measure integration (Pirkis et al., 2001), especially at the system level (Devers et al., 1994; Leatt et al., 2000; Leggat et al., 1997); and the challenge to attribute effects to causes in a complex, multifaceted system (Pirkis et al., 2001). The lack of valid and reliable evaluation tools to document the success or failure of integrated health systems may further impede implementation of integrated health systems (de Jong et al., 2001).

For the purposes of this review, outcomes are defined as the impacts attributed to the integrated health system. Typically, outcomes have measurable quality and/or quantity indicators, as defined by the institutions, used to assess progress toward and achievement of stated performance goals and objectives. A measurement tool is defined as an instrument which provides the basis for the evaluation of processes and outcomes of an integrated health service delivery system.

In the following sections, indicators and outcomes have been grouped according to system level, program level and provider level. System level pertains to the organization, the decision makers, and policy development. Program level focuses on the agency; provider level relates to the health professionals supplying the integrated health services. As program and provider level outcomes are often closely linked, they will be discussed together.

Overall, our literature search revealed a limited number of measurement tools, indicators and outcomes that relate to system and program/provider level. While this might be a reflection of a poorly defined and hence difficult to measure concept, it may also be a result of the specific search strategy applied. Since the primary purpose of this systematic literature review was to investigate the current state of knowledge regarding integration from a health systems perspective, the search terms were not specifically designed to identify measurement tools and indicators at the client level. Information on these outcomes and indicators may reside in a different body of literature that would be captured under search terms such as case management, shared care pathways, continuity of care, etc. (Readers are referred to Appendix 4.0 for a comprehensive list of documents reporting indicators and outcomes. The table contains information regarding what was measured, how it was measured, and reported outcomes.)

Measuring Health System Integration

The literature presented a variety of ways in which authors propose to or have measured integration. The Balanced Scorecard, a measurement tool used at the system level by a variety of industries including health care, is described in some detail. There were no measurement tools at the program/provider level.

Measurement Tools at the System Level

The **Balanced Scorecard (BSC)**, as developed by Kaplan & Norton (1992, 1993), was a response to perceived inadequacies of organizational performance measurements based on financial performance alone. The BSC was meant to be unique to the organization fitting “their mission, strategy,

technology, and culture” (1993, p.135). The organization chose its unique components (or perspectives) for measurement and then identified the key indicators within each of those components. The goal was to provide managers with a focused, comprehensive set of measures that could set a benchmark and then track changes to the organization’s components. The flexibility of the tool allowed an organization to measure integration amongst and between its main components by comparing the scores within and across those components.

The earliest known proponents of the BSC for the health care industry was a core group of researchers including S.M. Shortell, R.R. Gillies, D.A. Anderson, J.B. Mitchell, K.L. Morgan Erickson, and others. They studied a group of nine health care systems that participated in the Health Systems Integration Study (HSIS) (e.g. Devers et al., 1994; Gillies et al., 1993; Shortell et al., 1993b). Their findings are reported in numerous articles, some of which are discussed in the following section.

Two benefits of the BSC were suggested by Devers et al., (1994). First, the processes of developing the scorecard components and measurements, data collection, and evaluation were thought to be useful since it required organization executives to consider system-wide relationships. Second, the BSC was also a tool that could be used to track progress by identifying goals and the strategies required for achieving those goals. Table 5.3 provides a sample integration balanced scorecard.

Table 5.3: Example of Integration Balanced Scorecard (Devers et al., 1994, p.17)

| Integration Category/Item | Where We Are Now (%) | Where We Want To Be Next Year (%) | What We Plan To Do Action Plan | Who’s Responsible |
|--|-----------------------------|--|--|--|
| Percent of operating units sharing common clinical protocols | 50 | 100 | Appoint cross-system task forces in those areas where protocols are already used in some units (e.g. cardiovascular) | Vice President for Clinical Affairs and Manager of CV Surgery Line |

Within the health care context, the authors proposed three primary components of integration using the BSC: functional, clinical, and physician-system. They also developed a series of indicators which are discussed below. A mini-survey adapted from the HSIS was designed to answer the question “How well integrated is your organization?” (Shortell et al., 1993a, p.26). This simplistic measure (4 questions regarding organizational culture and 4 questions regarding clinical integration) completed by 10 to 100 managers provides a snapshot of how these managers perceive the success of the organization’s integration efforts.

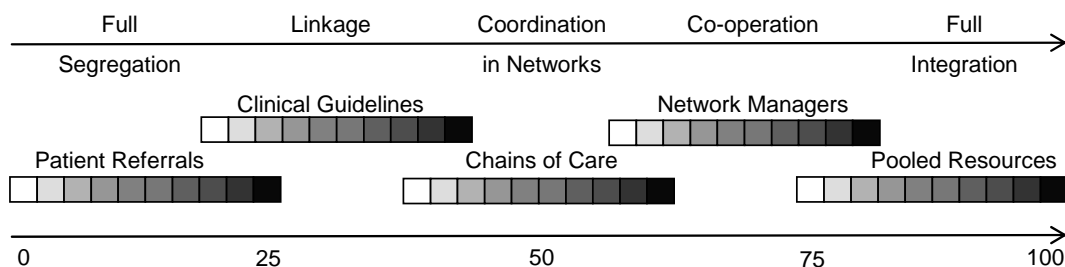
Several authors proposed various applications of the Kaplan/Norton or Devers et al. scorecards. For example, in Canada, the Sisters of Charity of Ottawa Health Services used a BSC approach to align strategy and performance in long term care (Macdonald, 1998); Pink et al. (2001) discuss the creation of a BSC for Ontario’s hospital systems; and the London Health Sciences Centre developed a BSC to evaluate an integrated dialysis delivery network (Peters & Ryan, 1999). In the United States both the Mayo Clinic (Curtright, Stolp-Smith, & Edell, 1999) and Veteran’s Affairs Upper Midwest Health Care Network (Lukas et al., 2002) have implemented a BSC tool. Duke University Health System applied the BSC to its birthing centre (Jones, Filip, Smith, & Remsburg-Bell, 2002) and Bilkhu-Thompson (2003) reports on the implementation of a BSC by an emergency medicine service line. In the United

Kingdom, the St. Andrew's Group of Hospitals (Sugarman & Watkins, 2004) used the BSC approach to determine the effectiveness of their health services integration efforts.

A second measurement tool at the system level is the **Clinical Microsystem Assessment Tool**. The tool was developed based on an in-depth study of 20 high performing front-line clinical units (Mohr, 2001; Nelson et al., 2002). Using surveys, interviews, observation and a review of medical and financial data, a series of key characteristics were identified that were consistently linked to high quality, cost-effective performance in these units (Nelson et al., 2002). The characteristics related to leadership, organizational support, patient and staff focus, interdependence of care team, education and training, community and market focus, integration of information and information technology, commitment to process improvement, and performance measurement have been highlighted as being reflective of an integrated system. Nelson and colleagues used these characteristics to develop a 10-item survey with a 3 point Likert scale. The survey was tested for content and face validity (Nelson et al., 2002). The Clinical Microsystem Assessment Tool allows a quick glance at where an organization might lie along those key success characteristics and where improvements are required. The small number of items and free access to the survey make this an easy and quick tool for evaluation. The Calgary Health Region has used this tool to measure integration of a new Community Health Centre (Suter et al., 2007).

Ahgren and Axelsson (2005) used a **Scale of Functional Integration** tool to determine the degree of unit integration in a Swedish Local Health Care network (similar to a Primary Care Network in Alberta, Canada). Different professional groups in the health care units were asked to rank their perception of their unit's integration with the other units. Ideally, this was a consensus between the units. The first step in determining the integration rank was to identify the highest integration category between two units (Figure 5.6), e.g. if clinical guidelines exist but chains of care are not fully developed, the integration rank is derived from the clinical guidelines category. Second, the integration rank was assigned by choosing the appropriate integration category square and its corresponding numerical value (e.g. one of the squares within the clinical guidelines category). The squares "illustrate with growing darkness the increasing relative number of cases in the different categories" (Ahgren & Axelsson, 2005, p.11). The units should also choose an optimum rank of integration and identify what factors may hinder or facilitate a closer correlation between the actual and optimal integration ranks. The categories were ranked on a continuum of integration: full segregation, linkage, coordination in networks, co-operation, and full integration. This scale could be used to analyse intra-organizational integration (within organizations), inter-organizational integration (between organizations), horizontal integration (independent organizational units on the same hierarchical level), and vertical integration (common organizational hierarchy).

Figure 5.6: Scale of Functional Clinical Integration (Ahgren et al., 2005, p.11)



Messeri, Kim, & Whetten (2003) discuss an approach for determining the level of integration particular to HIV programs; however, this scale is generalizable to the wider health care field. In order to measure integration between core agencies, key informants within the agencies were asked to rank the integration between pairs of core services as one of the following: 1) linked only by informal ties, 2) linked through written agreement or other formal mechanisms, 3) co-located but operated by separate agencies, 4) operated by the same agency at different locations, or 5) operated by the same agency at the same location. Their responses were then coded to determine the level of health services integration. Likert-type scales were used to measure inter-agency awareness, satisfaction, communication and client referrals (Messeri et al., 2003, p.32).

Indicators of Health System Integration

Few indicators of the implementation of integration, that is, how we know that we have an integrated health care system or services delivery program are reported in the literature. These indicators are not homogeneous and no generalizations are made, however, summaries of the study indicators are provided and readers are urged to consult the original study for further details. (Readers are referred to Appendix 4.0 for a comprehensive list of documents reporting indicators and outcomes. The table contains information regarding what was measured, how it was measured, and reported outcomes.)

Indicators at the System Level

In addition to adapting the **Balanced Scorecard (BSC)** for the health care context, the researchers also developed objective and perceptual measures (using yes/no responses or Likert scale responses) for the BSC components (Devers et al., 1994; Gillies et al., 1993). These questionnaires focus on measuring the internal process variables at the level of system-wide activity. In order to capture this system-wide data, the authors propose measuring functional, physician-system, and clinical integration. Table 5.4 lists examples of the integration areas and indicators.

Table 5.4: Components of Integration and Examples of Associated Indicators (Devers et al., 1994; Gillies et al., 1993)

| Type of integration | Integration areas | Examples of Indicators | Instrument |
|-------------------------------|-------------------------------------|---|---|
| Functional integration | ○ culture | ○ rating of system-wide values and norms agreed upon and shared | Survey (Devers et al., 1994, p.19-20) |
| | ○ strategic planning | ○ number of strategic plans and annual goals shared | Survey scales (Gillies et al., 1993, p.486-7) |
| | ○ quality assurance | ○ number of common policies | |
| | ○ information systems | ○ single medical record | |
| Clinical integration | ○ clinical protocol development | ○ number of clinical practice guidelines | Survey (Devers et al., 1994, p.16) |
| | ○ medical records accessibility | ○ percent of medical record features shared amongst units | |
| | ○ clinical outcome data utilization | ○ number of hospital acquired infections | |
| | ○ shared clinical services | ○ percent of clinical services shared with other units | |
| | ○ coordinated clinical activities | ○ level of duplication of clinical facilities | Survey scales (Gillies et al., 1993, p.486-7) |
| Physician integration | ○ group practice formation | ○ percent of physicians practicing in groups | Survey (Devers et al., 1994, p.13) |
| | ○ shared accountability | ○ percent of operating units sharing a common physician credentialing process | |
| | ○ physician benefits | ○ medical staff development is coordinated across operating units | Survey scales (Gillies et al., 1993, p.486-7) |

Leggat & Leatt (1997) developed performance indicators derived from a combination of structural measures which focus on the capacity for effective work; process measures which evaluate effort or conformity to establish practice norms but do not directly assess the effectiveness of the activities performed; and outcome measures which focus on changes produced and results achieved. The authors provided an extensive list of performance indicators categorised by: 1) customer perspective and outcomes e.g. client satisfaction and service delivery statistics, 2) financial perspective e.g. operating budgets, 3) innovation and learning e.g. number of new technologies or treatments introduced and joint education initiatives, 4) internal business e.g. the percentage of system goals

achieved and staff satisfaction, and 5) community perspective e.g. immunization rates and health care costs per capita.

The importance of measuring health systems integration implemented through networks in publicly funded health delivery systems was stressed in a paper by Provan & Milward published in 2001. They contended that a system must fulfill, at least minimally, the needs of three levels: 1) the system itself (called the network by Provan & Milward, 2001), 2) the program providers within the system (called the organizations), and 3) the patient population served by the system (called the community). The indicators of effectiveness at the system level were: 1) the number of agencies that joined or left the system, 2) the number of services provided to clients by the system and the number of services that clients sought outside the system, 3) an assessment of the strength of the relationships amongst the system members, especially across the full system, as determined by the number of programs that were connected amongst the system agencies, and 4) the administrative structure assessed by the existence of an umbrella administrative organization. In addition to discussing the indicators used to ascertain the relationship between each level and its key stakeholder groups, Provan and Milward (2001) also discussed the relationships across the system levels.

Lee and Wan (2002) developed indicators that span functional, clinical and physician integration: 1) integration across sites, measured by the number of pre-acute and sub-acute facilities within a hospital or as a subsidiary of a hospital; 2) integration across divisions of care, measured by the breadth of services e.g. the number of high tech services available, and case management e.g. whether the hospital has implemented case management; 3) integration of physicians based on number of contracts vs. ownership arrangements between the hospital and the physicians; and 4) integration of information technology, assuming the greater the number of application systems in each functional area the more highly integrated. In addition, performance was measured based on cost efficiency determined by the average total charge per discharge as a measure of how well resources were used.

Indicators relating to the integration of primary care were the focus of a literature review by Briggs, Capdegelle, & Garner (2006). The following indicators were discussed: 1) service outputs which can be measured as a) productivity (e.g. the number of users/staff members; average time of consultations) and b) coverage (e.g. vaccination coverage); 2) impact and effects of integration on the status of health (e.g. differences in morbidity, mortality, and fertility); 3) user acceptability (e.g. users' expressed satisfaction of service); and 4) unit cost (e.g. cost per consultation or cost per individual per year).

Indicators at the Program/Provider Level

The current literature review yielded one article that discussed measurement indicators at the program level.

Browne, Roberts, Gafni, Kertyzia, & Loney (2004) suggested that integration should be evaluated from the perspectives of: 1) network members or integrated service providers e.g. administrators and service providers, 2) service users, and 3) community members such as politicians, funders and other residents. Their article focused on measuring integration amongst service agencies affiliated with two children's programs in Ontario, the Healthy Babies, Healthy Children program and the Early Years program. The various sectors and services offered for a particular client base comprised a matrix which identified three aspects of integration: the extent of integration, that is, "the identification of services and the number of services within a number of programs" (p.5); the scope of integration such as the number of services with awareness of link with others; and the depth of integration, that is, "depth of links among all services and each service, along a continuum of involvement" (p.5). It

allowed communities, networks, agencies and individual programs to monitor local service integration as a whole, across sectors, or between services.

Outcomes of Health Systems Integration

The outcomes or impact of health systems integration have been minimally studied with a greater share of the literature focused on perceived benefits rather than empirical studies documenting actual gains (Hunter, 1999). Marriott and Mable (1998) describe the benefits of integrated health systems, which they contend relate to more effective mobilization and allocation of resources to areas of need along with increased flexibility and innovation. Perceived disadvantages of integrated care also exist, relating to potential loss of control of health services provision to other provider groups along with the political and fiscal risk which may be associated with such a loss of control (Coster, 1998). Other potential drawbacks include skimming, cost shifting from one provider sector to another instead of cost savings, and increased privatization of health care (Coster, 1998).

Leatt et al., (2000) summarized key studies that assess the effectiveness of integrated health systems in providing quality care. Their report focused on some of the major reviews published between 1993 and 1999. Quality of care was defined as “the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” (p.20). Overall, hopes that integrated health systems would increase quality of care have not been supported in these studies. It should be noted that the majority of these studies were conducted in the United States and focus on Health Maintenance Organizations and managed care plans. The authors also point to methodological cautions that have been raised repeatedly in the reviews suggesting that good quality studies are scarce.

There is a recognized need to regulate and monitor integrated care, as some models are susceptible to risks in cost-shifting, ethical hazards, under-purchasing, and poor quality of care (Feek, 1998). Clear standards for monitoring success and failure of integrated health systems are needed. It has been suggested that patient health outcomes and the cost of care should be the benchmarks used when evaluating the effectiveness of an integrated program or system (Weiss, 1998). However, difficulties exist in detecting and measuring changes in patient health outcomes which can be slow to develop.

The next section provides a summary of health systems integration outcomes documented in the literature. (Readers are referred to Appendix 4.0 for a comprehensive list of documents reporting indicators and outcomes. The table contains information regarding what was measured, how it was measured, and reported outcomes.)

Outcomes at the System Level

There were few documents reporting outcomes measured at the system level and the quality of research was variable. The majority are based on data from the U.S. health sector; therefore, the findings reported here are limited to those aspects which have applicability to the Canadian health system.

Several studies have addressed the financial outcomes of integration. For example, Wang, Wan, Clement, & Begun (2001) found that “hospitals that integrate with physician groups and provide outpatient services are associated with better financial performance in terms of operating margin, return on assets and net cash flow” (p.188).

Lee & Wan (2002) conducted a study that examined the relationships between structural clinical integration, efficiency of the care process, and patient outcomes. The authors investigated whether clinical integration was positively related to performance and efficiency of the care process. Their

results indicated that, “hospitals with highly clinically integrated structures showed higher average total charges than others with less clinically integrated structures. This implies that strategic changes of hospitals’ structure toward more integration do not immediately improve the financial performance” (p.242).

Denver Health, which was established in the late 1800’s, has been integrating services since 1916. At present, it is fully integrated horizontally, vertically, organizationally, and functionally (Gabow, Eisert, & Wright, 2003). The most beneficial system outcome identified by these authors was that hospitals experience a reduction in non-emergency cases using the emergency room, due to the fact that these patients can be seen in their community by Denver Health. As well, the average length of stay in hospital for patients from the Denver Health catchment area was shown to be reduced compared with other health organizations.

Conrad et al. (1996), reporting on their own research as well as that found in the literature, wrote that some of the outcomes of integration included better financial performance relative to competitors. Other noteworthy findings were that greater physician–system integration was significantly related to higher inpatient productivity and to higher levels of clinical integration; a greater percentage of system physicians practicing in primary care groups was positively related to a system’s total operating margin; and greater perceived clinical integration was related to greater system net revenue and to higher inpatient productivity.

Hurst et al. (2002) discussed the outcomes of a mixed methods study of primary health care providers in three United Kingdom community health care trusts (similar to Alberta’s Primary Care Networks) two years after the shift from the traditional hierarchical management style to “self-managed, integrated primary health care teams” (p.464). In addition to focus group participation, respondents were asked to rank factors that “influenced their managerial or clinical practice” (p.465). The authors reported their outcomes in three categories: managerial, clinical, and educational. The managerial category, which directly pertains to the system level, includes factors related to management, employment, team structure, and communication. The positive aspects were the flatter organizational structure, that is, fewer management tiers; stronger team cohesion; and reduced average cost per patient site visit for the study care trusts compared with elsewhere. The challenges included problems retaining staff; a perceived lack of promotional opportunities; a failure for information to be communicated “from the top” (p.478); uncertainty about job stability; and dissatisfaction with the information management and technology available to the team.

The Clinical Microsystem Assessment Tool (see discussion of this tool in Section 5.1.5), referral tracking, and corporate utilization data were used to evaluate integration at the system level of the South Calgary Health Centre, a multiservice health centre in Calgary Alberta (Suter et al., 2007). Outcomes of functional integration, clinical integration, community integration, physician integration and access were measured. Functional integration had been quite successful with the central registration process affording adequate access to client information, though incompatible data systems necessitated dual data entry. Clinical integration was not widespread with few clients being formally referred between services. Staff report that clinical integration was slow because of minimal planning and staff’s lack of familiarity with the other services offered at the centre. Community and physician integration were also slow. The centre was well utilized indicating that access for residents was successful.

Outcomes at the Program/Provider Level

Job satisfaction of frontline staff was evaluated as one of the integration outcomes of the PROCARE project (Coxon, 2005). “The main advantage reported by staff was that their job satisfaction was

improved through integrated working, and respondents said that this was because their service could be more responsive to the needs of the client” (p.3). Other advantages identified by the staff included: good teamwork, good communication, increased cooperation with other agencies, and a blending of professional cultures into one shared culture. It is interesting to note that overall, the staff identified more disadvantages than advantages of integration. The biggest drawback identified by frontline staff was having to work alongside the medical professionals. A boundary between medical and social health care professionals was identified that includes communication difficulties, status variances, and geographical distances, making it a difficult barrier to overcome in successful integration.

A second aspect to the outcomes reported previously by Hurst et al., (2002) related to education. They found that integrating primary health care teams and devolving responsibility called for new knowledge and skills. The staff reported feeling ill-prepared and lacking in confidence, especially in disciplinary matters or dealing with “untoward” incidents. The in-service education for teams led to workload problems as clinical and administrative work accumulated while staff was away for training. Some staff also reported feeling worried about failing clinical knowledge and skills because of the pace of new clinical development practices. The authors also found that management had difficulty retaining staff due to changes experienced as a result of the integrated system. Staff was required to take on extra administrative responsibilities and provide 24-hour community nursing services which resulted in internal rotation and shift schedules that were problematic for some staff. There was also a marked change in workforce demographics with declining recruitment, many staff nearing retirement, and fewer promotion opportunities. One positive outcome identified was the development of stronger cohesion among teams. In terms of patient outcomes, patient satisfaction was ranked highly in importance. However, there was increased patient dependency on community services due to shorter inpatient (hospital) stays, which resulted in rising workloads for the community services team. The authors did not discuss how the outcomes were measured.

In the Denver Health integrated system cited earlier, the only reported provider outcome was that physicians benefited from the opportunity to work in both ambulatory and inpatient settings (Gabow et al., 2003).

Summary

The literature contained a limited number of tools to measure outcomes of integration. The balanced scorecard (BSC) was most commonly reported and several organizations describe its use. Its flexibility makes it a versatile tool which is appropriate for use at both the system and program/provider levels as are the other tools discussed in this section. However, the BSC measures system performance generally rather than integration specifically and it may be preferable to use it in conjunction with integration-specific instruments or indicators that can document processes. Several indicators have been used throughout the years for integration at the clinical, functional and physician level, most of which can be adapted to a publicly funded health care system. However, none of these indicators has consistently been used across studies. This makes comparison of findings difficult and also begs the question of “best indicators” to use by decision makers.

Unfortunately, there was a lack of strong empirical research of the impacts of health systems integration, in particular in publicly funded systems. The majority of findings reported in the literature are based on research conducted in the United States. As such, the impact of integration on hospital profitability or physician-hospital alignment is not directly applicable to the Canadian health sector. There does not appear to be agreement regarding hospital profitability (Lee & Wan, 2002; Wang et al., 2001) with respect to integration. An encouraging finding, decreased emergency room

utilization, was reported from Denver Health (Gabow et al., 2003). Overall, most of the studies reviewed (both empirical and non-empirical) presented mixed outcomes.

Box 5.7 – TOOLS, INDICATORS, AND OUTCOMES KEY POINTS

- There is a lack of measurement tools or instruments reported in the literature.
- The Balanced Scorecard shows promise as a tool for measuring health systems integration.
- There is very little solid empirical evidence of outcomes or impact of health care integration.
- Overall, results reported are mixed.
- Some of the positive system level outcomes include: reduction in non-emergency cases using the emergency room; reduction in the average length of stay in hospital; better financial performance; and a flatter organizational structure (fewer management tiers).
- Some of the positive program/provider level outcomes include: increased job satisfaction; increased cooperation with other agencies; and a blending of professional cultures into one shared culture.

5.2 *The Business Literature*

Much of the experience and knowledge related to the implementation and impact of integrated systems resides in diverse locations across traditional literature. Therefore, a review of the business literature was included in this systematic review. While specific research findings in business sectors may have minimal relevance for publicly funded health services, this component will focus on identification of the most recent innovations in the planning and implementation of integrated systems and related areas such as coordination and teamwork. The principles of organizational integration and the coordination processes used in the business sector may provide insight for health care integration planning. Our search parameters included the past five years, and our appraisal process included only the highest quality information from that literature. In the following section, ten articles are discussed which are believed to be most relevant to this review. They provide information on models of organizational integration, characteristics of successful initiatives, as well as barriers that need to be overcome.

5.2.1 *Business System Integration*

Barki & Pinsonneault (2005) suggested that the concept of organizational integration (OI) can be better understood by considering two key characteristics of any system: the distinctiveness of system components, and the responsiveness of the components to each other. OI is characterized by the fact that “two or more different and complementary components of organizations behave as a unified whole without being merged into a single entity” (p.166-7). If integration leads to all system components becoming indistinguishable, then the much needed capabilities of differentiation and specialization will be lost. In terms of responsiveness, each component is constantly making demands of the organization, and interdependent components must have the ability to respond to the demands of other units rapidly and appropriately. “The human body is a good example of a highly integrated system exhibiting both distinctiveness and responsiveness. While its parts are highly specialized and distinct, they are also highly responsive to each other” (p.167).

These authors proposed a model that encompassed six different types of OI. The first distinguishing factor was whether the integration process is internal or external to the organization, followed by whether activities are functional or operational. External operational types were further differentiated according to their direction: forward to distribution and clients, backward toward supply, or laterally with partially assembled products and parts. The six types of OI the authors proposed are (p.168):

- ❖ Internal Operational – Integration of successive stages within the primary process chain of a firm.
- ❖ Internal Functional – Integration of administrative or support activities of the process chain of a company.
- ❖ External Operational Forward – Integration of successive process chain stages into distribution and retail.
- ❖ External Operational Backward – Integration of successive process chain stages into supply.
- ❖ External Operational Lateral – Integration of successive process chain stages into components or parts.
- ❖ External Functional – Integration across firms of administrative or support activities.

Concepts of interdependence, barriers and facilitators were then used as factors to further explain and differentiate the types of organizational integration. Three types of interdependence discussed include pooled, sequential and reciprocal (p.168-9):

In pooled interdependence, each part of the organization makes a discrete contribution to the whole and is supported by the whole organization. However, each part does not necessarily depend on, or support, every other part directly. In sequential interdependence, a serial relationship exists among different parts. The output of one part becomes the input of another part ... in the case of reciprocal interdependence, the outputs of each part become inputs for the others ... The output of Unit A is the input of Unit B, whose output subsequently becomes the input of Unit A.

According to the authors these three forms of interdependence are hierarchical, with pooled being the most basic form and reciprocal the most complex in encompassing aspects of the other two. As such, increasing levels of interdependence and integration reflect a need for greater cooperation, communication and organization between different units. This requires greater effort in the form of resources, time, budgets and staff to integrate processes, technologies and people within the system.

Barriers to OI implementation identified in the article are grouped into two categories, specialization and political barriers. Specialization barriers entail differences in “unique domain-specific skills, knowledge, and procedures” (p.170) which lead to a greater focus on local unit-level goals and objectives with specialized language, cognitive and emotional orientation, and terms of reference. Political barriers refers to the potential for power struggles between units, where managers may be reluctant to cooperate or share information that is critical for integration in order to further their own agendas or protect their status and base of power within the organization.

A host of mechanisms were discussed that facilitate OI. These include working toward standardization in several areas such as (p.171):

- ❖ Standardizing norms – Establish common values, beliefs, and expectations.
- ❖ Standardizing skills and knowledge – Standardize training and expertise.
- ❖ Standardizing output – Clearly specify results or output of work.
- ❖ Standardizing work – Common and clearly specified procedures and tasks.
- ❖ Direct supervision – Someone not directly doing the work, but being responsible for coordinating the activities.
- ❖ Planning – Establishing schedules governing activities of different units.
- ❖ Mutual adjustment – People or units adapting to each other during their work processes.

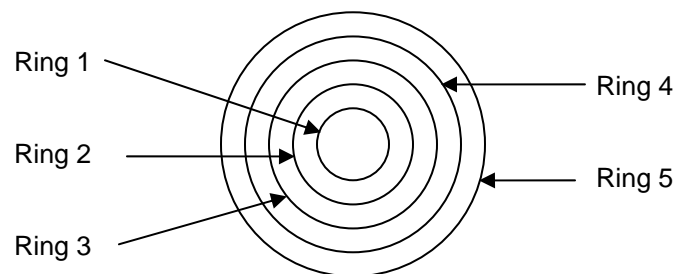
Complexity and interdependency of tasks are two main factors that determine which of the mechanisms are most suitable for facilitating OI. Generally, the above list is grouped in declining order of suitability from most to least complex. For instance, mutual adjustment is well suited for simple tasks, while direct supervision may be more effective for more complex or high-volume activities and standardization of norms or skills may be optimal for highly complex or unstructured activities. Alternatively, the form of interdependence between tasks can be used to determine the most suitable coordination mechanism, where “the most appropriate mechanisms for integrating pooled, sequential, and reciprocal interdependent tasks are standardization, planning, and mutual adjustment, respectively” (Barki & Pinsonneault, 2005, p.171). Choosing an appropriate integration mechanism to match the organizational situation is important in achieving efficiency and minimizing the associated costs of OI.

In another study, Dan, Li, Zhang, Guo, & Zhou (2005) suggested that systematic integration is comprised of four aspects (p.2632–35):

- ❖ Information integration – Serves as the foundation for information sharing (both within the organization and among partners) and for the other aspects of integration.
- ❖ Process integration – Can be subdivided into two dimensions of vertical and horizontal integration, such as workflow management, concurrent engineering and business process re-engineering.
- ❖ Knowledge integration – The effective integration and management of knowledge that all partners bring to the network.
- ❖ Organization integration – Integrating the various functional areas within a company as well as the external relationships with suppliers, partners and consultants.

Based on the authors' analysis of the four aspects of systematic integration outlined above, they proposed a model of network-integrated manufacturing systems (NIMS) comprised of five rings within a wheel. The objective of the NIMS model is "to satisfy customer needs with short lead time, acceptable quality, low cost, good service, and 'win/win' among the business partners" (p.2637).

Figure 5.7: Dan et al. (2005) model of NIMS



Ring 1 represents the core objects. This inner ring emphasizes the market and the customers, with the core object supported by the other four rings surrounding it. Ring 2 signifies the participants. These are the manufacturers, suppliers and other partners who implement processes to satisfy customers with products and services. In the NIMS model, the participants "exchange business information, integrate their business and production processes, complement each other with their unique expertise and knowledge, and form an integrated virtual organization to provide products and services" (p.2637). Ring 3 represents support centres. The support centre is made up of the networked coordination centre, technical support and information services. The primary purposes of these centres are data management and technical support services. Ring 4 represents functional subsystems. This ring is made up of five subsystems: e-commerce, networked cooperative design, supply chain management, knowledge management, and networked manufacturing executive. The final ring, Ring 5, stands for infrastructure. Computer networks and distributed databases comprise this ring, with the objective of supporting the functional subsystems ring above.

Another business model for organizational integration was developed by Ghoshal and Gratton in 2002. The authors studied 15 international companies over a five-year span, looking at how these companies managed change and performance-improvement processes. The theme of horizontal integration emerged as a common model that many companies were working toward. In the past, organizational integration efforts had focused on vertical integration that empowered company

subunits, which had resulted in a high level of internal fragmentation rather than coordination. Ghoshal and Gratton (2002), therefore, designed a framework to help large, complex organizations balance the inherent tensions between integration and individual unit autonomy or empowerment. They asserted that instead of vertical integration, which tends to quell bottom-up initiatives, organizations can foster horizontal integration with sub-unit autonomy to create a dynamic culture of entrepreneurship and collaboration.

Ghoshal and Gratton (2002) argued that by implementing the following four critical components of horizontal integration, it is possible to achieve organizational cohesion without the hierarchy. First is **operational integration**, which is implemented through standardized technological infrastructure. IT systems need to be updated and supporting systems standardized in order to advance operational integration. Secondly, **intellectual integration** is put into practice through a shared knowledge base. It is essential for organizations to work towards knowledge management. Many companies “have developed IT-based systems that are essentially databases for sharing information on an organization wide basis” (p.34). The third component is **social integration**, which is realized through collective bonds of performance. Peer-to-peer interactions can be extended to traditionally vertical relationships in order to facilitate learning and knowledge sharing. Finally, **emotional integration** is implemented through shared identity and meaning. Shared knowledge can be translated into “coordinated and aligned action across the different parts of an organization” (p.35).

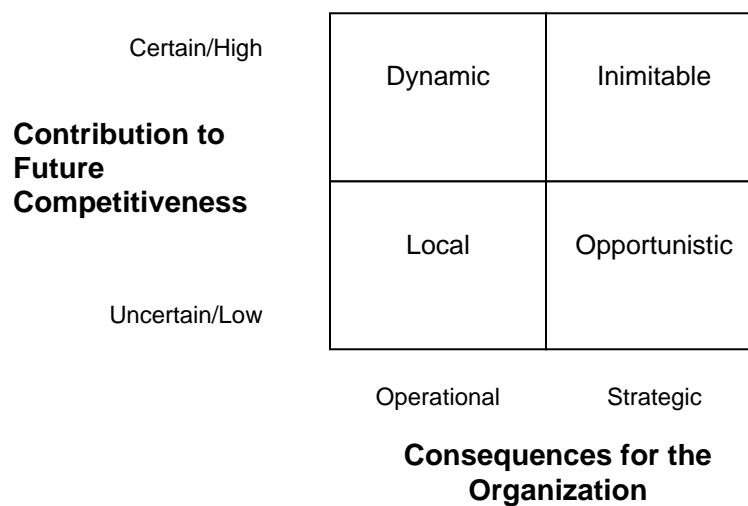
In Ghoshal and Gratton’s (2002) model, traditional command-and-control infrastructure of vertical integration is eliminated and replaced with more autonomous and empowered business units. These units remain fully accountable for their performance and must respect the core values-based “boundaries” of the company. While being autonomous, unit managers are not left isolated or completely independent. Instead, the guidance and direction traditionally provided from a vertical structure is replaced by a network of peer-assisted support groups where managers of similar units meet to exchange ideas, tackle shared challenges, improve collective performance and build a culture of trust and self-confidence. This structure helps promote a spirit of entrepreneurship and initiative at the business unit level. The resulting improved organizational performance reinforces a confidence in delegating authority down to the business-unit level and allows more resources to be invested in integration infrastructure such as IT systems. The “symbiotic effects of autonomy and horizontal integration” (p.37) create a culture of increased collaboration, improved self-confidence among managers, stronger entrepreneurship, and reinforcement of the mutual trust and friendship that is critical to achieving horizontal integration. However, the authors cautioned that this process takes longer to implement than traditional vertical integration structures and organizations must be persistent and patient in realizing the benefits.

Braganza (2002) described three key features of organizational integration that emerged from her literature review. These attributes were the characteristics of integration, the scope of the integration initiative, and the particular elements that need to be aligned as part of the integration plan. First of all, the characteristics feature helps us to define integration. Organizational integration is partnerships between parts of a company, including “strategic direction, market focus, resources, skills & culture” (p.564). There are several characteristics of organizational integration, but the ones identified by this author include cooperation and communication, vertically between managers and front line staff and horizontally between teams and across functions, and the coordination of knowledge and processes across functions. The second key feature, scope, refers to the functions that are being integrated. The integration of strategic business units involves the “coordination of separate elements of each business unit so that efficiencies or market prominence can be achieved” (p.565). In order to implement current strategies, develop new and exciting products, or to capitalize on new opportunities, competencies and resources are combined from the different business units being

integrated. The final feature, elements, refers to the aspects of the organization that need to be controlled in order to facilitate integration. Some of the key elements identified by this author that need to be coordinated include the organizational culture, resources and products, which should all be aligned to the most important element, the organisation's strategy.

Having identified these features, the author felt that the literature was missing a conceptual framework that would help organizations coordinate the process of integration with their purpose of integration. Therefore, the author developed the Enterprise Integration Capabilities Framework. The underlying assumption of this framework is that the purpose behind the integration initiative, which is vital to understand, can be viewed along two dimensions: contributions to improve future competitiveness, and consequences for the organization.

Figure 5.8: Braganza's (2002) Integration Capabilities Framework



An organizational integration initiative can be placed into one of the four quadrants, dependent on its purpose. The outcome of the initiative, or as Braganza titled it, the capability developed, is different for each quadrant. Utilizing this framework allows for a more strategic approach while requiring consideration of the results of planned integration initiatives, specifically the achievement of desired capabilities and the resulting potential impact on the organization.

Turning to a parallel field, the evolution of supply chain management offers some similarities to the study of integrated health services models. In this area, Stonebraker & Afifi (2004) developed a contingency model for supply chains to assess when supply chain integration efforts are appropriate and define what the characteristics of success and failure may be. Historically, manufacturing and distribution systems have been characterized by rigid structures, high volume with low cost, and disaggregation. More recently these systems have evolved into highly flexible, time-based, integrated supply chains. This evolution has occurred in distinct phases, associated with descriptors such as: Just-in-time (JIT) processes, cellular, lean, concurrent engineering, mass customization, business process redesign (BPR), enterprise resource planning (ERP), customer relationship management (CRM), and vertical and virtual integration (Stonebraker & Afifi, 2004). All of these strategies are aimed at achieving sustainable, profitable growth (Braganza, 2002). The latest stage in the supply chain evolution focuses on customer satisfaction, moving away from a sole focus on costs to also

include flexibility, longer-term relational efforts with increased sharing of information, and broader participation in decision making through flatter hierarchical structures (Stonebraker & Afifi, 2004).

More complex businesses require differentiation, which typically results in decentralization and technical specialization (Braganza, 2002; Stonebraker & Afifi, 2004). These aspects tend to drive an organization apart, so it is essential to implement integration strategies that include formalization and collaboration. Such strategies can include: standardization of policies, rules and procedures; compatible communication formats (manual or electronic); and processes to coordinate across different organizational components. Systemic thinking along with trust are considered essential components for successful integration. Several studies have noted that supply chain failures result from lack of integration (e.g., poor communication, lack of trust and shared information), while collaborating and coordinating mechanisms lead to success (Braganza, 2001; Stonebraker & Afifi, 2004). The process of integrating supply chains is not an easy one, being affected by cultural and organizational norms, member productivity and creativity, and profitability (Stonebraker & Afifi, 2004). Stonebraker and Afifi (2004) suggested that the more evolved the technology, the greater the differentiation and integration efforts required to make a system work.

Also examining the area of supply chain management, Fawcett & Cooper (2001) found that, “bringing functional excellence and process integration together within the firm and throughout the supply chain requires four essential ingredients: the establishment of compatible strategic and operating goals; the modification of traditional performance systems; extensive communication and information support among the management functions; people with the experience and skills to bridge functional gaps” (p.410).

Fawcett & Cooper (2001) also identified six broad barriers to organizational integration. First, most companies do not have formal feedback processes in place to learn and understand the needs and wants of customers (or patients). Time is spent improving performance in areas that are of lesser importance to customers because top preferences have not been benchmarked. Second, there is a “lack of consistency among operating goals across departments” (p.401). Often, managers cling to their own individualized goals and ideas which may not be the best for the overall operation of the company. “The challenge for firms is to improve communication and understanding regarding firm strategies and objectives. Only then can localized units be expected to revise their operating goals to support the firm’s strategic initiatives” (p.401). Third, when performance measurements are not coordinated across various departments, they become counterproductive for organizational integration. Performance measurement can be an effective tool for integration, if they are reflective of the overall organizational strategic objectives. Fourth, a lack of “information systems capable of supporting company strategy” can act as a barrier to integration (p.402). Information systems also need to be linked across different geographical operating sites to ensure that information sharing can occur in real time. A fifth common obstacle is short-sighted focus in training and staff relations. “True integration occurs only as cross-functional and process-oriented attitudes are developed among the firm’s management and workforce. Such workforce support of integration efforts, however, requires mutual commitment from both the firm and its workforce” (p.402). And lastly, many firms have not established clear guidelines for managing supply chain alliances, which can be a hindrance to integration as these alliances are critical for developing highly valued products and services.

In addition to the barriers outlined above, these authors also identified several actions that can facilitate integration. They stated that senior managers must set the stage for integration, defining the company’s mission and vision, and from this, establishing customer-directed performance objectives. Specific functional roles must be identified along with key cross-functional relationships that impact organizational performance. It is important to get area managers to understand and accept the roles

of their area, whether highly visible or not, in order for the organizational strategy to be successfully implemented. Key processes need to be made visible in order to facilitate understanding and support for integration. Performance measurement systems should be implemented to provide accurate and timely information. Objectives, roles and measures need to be communicated both vertically and horizontally throughout the organization. Furthermore, managers are key integrators for the organization and benefit from being trained in the various positions throughout the company. Cross-functional managers are better able to understand the nature, culture and strategy of the company, “The key is to provide them the opportunity to use this insight and ability to facilitate integration” (p.408). And finally, the authors again contend that, “process integration goes across firm boundaries as companies make supply chain alliances. These relationships need to be well coordinated and companies should have protocols in place for establishing, building, monitoring, and terminating alliances” (p.410).

As mentioned by Stonebraker & Afifi (2004), the evolution of organization integration, specific to supply chain management, has occurred in phases. One of the named phases was Customer Relationship Management (CRM). Chan (2005) examined CRM as an important strategy for developing competitive advantage and increasing value along demand and supply chains. CRM is described as “a combination of strategy and information system aimed at focusing attention on customers in order to serve them better. An integrated business model that ties together business organizations, processes, information and technologies along the entire value chain is critical to the success of CRM strategies” (p.32). Careful planning of business processes and implementation strategies is required in order to establish an effective CRM system. While IT is an important enabler within this system, it must be combined with an integrated business model that ties processes together from initial customer contact throughout the supply chain. Chan (2005) suggested that in many cases information is not shared across departments and current customer data is not being used effectively to optimize satisfaction. Integration throughout the supply chain is important to achieving better customer service: “The focus of customer relationship management has evolved from customer satisfaction to the creation of values for the customer. In this model of value creation, customers are viewed as active participants in the value chain and not just the recipients of goods and services” (p.38).

Childerhouse, Hermiz, Mason-Jones, Popp, & Towill (2003) examined the re-engineering of supply chains within organizations. They suggest that the process to enable a seamless supply chain can be achieved by organizations re-engineering their own value-added processes, and then using the knowledge and expertise gained to assist vendors in elevating their practices to the same standard. Organizations can exploit these core capabilities, working together with customers to enable a seamless operation, while simultaneously updating system controls to maximize effectiveness.

Through their research, these authors identified several barriers to integration. Using the Cardiff business process change model, the authors categorized the barriers into four main topics: technology, culture, finance, and organization. Technology barriers included the complexity and cost of electronic systems, inflexibility, and incompatibility across various partner systems. The authors suggested that focusing on partners who are integrally linked offers the most cost-effective implementation of electronic systems. Partner organizations generally have different cultures and merging these can be challenging, with the people perspective of an organization’s culture being particularly important. The authors provided several factors to consider when introducing changes to the organization and staff. These included a lack of relevancy in formal organization charts which may not accurately reflect working relationships between staff, the fear factor of unfamiliar structures and processes for personnel, and the fact that people as individuals may not utilize “rational” decision making methods. As mentioned earlier, the financial costs of integrating information flows can be

problematic. Costs can be incurred for new software and hardware, addressing staff shortages, improper skill mix and understaffed IT departments, feasibility studies, system design and management. A key challenge is determining how financial costs of implementation are allocated between partners in the supply chain. Finally, organizational barriers also need to be considered in relation to integration. Governance issues can be complex when dealing with several partners. Thus champions within the various organizations are necessary at all levels, while a culture of sharing can promote positive relationships between members of lateral management positions. The basis of successful integration is trust and cooperation along with a realistic and shared understanding of expectations and contributions to the supply chain. As a caution, the authors emphasized that these are not “natural” states so it is necessary for all partners to be committed to the integration of information flows.

Beretta (2002, 2004) looked at the role of process based performance measurement systems in the context of organizational integration. He contended that in order for integration to be successful, it must be leveraged along three dimensions: information integration, which is the ability to transfer information throughout the organization; cognitive integration, meaning that each professional should understand the point of view of the other professionals involved; and managerial integration, which requires that the economic responsibility be assigned to managers along with connected incentives.

This author also proposed that integration processes should be visible and relevant to all employees. It is management’s responsibility to make people conscious of the processes, of the process performance and to make the processes relevant to the people. Performance measurement systems can assist in this by promoting both vertical and horizontal communication. He further suggested that performance measurement systems that are process-based can be effective in helping organizations highlight critical processes, making them relevant to staff rather than focusing on traditional functional units. Organizations need to link process-based performance measures with strategic vision and organizational structure. These measures support integration by aiding internal communication in two ways. Firstly, performance measurement systems promote vertical communication by facilitating two-way internal communications, allowing for standards and expectations to be conveyed while allowing for constructive reciprocal dialogue. Secondly, they also facilitate horizontal communication through the interaction of different units that contribute to common processes. Performance measures support process management through operational and cognitive integration, by highlighting linkages between different process activities, enabling process knowledge generation and making outputs relevant to each individual.

Brandao, Wilken, & Dutra (2001) provided an example of the integration process through a case study of the Samarco Integrated Management System. When the company established their management vision, they developed standards and procedures, created the structure for quality management, and maintained a focus on both internal and external customer satisfaction. The vision has been carried out through the Quality House, which represents the integrated management model established by the firm and is comprised of four aspects (p.728):

- ❖ Motivated personnel – The success of any project is dependent on staff feeling a sense of ownership and responsibility.
- ❖ Knowledge management – Focuses on ongoing training and equipping of each staff member.
- ❖ Management model – Management is involved in the strategic planning and establishment of short-term goals and objectives.

- ❖ Wealth generation for shareholders – This refers to the “active participation of all employees in the management of the company, identifying and keeping knowledge associated with the organizational processes and, a management model focused on the needs of all stakeholders” (p.728).

Key components of successful implementation for this company included developing a strong training program and raising employee awareness and commitment to the cultural, behavioural and methodological changes required for successful deployment of the new management system. The objectives and methods utilized in the integration process closely aligned with existing systems in the areas of quality, environment, occupational health and safety, thus creating support, sustainability and consistency in the form of integrated managements systems. Planning for the integration process involved identifying and evaluating common points across units and creating an employee task group to integrate system requirements and assign responsibilities to various departments. Occupational health and safety risks have also been identified and assessed together with aspects of environmental impact. Ensuring the participation of department stakeholders has been essential to the execution and operation phase. A core group of facilitators have been trained to assist in the implementation of the integrated management system and help disseminate knowledge and awareness of the new culture. Key components of the operation phase have included: an integrated management system manual, an improvements targeting plan, outlining of objectives, processes and procedures, and computerized management systems. The outcome has resulted in improved operational stability and quality along with lower product variability. Finally, pre-existing monitoring processes have been evaluated to ensure accurate and consistent measuring across departments of process parameters, operational control and “global performance of the integrated management system” (p.730). The positive results that the company has experienced include an improvement in quality, lower costs, higher market share and sales, and an improvement in corporate morale and environment. Overall, the integration of the management systems has led to “a consistent and methodological achievement of results assuring a continuous foreseeability, traceability and improvement of the key indicators of corporate performance” (p.737).

5.2.2 Relating Business to Health Care

All of these business authors provide some insight into organizational integration; integration frameworks, characteristics, barriers, and facilitators. Although these articles are presented for a business minded audience, much of the information can be generalized to the health care field.

Most of the barriers to integration identified in the business literature were reflective of the organizational culture, which was also identified in the health literature. In both business and health care, there are levels to the system, from frontline workers to management. Overcoming the potential power struggles, communication difficulties and cultural differences that exist between the different levels is a concern in both arenas when it comes to implementing a new system of production or patient health services (Barki et al., 2005; Burns et al., 2002; Childerhouse et al., 2003; Coxon, 2005; Fawcett et al., 2001; Hardy et al., 1999; Mur-Veeman et al., 1999; Stewart et al., 2003). However, as Barki and Pinsonneault (2005) point out, if the various organizational levels become too integrated to the point of being indistinguishable, the capabilities of differentiation and specialization will be lost. Therefore, it is essential for any organization, whether health or business related, to work towards integration and sub-unit autonomy at the same time (Barki & Pinsonneault, 2005; Ghoshal & Gratton, 2002).

The business integration models presented above can be directly applied to the health care setting. For example, the model presented by Dan et al., (2005) can be translated into terms relevant to the

field of health care. Knowing where the various stakeholders can be placed within the five rings (i.e. the patients are Ring 1, health care providers are Ring 2) can help in understanding the roles that each play in sustaining an integrated system. As in the NIMS model where the patient would be placed at the centre of the plan, in the Customer Relationship Model presented by Chan (2005), the patient would play an active and important role. As Chan (2005) describes, “in this model of value creation, customers are viewed as active participants in the value chain and not just the recipients of goods and services” (p.38). Likewise, patients should have the same experience in an integrated health care system where they are not simply the recipients of treatment, but are active participants in their care.

The literature on integration specific to supply chain management (SCM) displayed more similarities to health care than was initially anticipated. It appears that the goals of SCM organizations implementing integration are comparable to those of health care organizations doing the same. Supply chain integration is currently focusing on customer satisfaction, flexibility, increased sharing of information, using a broader participation in decision making, and achieving sustainable, profitable growth (Braganza, 2002; Stonebraker & Afifi, 2004). These are also some of the underlying intentions behind health care integration initiatives (Coddington et al., 2001c; Hunter, 1999; Shortell et al., 2000; Wilson et al., 2003).

Overall, including a review of the business literature as it pertains to integration proved beneficial. In many ways, the information gathered in the health care literature was validated by the findings in the business articles. Some of the business integration models also provide some insight into strategic ways to think about and plan for integration initiatives.

Box 5.8 – BUSINESS LITERATURE KEY POINTS

- The principles of organizational integration and the coordination processes used in the business sector may provide insight for health care integration planning.
- There are three key features of organizational integration: 1. the characteristics of integration, 2. the scope of the integration initiative, and 3. the particular elements that need to be aligned as part of the integration plan.
- Similar to the health care literature, most of the barriers to integration identified in the business literature were reflective of the organizational culture.
- Health care organizations have similar goals when implementing integration as to SCM organizations: customer satisfaction, flexibility, increased sharing of information, using a broader participation in decision making, and achieving sustainable, profitable growth, reinforcing applicability of business models to the health care context.
- Many of the organizational integration models and experiences can be adapted to the health care field.

5.3 Special Topics in Health Systems Integration

The preceding sections focused on health systems integration at a general level. Several topics were identified by the data retrieved by this review and during the preliminary research stage through requests by decision makers. The following sections focus on the integration of physicians; integrating complementary and alternative medicines into the dominant conventional, biomedical system; integration for rural or remote populations; and studies reporting on integration for special populations. These include those with chronic diseases, HIV/AIDS, or mental illness and Aboriginal populations, children and youth, and the elderly.

5.3.1 Physician Integration

“... the degree to which physicians and their medical groups share, identify with, and work toward accomplishing the goals together with their affiliated health system”

(Budetti et al., 2002, p.203).

A common theme throughout the literature is the importance of physician integration, also called physician alignment, to the successful delivery of integrated health services (---, 2003a; Burns et al., 1998). There are two basic types of physician integration discussed in the literature: integration amongst physicians, and between physicians and the health care system, often called physician-system integration. Both forms of integration occur in various ways and are fundamentally linked to one another.

The majority of the articles discuss this topic within the context of the United States health system. Also, several of the articles report findings from a cabal of researchers who have been dominant in this area in the United States for several years. The result is that much of the information contained within the following section is based on the perspective of this select group and therefore may lack sufficient diversity of perspectives necessary to generalize to other systems. (Readers are referred to Section 5.1.3 (viii) for a discussion of physician integration within the context of the principles of successfully integrated health systems.)

Models of Physician Integration

Models of physician integration fall into two broad categories: physician equity and staff models. Within these two broadly defined models there are many variations and combinations.

Physician equity models are an illustration of both physician integration and physician-system integration. There are a variety of ways in which physicians can integrate amongst themselves and these groups may become components of an integrated health delivery system. Some variations within the physician equity model include: Physician Hospital Groups, Independent Physician Associations, Integrated Medical Groups, Management Service Organizations, or Physician-organized Delivery Systems (Alexander et al., 2001a; Burns, 1999; Robinson & Casalino, 1996). Groups vary in size and physicians may belong to more than one group (Robinson & Casalino, 1996). While some of the characteristics of these various groups may differ, in all of them physicians are co-owners and managers of health care organizations (Bost, 2003; Zismer & Person, 2006) and operate their practices autonomously. The advantages to physicians of these physician equity models include “economies of scale; ability to spread the financial risk of capitation payment; reduction in the transaction costs of negotiating, monitoring, and enforcing agreements; and creation of an organizational context for continuous process innovation” (Robinson & Casalino, 1996, p.12). Physician equity models also have several challenges which impact the success of physician integration amongst them or with the system. Groups may be “cobbled together” (Gillies et al., 2001)

and exist across various locations with little interaction amongst the members. When purchasing groups or hiring physicians, minimal thought may be invested to understanding their needs or to how they would fit within the culture of the existing group (Gillies et al., 2001).

These physician groups may align themselves loosely or more tightly with a health system or hospital. The physician equity model allows a more **loosely affiliated relationship** with integrated health delivery systems. This is often achieved by contracting, also called virtual integration (Burns, 1999; Dynan, Bazzoli, & Burns, 1998). Contractual negotiations may result in conflicts between hospital management and physicians. Loosely coupled contractual vehicles between physicians and hospitals facilitate integration without specific internal policies for the delivery of patient care that requires change in physician practice (Burns et al., 2001a). Loosely coupled contractual agreements allow greater flexibility in developing strategies for integration to better meet the changing needs of the population and environment. If structures (contracting relationships) are continually adapted, the process of integration will mature and evolve. Despite the advantages of loosely coupled relationships there are also disadvantages. The lack of standardization of clinical processes results in varied care for patients across the integrated delivery system, possibly higher costs, and lack of improvement in the quality of care (Burns et al., 2001a).

Staff models are associated with physician-system integration and are often characterized by a **tighter affiliation** between the physician and integrated health care delivery system. Physicians are either employees of the integrated delivery system (Bost, 2003; Zisner et al., 2006) or are vertically integrated via ownership of physician practices. The Management Service Organization is an example of a more tightly coupled affiliation as the physicians are economically tied to the health system (Alexander et al., 2001a; Burns, 1999). In a sample of 59 hospitals in the United States, almost 66% of hospitals purchased physician practices (individual or group) to facilitate physician integration (Burns et al., 2001b). Studies report that hospital employed physicians are less productive, less autonomous, and often not involved in leadership (Fischer & Coddington, 1998). Benefits for physicians include income security, more flexible hours, and improved benefits (Fischer & Coddington, 1998).

In the United States, system owners (e.g., hospitals) and stakeholders (e.g., health insurance plans, physicians) have undertaken the development of **Primary Care Networks (PCNs)** to ensure access to primary care physicians (Fischer & Coddington, 1998) and a referral base for specialty and acute care. Purported benefits include improved quality of care, improved service, improved accessibility, reduced unit costs, improved operating efficiency, strengthened customer relationships, and enhanced product offerings (Fischer & Coddington, 1998). These benefits, however, have not necessarily been demonstrated. Hospital owned and health insurance plan PCNs have not been financially beneficial. However, PCNs run by multi-specialty clinics are doing well financially, benefit from primary care physician referrals, and are able to reduce clinical variation (Fischer & Coddington, 1998).

Factors Affecting Physician Integration

Physician integration is a complex concept and the more complex the organization the greater the need for interdependence and integration (Alexander et al., 2001b). In addition to the barriers and facilitators discussed in the general principles section (5.1.3 viii) that also apply to physician integration, two further factors affecting physician integration include context and physician characteristics.

Context

Understanding the context within which physician-system integration is attempted is important. In the United States, physicians who had a larger proportion of their revenue tied to **managed care** contracts were more closely integrated with the system (Alexander et al., 2001b; Burns, et al., 2001a) and the lack of uptake of managed care has negatively impacted the alignment of physicians to the system (Burns et al., 2001a; Gillies et al., 2001).

Payment models used between parties is another major contextual component in United States. Compensation and productivity incentives vary from system to system and group to group. Salaried physicians appear to be more aligned with their health care organizations (Alexander et al., 2001b; Bost, 2003; Budetti et al., 2002; Lester et al., 1998). Financial incentives for clinical care were also discussed with one study finding increased alignment with the system (Burns et al., 2001a) while others suggest that accountability should not be attached to consequences (Gillies, et al., 2001). The challenge of payment models is to facilitate autonomous practice while ensuring economic security in the context of managed care.

There is a renewed focus on primary care with the assumption that primary care will provide health services to large numbers of the population with savings to the system. As a result of the changed health care climate, attention and resources have shifted from specialists to primary care physicians resulting in **competition** and conflict between the two groups and hampering physician-system integration (Gillies, et al., 2001). In the United States, health systems and physician groups are actively recruiting primary care physicians and decreasing the number of new specialists (Burns, et al., 2001b; Robinson & Casalino, 1996). Physician groups now make decisions regarding acquiring or contracting speciality services and specialists fear a decrease in referrals or being left off referral lists completely (Burns et al., 1998). However, if competition is focused on achieving better patient outcomes and is value-based, it can be beneficial (Porter & Teisberg, 2007).

Physician Characteristics

Burns et al., (2001a) found that physician characteristics were correlated with various dimensions of integration (affective commitment, loyalty to the system, and citizenship). Physicians who were older (Alexander et al., 2001a; Burns, et al., 2001a) were more closely aligned with the health system providing them with a less complicated arrangement for working with the system and offering a full spectrum of care for their patients. They were not necessarily satisfied with this arrangement but felt they had few options since they were reaching the end of their careers. Physicians who regularly admitted patients and those who practiced in larger, multi-specialty groups were often more integrated with the health care system (Burns, et al., 2001a). Contrary to these findings, Alexander et al. (2001a) found that tightly linked physicians tended to be younger, had a lower number of years of service with the system, and were most often community-based primary care providers. Those less committed to the health care system included male physicians, those who worked in larger groups where they had developed synergy within their group, primary care physicians and single specialty groups (Alexander et al., 2001b).

Physicians have been described as traditional entrepreneurs and may fear integration and the possible loss of their independence; but this is most certainly an overgeneralization. Even so, there is recognition by physicians that integration is a necessity in today's health care environment (- -, 2003a; Anderson, 1998; Budetti et al., 2002; Burns, 1999; Gillies et al., 2001; Lester et al., 1998). Despite this understanding, physician's preference for autonomy may have a significant impact on the process and outcomes of integration.

Leadership is an important component of physician integration with the health system. In one study (Burns et al., 2001a), most of the 59 hospitals surveyed were involved in leadership development and their physicians were being prepared for roles such as board members, medical directors, and quality improvement leaders. Some health care delivery systems developed and implemented mentoring programs (Alexander et al., 2001b; Gillies, et al., 2001). However, there is conflicting evidence regarding the role leadership plays so far as physician integration. While Burns et al. (2001a) found that physicians who received financial incentives for administrative and non-clinical time were more committed to the integrated health system, Budetti et al. (2002) suggests that board and administrative appointments have little impact on physician integration. Physicians also experienced conflicts choosing between leadership and clinical practice, some experienced negative consequences as a result of their dual role (Budetti et al., 2002; Gillies et al., 2001) while others did not (Burns et al., 2001a). Many hospitals surveyed did not have policies to have physician leaders continue with clinical practice (Burns et al., 2001b).

Health care systems generally operate on a system of **centralized decision making**. This structure decreased physicians' levels of loyalty and citizenship to the system, highlighting the importance of involving physicians in decisions that impact their work and ability to provide care for their patients (Burns, et al., 2001b). Burns (1999) recommended a matrix reporting structure with accountability and responsibility to the system but with local reporting. Zismer et al. (2006) also support the importance of physician involvement in decision making at all levels of the organization as well as clinically.

Organizations impact physician integration in other ways as well. Some physicians perceived a waste of money, particularly on administration, that could have been used for direct patient care (Budetti et al., 2002; Gillies et al., 2001) and this negatively impacted physician-system integration. On the other hand, assistance with negotiating managed care contracts facilitated physician integration with the system.

Little information was found in the literature on physician integration in **Canada**; however, some articles emphasize the importance of their involvement in the early stages of health care reform (Lester et al., 1998) particularly in the planning and leadership of primary care initiatives (Rosser et al., 1999). Lester et al. (1998), discussing health care reform planning and implementation in Ontario, noted the lack of physician involvement in the process. There are several explanations offered such as a lack of knowledge about integrated health systems, concerns resulting from a past history of fee rollbacks and difficult negotiations, and little interest in pursuing models that resemble Health Management Organizations in the United States. As well, it was suggested that, in the future, economic efficiency of physicians will be monitored more closely with incentives focusing on "desired clinical behaviors, quality of care, clinical outcomes and patient satisfaction as well as optimizing utilization and reducing costs" (Lester et al., 1998, p.61). What is agreed upon is that family doctors should be the coordinators of care for patients (Rosser et al., 1999). Primary care physicians may need to work in groups or virtual networks, and be active staff members in local hospitals, in order to deliver comprehensive primary care services to patients. Blended funding models may also allow primary care physicians to practice differently thus providing comprehensive services for their patient.

Outcomes of Physician Integration

Physician alignment with the larger system has been considered a key outcome of integration. However, it has also been argued that evaluation of primary care integration is, for the most part, non-existent and outcomes of new initiatives are poorly measured (Batterham et al., 2002; Simoens et

al., 2005). Within the context of this review, the following articles were found to offer some insight into the potential, and sometimes measurable, outcomes of physician integration.

Some authors have explored the differences of equity and staff models on physician alignment. The equity-based model was seen to create a stronger commitment to the strategic goals of the integrated delivery system (Bost, 2003), however, only a modest impact on physician system alignment was noted with ownership or partial ownership models (Alexander et al., 2001b). In the staff models there is no “real return” which appears to have impact on productivity such as cost reduction and amount of work completed as “employees do not pay for the consequences of bad decisions that affect productivity” (Bost, 2003, p.29).

Robinson and Casalino (1996) discuss the “growing linkages between primary care-centered medical groups and specialists and between physicians and hospitals under managed care” (p.8). Gathering their information through interviews, the authors present several outcomes of primary care integration. They suggest that there are four main reasons why it is advantageous to integrate practices: “economies of scale; ability to spread the financial risk of capitation payment; reduction in the transaction costs of negotiating, monitoring, and enforcing agreements; and creation of an organizational context for continuous process innovation” (p.12). The authors go on to discuss the advantageous outcomes of integrated physician groups aligning with hospitals, either vertically or virtually. By creating an integrated delivery system, the duplication of both clinical and administrative services is less likely to occur.

A study conducted by Mehrota, Epstein, & Rosenthal (2006) sought to determine if there were differences in the quality of care received based on the type of integrated physician group contracted by California’s PacifiCare health plan. The two main types of physician groups studied were integrated medical groups (IMG), defined as “centralized organizations in which physicians are employees or participants in a partnership arrangement” (p.826), and independent practice associations (IPA), which are decentralized, or virtual, groups. The survey data measured PacifiCare patient enrollees’ member satisfaction, quality of care, patient safety, and utilization. The results of the study showed that quality of care measured across various indicators was higher for IMGs than the IPAs. Hybrid groups, employing a combination of the two groups, placed somewhere in the middle. Leaders of IMGs reported higher usage of electronic medical records and quality improvement activities. Patients of physicians belonging to IMGs were more likely to receive four out of six quality health care measures when appropriate (mammography, Pap testing, chlamydia screening, diabetic eye screening). The authors suggest that the “centralized decision making and closer physician affiliations [present in the integrated medical groups], are able to provide higher quality care” (p.830-1). Another explanation may be that those physicians employed by IMGs differ from those that work in IPAs. Another finding from this study was that groups that provide a larger volume of services tended to provide higher quality of care than those with lower volumes. Generalizability of results may be limited as the study was conducted in California where physician groups are somewhat unique and the penetration of managed care and capitation is much greater.

Budetti et al. (2002) reported on physician and health system integration, using the data collected in the Shortell et al. (2001) HSIS study mentioned above. Through their multi-year research project, the authors found that participation in “structural relationships such as PHOs [Physician Health Organization] or IPAs” (p.206) did not increase physicians’ commitment to the health system. Strategies by management to enhance the physicians’ role in the system, such as giving them opportunities to serve on a governing board or tying financial incentives to individual productivity did not work. In fact, these strategies resulted in the physicians developing negative attitudes towards the health system. However, if the physicians were salaried and received extensive operational support,

their loyalty to the system increased. Several facilitators of physician system alignment were identified, including having a patient-centred focus, use of multiple compensation incentives, strong managerial leadership, and risk sharing between the physician group and the system. Despite the documented positive impact these strategies may have they were often not in place. Unfortunately, it was found that energy that should have been used to put these facilitators in place was “largely being expended on measures that were not likely to enhance alignment” (p.207).

Four measures of physician alignment were identified by Alexander et al. (2001b) as they sought to study the “organizational linkages that promote (or reduce) alignment between physicians and health systems” (p.39). These were the relationship between physicians and the system; loyalty; citizenship; and behavioural commitment. Using data gathered through physician surveys, the study had three main findings. First, administrative control and governance linkages, such as centralized system decision making, did little to enhance the alignment between physicians and the health system. Second, having system representation on the physician board and physician representation on the system board, referred to as “interlocks”, showed mixed results. Although interlocks allow physicians to be informed of system visions and goals, it did not necessarily translate to the day-to-day work of physicians, and the time that was required to participate in these organizational linkages might be seen as an intrusion on the physicians’ time. In contrast, the third finding was that “operational linkages between physician groups and health systems [were] positively associated with physician-system alignment” (p.40). The operational linkages allow physicians to practice more effectively particularly in a complex health care environment. There were two other notable findings, the first being that managed care appeared to increase the dependence of physicians on the system, and subsequently strengthened the physician-system alignment. Finally, the authors found that although there were personal and practice characteristics that differentiated the physician groups that were in a loosely or tightly affiliated alignment with the system, these differences “were not central to explaining the relationship between attitudinal alignment and organizational linkages” (p.41). These authors concluded that overall, integration of physicians with the health system was not well developed with physician commitment being complex, and having multiple dimensions. Contracting vehicles (IPA or PHO) did not seem to make a significant difference, although investment, both economic and time, and the subsequent dependence on the system did seem to increase the level of the physicians’ commitment to the organization. The findings from this study suggest that administrative involvement was not closely associated with physician commitment. As shown in other research, physicians were not necessarily interested in having a voice, but rather were looking for convenience and value added services.

Morrissey, Alexander, Burns, & Johnson (1999) reported the results of their research into the effects of managed care on physician and clinical integration in U.S. urban hospitals. They hypothesized that increased managed care in an urban area would result in higher levels of clinical and physician integration with hospitals. A wide variety of integration strategies was used by hospitals to advance physician integration, ranging from support of physicians in their private practices to acquiring physician practices. Overall, the relationship between managed care and physician integration was a modest one (possibly because of the variety of strategies). Strategies utilized by hospitals to achieve clinical integration included the integration of clinical data across hospital departments and the use of clinical guidelines. Given the “variety of physician and clinical integration approaches” (p.14) and the limited success of any one strategy the authors contend that “integration requires the participation of both the hospital and physicians or physician groups. It cannot be unilaterally imposed” (p.14).

Simoens and Scott (2005) conducted a thorough literature review, studying the nature of integrated primary care organizations (IPCO) in the United Kingdom. Similar types of integrated groups can be found in several countries, including Canada, which increases the relevance of this empirical research.

The study results provided a rationale for primary care integration, which included the ability to provide a wider range of services, changing the way services were delivered to benefit providers, and the ability to obtain new resources. The authors found that the complexity of the integrated structure was associated with increased costs, which decreased the likelihood of primary health care professionals integrating with the IPCO. One of the main objectives of an IPCO is to enhance the collaboration between health care and social welfare agencies. In many of the studies there was evidence of partnering of different primary care groups and health and social organizations, however, no measurement of collaboration was evident in any of the studies. The amount of information on costs available from the studies was limited. Potential savings through economies of scale were also difficult to determine as most IPCOs did not provide information on the number of providers, patients and their operational costs. Of interest is the fact that, financially, smaller IPCOs fared as well as larger organizations; the larger the organization, the more complex and costly the management structure. Therefore, the economy of scale principle may not apply with IPCOs. The authors suggest that further research to determine the extent of integration, influencing factors, cost-effectiveness and the impact on quality of care and patients is needed to better understand how the evolving IPCOs are meeting the needs of patients.

Summary

The majority of findings reported in the articles retrieved during this systematic literature review were based upon data obtained in the United States by a select group of researchers. While this may limit applicability to the Canadian health care context, some aspects are relevant to the Canadian health care system. As reported in the literature, the benefits of health care system integration are different for physicians than for the system. Also, systems or physicians cannot be treated as homogeneous groups as each individual/group may be at a different point on the integration continuum. Consequently there is no one model or set of components that will ensure successful integration of physicians and primary care into an integrated health care system. What appears to be a common theme in the limited literature from Canada is that physicians and primary care are likely to have a major role in the successful implementation of health systems integration in Canada. Therefore, it is essential that physicians be actively involved from the earliest stages.

Box 5.9 – PHYSICIAN INTEGRATION KEY POINTS

- The literature stresses the importance of physician and primary care integration to the successful implementation of an integrated health care delivery system.
- Models of physician integration fall into two broad categories: physician equity and staff models.
- Physicians may be either loosely or tightly affiliated with integrated health care delivery systems. Research findings are mixed regarding which relationship is most beneficial.
- The benefits of integration are different for physicians than for health care systems.
- Primary care networks have gained popularity in the United States and the United Kingdom but there is a lack of empirical evidence to substantiate the perceived advantages of these networks.

5.3.2 Integrating Conventional and Complementary / Alternative Medicines (CAM)

The increasing interest in conventional and complementary and alternative medicine (CAM) (Coates et al., 1998; Featherstone et al., 2003; MACCAH, 2004; NIH, 2006; Smeeding & Osguthorpe, 2005) and in the prevalence of CAM use (Eisenberg et al., 1998; Kelly et al., 2005; Kessler et al., 2001; Launsø, 2001; Rössler et al., 2006; Wootton et al., 2001) warrants a brief discussion on integration between CAM and conventional medical health care. The philosophy underpinning CAM modalities include an individual person-centred approach to health care which recognizes inter-relationships among physical, mental, social, environmental, and spiritual dimensions of health and well-being; promotes disease prevention; and requires interdisciplinary practice (DeBruyn & Boon, 2003).

Reasons for the increasing interest in CAM therapies have been attributed to dissatisfaction with biomedicine (Coates et al., 1998; Hollenberg, 2006), a desire for a more participative or holistic health regimen with a focus on health promotion and wellness (Bell et al., 2002; Coates et al., 1998; MACCAH, 2004; Smeeding et al., 2005), interest in a person-centred approach to health care (DeBruyn et al., 2003), and a perception of safety (Health Canada, 2005). Driven by consumer demand, integrating conventional and CAM practices has gained popularity. The lack of disclosure by patients of their CAM use to their physicians and the potential impact on health (e.g. drug interactions) is a primary reason for the integration of conventional and CAM therapies at the primary care level (Frenkel & Borkan, 2003). Other motivators include the hopes of improved health care outcomes (Coates et al., 1998) and cost-effectiveness, for both the initial cost of treatment as well as the long-term cost to the health care system. This is supported by some evidence that CAM therapies are effective in treating chronic pain or disease (Coates et al., 1998; Smeeding et al., 2005), typically high cost conditions.

Bell et al. (2002) stress the importance of aiming for **integrative medicine** which they define as a “comprehensive, primary care system that emphasizes wellness and healing of the whole person as major goals, above and beyond suppression of a specific somatic disease” (p.134). Boon et al. (2004a) conceptualized integrative health care and described seven different levels of health care practice that denote increasing integration (Figure 5.5 in Section 5.1.2). DeBruyn et al. (2003) report workshop findings which described four models of integrative health care. The Marylebone Health Centre provides a “full range of primary care services ... [including] an expanded range of complementary services” (p.3). The Duke Center for Integrative Medicine “is a consulting clinic ... [which] focuses on helping each patient to develop a strategic health plan and to maintain that plan with the assistance of a personal wellness coach” (p.3). A third model presented was the “practice of health care at Shanghai Yueyang Hospital [which] involves dual diagnosis and dual prescription in both Western medicine and traditional Chinese medicine” (p.3). The final model presented was based on the Tzu Chi Institute which focuses on three aspects of health care: “clinical care, research/evaluation, and education/information” (p.3).

Even when it is purported that CAM and conventional therapies are integrated there are barriers to seamless collaboration. Hollenberg (2006) reports that general physicians with a biomedical focus remained the dominant professional group in two integrative health care settings in Canada. CAM practitioners were excluded from patient charting; prohibited from ordering diagnostic tests; and not allowed to refer patients to biomedical physicians. Moreover, conventional physicians may misappropriate CAM modalities or exclude CAM practitioners from group rounds. CAM practitioners were also disadvantaged because they didn't understand biomedical language which dominated group meetings and patients' charts.

There are several factors that may promote the integration of conventional and CAM therapies:

- ❖ Open communication between patients and providers is paramount and allows a dialogue about patients' preferences and expectations (Frenkel et al., 2003) particularly since patients may not disclose CAM use;
- ❖ Focus on integrating CAM for conditions that are poorly treated with conventional medicine (Coates et al., 1998; MACCAH, 2004);
- ❖ Ensure there is a method of verifying CAM providers' background (Frenkel et al., 2003; MACCAH, 2004; Smeeding et al., 2005) which might improve trust amongst the patient, CAM provider and conventional provider (Frenkel et al., 2003) and improve attitudes about CAM practitioners (Coates et al., 1998);
- ❖ Interprofessional education and working (Coates et al., 1998; MACCAH, 2004; Mills, 2003) which may encourage participation of primary care physicians in the evaluation of patients regarding appropriateness of CAM for treatment (Frenkel et al., 2003);
- ❖ Encourage primary care physician follow-up to ensure effectiveness and safety of CAM modalities (Frenkel et al., 2003; MACCAH, 2004);
- ❖ Encourage providers to experience CAM modalities (Mills, 2003);
- ❖ Recognize the limitations of CAM modalities and practitioners (Coates et al., 1998);
- ❖ Integrate CAM and conventional patient records, scheduling and follow-up (Smeeding et al., 2005);
- ❖ Develop appropriate measurements to determine CAM effectiveness and safety (Coates et al., 1998; MACCAH, 2004; Smeeding et al., 2005), focusing on outcomes measures (Coates et al., 1998);
- ❖ Provide adequate information to clients/patients about CAM therapies (Coates et al., 1998); and
- ❖ Adequate resources such as funding for CAM research (Coates et al., 1998; MACCAH, 2004).

Given the increasing interest in and use of CAM, it is important for health care providers, managers, and decision makers to consider strategies and models which will integrate these modalities with the currently dominant biomedicine practice thus strengthening the delivery of patient-focused, comprehensive services across the continuum of care.

The systematic literature review did not focus on the integration of CAM modalities and conventional, biomedical treatments, therefore, the discussion within this section is limited and readers are encouraged to seek a more comprehensive source for information regarding this topic.

Box 5.10 – CONVENTIONAL & ALTERNATIVE MEDICINES KEY POINTS

- Increased interest in and use of CAM modalities by Canadians (and others) indicates the importance of integrating these treatments with conventional medicine.
- Open communication, interprofessional education and working, shared electronic patient records, evidence-based research regarding the safety and effectiveness of CAM therapies, and client/patient information are several factors that may promote integration of conventional and CAM treatments.

5.3.3 Health Systems Integration for Rural or Remote Populations

While the majority (80%) of Canada's population dwells in urban centres, several of the provinces or territories still remain largely rural. The 2001 census reported three provinces/territories with 50% or more of their populations in rural or remote areas (New Brunswick, Nunavut, Prince Edward Island) and an additional four with 40 – 49% (Newfoundland/Labrador, Northwest Territories, Nova Scotia, Yukon) outside urban centres. The remaining provinces' populations range from 15-36% residing in rural or remote areas. An Alberta study found that residents in rural communities had access to fewer service delivery alternatives and had to travel further to receive speciality services (Halma, Mitton, Donaldson, & West, 2004). There are also **aspects of rural populations which may set them apart from their urban counterparts** including being poorer, underinsured, elderly, and having lower education levels (Bolda & Seavey, 2001). They value independence and privacy (Badger & Farley, 1999), and are more likely to display "customer loyalty" (Bolda et al., 2001).

Primarily, the documents regarding integration of health services in rural or remote areas identified by this systematic literature review focused on primary care reform and physician integration. The findings reported earlier in this document regarding these topics also apply to health systems integration in rural areas. The following section will briefly outline some of the similarities between urban and rural health care settings but will focus on the aspects unique to rural or remote areas.

Similarities in integrating health systems in urban and rural areas include the importance of inter/multidisciplinary teams and respect for and trust among all team members (Glasser et al., 2003; Rho et al., 2001; Rogers, 2003; Truman, Vallee, Miller, & Spelten, 2000; Wedel & Patterson, 2003); the value of case managers or coordinators or nurse practitioners to assist with access to services especially for the chronic disease population (Rho et al., 2001; Truman et al., 2000; Wedel et al., 2003); the benefits of integrated governance or formal governance agreements (Hanlon, 2001; Rho et al., 2001; Tucker, 2001; Wedel et al., 2003); and the focus on population needs and the determinants of health (F.Picherack & Associates, 2000; Tucker, 2001; Wedel et al., 2003). Common challenges include the lack or shortage of providers (Badger et al., 1999; Rho et al., 2001); lack of or inflexibility of funding (Badger et al., 1999; McCabe & Macnee, 2002); long waiting lists for speciality services (Badger et al., 1999; Rogers, 2003); and lack of anonymity when accessing mental health services (Badger et al., 1999). However, these factors are more challenging for integration in rural areas than for urban areas because of the following **unique barriers**:

- ❖ Geographical distance between communities, residents, health care providers, and health care services (Bolda et al., 2001; O'Meara, 2003) and isolation, making access by emergency services difficult (Simpson & Littlejohns, 2000),
- ❖ Challenges with regular communication amongst providers and service centres (O'Meara, 2003) exacerbated by the geographical distance, and
- ❖ Animosity between communities which may impede integration efforts (Hanlon, 2001).

There are, however, **facilitators** to integrated health systems that exist in rural communities that are less likely to occur in urban settings (Bolda et al., 2001):

- ❖ Local leadership with strong ties to the community,
- ❖ Local control of health resources,
- ❖ Sense of community and support for local organizations and providers, and
- ❖ Flexibility of smaller health care teams which can expedite identification of problems and the development and implementation of solutions.

Health care providers also face some unique challenges in rural communities including (Halma et al., 2004; McCabe et al., 2002; Rogers, 2003):

- ❖ Reduced opportunities for continuing education,
- ❖ Lack of collegial support,
- ❖ Low salaries,
- ❖ High case loads,
- ❖ Insufficient off-call time,
- ❖ Unavoidable social contact with patients,
- ❖ Restricted access to support services, and
- ❖ Being considered second-class professionals by colleagues.

Health care providers in rural or remote settings may need to have a broader knowledge base and provide a wider range of care than those working in urban areas since the rural setting often limits access to other health care providers. The ability to be flexible and creative when coordinating resources may also be beneficial (Rygh & Hjortdahl, 2007).

Findings from the **Taber Integrated Primary Care Project**, initially a three year primary health integration project conducted in a rural area of Alberta were mixed (- - -, 2003b). *Health care professionals* reported improved patient care and increased job satisfaction, though they were busier than before the project (Halma & Hasselback, 2003b). However, the burnout rate did not differ from that reported in other studies (Boudreau, 2003). *Patient satisfaction* (Halma & Hasselback, 2003a) within the Taber area was higher than the norm before the initiative and did not worsen. There was a decrease in the use of hospital services and an increase in the clients who indicated that they had enough information to make an informed decision. The availability of the nurse practitioner was positively related to patient satisfaction. Healthier population indicators (e.g. decrease in tobacco and alcohol use, increase in seat belt and sun protection use) were positive; however, these changes also occurred in the comparison communities suggesting that the changes “may not be attributable to the initiative” (- - -, 2003b, p.17). Overall, in relation to the comparison communities, *system utilization* (Alibhai, Saunders, Thanigasalam, & Hasselback, 2003) was more appropriate including decreased access to physician services and day surgeries. The rate of use of emergency and outpatient services increased less than in the comparison communities. However, Taber saw a substantive increase in hospital days and average length of stay compared with the comparison communities. It was suggested that a “very significant increase in the measure of severity of the illness ... particularly among Taber residents who were hospitalized outside of the region” (- - -, 2003b, p.19) may account for some of the difference but no explanation was provided for the remainder. Finally, though there was not a detailed *economic analysis* undertaken to determine the efficiency or effectiveness of the system, physician claims data supports the finding that “utilization in Taber was lower and less expensive than comparison communities” (- - -, 2003b, p.20).

A common solution to the challenge of access and communication in rural or remote settings and the difficulty of providing specialty services to these areas has been the implementation of **telemedicine** or **telehealth**. The basic premise is the use of telephone or satellite access to provide verbal and visual links between sites. It has also been tested extensively as a tool to promote and achieve health systems integration. A report submitted to Health Canada in 2004 estimated that there are “approximately 200 telehealth projects and networks currently operating in Canada ... [and] 300 Canadian telehealth companies” (p.26). The *benefits* of telehealth include:

- ❖ Wide range of health care providers can be available to patients and health care professionals in remote or rural areas (Sheppard & Goobie, 2000; Wynne, 2000),
- ❖ Enhanced health care service availability because patients and providers can ‘meet’ on a regular basis (Wynne, 2000) reducing patient travel time and costs (Sheppard et al., 2000),
- ❖ Long distance communication via teleconferencing allows verbal and nonverbal cues between patients and health care providers (Dimmick et al., 2003), and
- ❖ Retention of health care providers by enhanced access to continuing medical education, contact with family members, and consultation with other health care professionals (Sheppard et al., 2000).

Challenges of telemedicine included scheduling with various sites, accessibility of equipment at the home base, perceived lack of privacy, and not having a technical person at the rural site who could assist with technical and satellite problems. The authors report that “physician reimbursement schemes ... which do not recognize telemedicine or distance-based services as being eligible for payment ... may represent the single biggest *barrier* (and major policy issue) to be addressed in using distance technologies to enhance health service delivery to rural and remote communities” (Sheppard et al., 2000, p.22).

The Knoxville Telehealth Assistance Center illustrates the successful development and implementation of an integrated telehealth network. This case study, including outcomes, is discussed in Box 5.12.

Box 5.11 – POPULATIONS IN RURAL & REMOTE AREAS KEY POINTS

- Health services integration in rural and remote areas face unique challenges including geographic distance and isolation which may make communication amongst health care providers and patients more important but also more difficult.
- Telemedicine, also known as telehealth, was found to improve access and communication thus allowing services to be integrated over long distances and improved health outcomes for patients.

Box 5.12 CASE STUDY**KNOXVILLE TELEHEALTH ASSISTANCE CENTER –
TENNESSEE, UNITED STATES**

An integrated telehealth network providing clinical consults for a variety of services including dental health, behavioural health, and disease management programs was successfully developed and implemented in Scott and Anderson counties (Tennessee, U.S.). A centralized hub was located at the University of Tennessee, Knoxville Telehealth Assistance Center (TAC) and connected to a variety of health care agencies in the counties. These included a psychiatric hospital, county hospital, and several health clinics.

The *teledental* services supported videoconferencing between patient and provider, and an oral camera and monitor for consultation with the oral surgeon at TAC. This service reduced the number of out-of-town trips for patients from three to one, representing a saving in time and expenses which “encouraged patients to get speciality care” (Dimmick et al., 2003, p.16).

The *telebehavioural* program focused on crisis management. The goal was to reduce the travel time and cost of the psychiatric hospital’s existing Mobile Crisis Team (MCT) and to decrease the time a patient waited to be assessed. Prior to the telehealth program, patients would wait approximately 1½ hours in the county hospital’s emergency department for the MCT which had been dispatched from the psychiatric hospital about 60 miles away. The MCT would then transport the patient to the psychiatric hospital for assessment. The telehealth program allowed videoconferencing between the county hospital and the psychiatric hospital allowing treatment of less severe cases, and faster assessment and interim treatment of more severe cases. This reduced travel time of the MCT and expenses for patients and their families. The average time before a patient was assessed was reduced from 99 minutes to 12.7 minutes.

The telehealth *disease management* program included congestive heart failure (CHF) and diabetes. Communication systems for both programs were a combination of videoconferencing, normal telephone conversation, and remote monitoring between patients and registered nurses at the telemedicine centre as well as equipment which provided specialized readings appropriate to the patient population. Patient outcomes for the CHF disease management program were mixed; however, projected labour and equipment savings were estimated to be almost \$4 billion annually. The diabetes disease management program was very successful with patient outcomes improving in all measurable categories. “One of the keys to success for the disease management initiatives ... had been to provide support and education over time so that participants learned to manage their chronic health problems” (p.21). With health care providers ‘visiting’ weekly via teleconferences, participants had incremental education over time, thereby supporting lifestyle changes.

5.3.4 Health Systems Integration for Special Populations

The primary focus of this research project was health systems integration with the goal to highlight principles, processes and outcomes that are transferable across systems and populations. However, it was recognized that integration of services for special or vulnerable populations such as those with chronic disease, HIV/AIDS, or mental illness and children, youth, the elderly, and Aboriginal peoples may require special consideration in planning and implementation. The literature was searched for publications describing integration efforts relating to specific populations, all the while maintaining the focus on **system** level integration.

A limited number of articles were identified which focussed on health system integration for these special populations. These will be described in more detail with the purpose of highlighting aspects that are unique for a special population and have not been discussed in the general section of the report.

Chronic Diseases

Chronic conditions are defined as health problems that require ongoing management over a period of years or decades such as diabetes, heart disease, chronic kidney disease, asthma, chronic obstructive pulmonary disease, cancer, human immunodeficiency virus (HIV)/acquired immune deficiency syndrome (AIDS), depression and physical disabilities (Epping-Jordan, 2005). While biomedical etiologies of these conditions are distinct, they show similarities in terms of their complexity, comorbidities, risk for complications and psychosocial impact. They place high demands on the health care system, health care providers, patients and their families and require proactive and coordinated care (Epping-Jordan, 2005). Chronic conditions account for an increasing proportion of acute hospitalizations which are largely preventable with appropriate early intervention and ongoing management (Wellingham, Tracey, Rea, & Gribben, 2003). However, as noted by the U.K.'s King's Fund Consensus Statement, services for chronic disease management are fragmented, "The services that are provided in hospitals, primary care, and the community seem haphazard, fragmented and poorly tailored to patients' needs" (Williams & Craddock, 1999, p.586). Furthermore, "access to services is often uneven. In most areas, there are components of a service which are underdeveloped, under-resourced, and poorly organized. This limits the effectiveness of the service" (Williams & Craddock, 1999, p.586). While the consensus statement specifically referred to stroke services, it rings true for most of the services for patients with chronic diseases. Integration of services across sectors has received increasing attention, in particular linkage to primary care settings for preventative interventions for the ongoing management of chronic conditions (Wellingham et al., 2003).

Integration of preventive health services within community health centres (CHC) is critical as CHCs are the foundation of health care services for low income groups in the United States. For example, integrating preventive cardiovascular programs with other community health centre services provided women with better access to the continuum of services from prevention to screening along with referral and treatment. This particular preventive program (WISEWOMAN) was integrated both formally (health centres provided WISEWOMAN services) and informally (health centres referred patients to other WISEWOMAN projects). Several challenges to integration were encountered. These included competing demands for health centre resources; high demand for services exceeding capacity; limited ability to take on new programs; difficulties in hiring staff; lack of clinical and administrative structures to support the program; ability to pay for services required by women attending the clinic for other issues; and, difficulty and additional work required for data collection and reporting. For those health centres that did participate in the integration of the WISEWOMAN program the experience facilitated collaboration on other initiatives as well (Mays et al., 2004).

Models of Chronic Disease Management

Given the increasing number of persons affected by chronic conditions, the issue of improving health care for chronic conditions is of global importance. The World Health Organization (WHO) developed the Innovative Care for Chronic Conditions Framework in 2002 that outlines an integrated chronic disease management approach (Epping-Jordan, 2005). Its components include patient interactions with the health care team and the community, the health care organization (e.g. promote continuity and coordination, information systems, support self-management and prevention), the community (e.g. mobilize and coordinate resources, provide complementary services) and a positive policy environment (partnerships, integrated policies, consistent financing). It is a framework decision makers may use to improve system capacity for the management of chronic conditions.

A widely used model for integration of care for chronic disease management is the Chronic Care Model (CCM) developed by the MacColl Institute for Healthcare Innovation (2007). The model has been designed to address shortcomings of the current approaches such as rushed practitioners not following established practice guidelines, lack of care coordination, lack of active follow-up to ensure the best outcomes, and inadequate training of patients to manage their illnesses. The CCM identifies the essential elements of a health care system that encourage high-quality chronic disease care. The model's building blocks show similarity with the components proposed by WHO and relate to the community, the health system, self-management support, delivery system design, decision support and clinical information systems. Evidence-based change concepts under each element, in combination, foster a productive interaction between informed and engaged patients and a proactive and prepared team. The Model can be applied to a variety of chronic illnesses, health care settings and target populations. It has been widely applied and a series of evaluations have been conducted to test the effectiveness of the model. The summary report is available on the website (www.improvingchroniccare.org). The CCM model has been adapted by many groups which have retained the interaction between provider and patient as well as the community and health care system. Example models can be found on the CCM website.

A research group from New Zealand developed a chronic disease management model designed to help implement seamless care processes for targeted populations (Wellingham et al., 2003). The components of the model are described below:

- ❖ Culturally competent systems and provider skills that allow individuals to deal appropriately with culturally diverse populations
- ❖ Information system to facilitate information sharing and evidence-based decision making
- ❖ Selection of target groups including analysis of needs, benefits and health economics
- ❖ Clinical guidelines and education of patients and providers to ensure consistency of care processes
- ❖ Support from and linkages to secondary care to provide continuity and consistency across sectors
- ❖ Skills in behavioural change that focus on patient empowerment. This includes a care plan negotiated and residing with the patient
- ❖ Practice systems that encourage proactive care including tracking/monitoring and patient flow
- ❖ Evaluation, audit and feedback of general practice team performance, patient benefits and the net costs

Overall, this model is similar to the CCM approach as the eight components described by Wellingham and colleagues (2003) can be subsumed into the four building blocks of the CCM model, with the exception of cultural competence. Including cultural competence as a key element for chronic disease

management may be a valuable addition given the cultural diversity of the target populations (Wellingham et al., 2003).

All the models discussed above stress the importance of partnerships with patients and communities; a primary health care and population-based approach; and the need to be proactive. They all claim to be applicable to the care management of a range of chronic disease populations. Furthermore, the models show elements that have been highlighted as key principles for integrated health systems (Section 5.1.3), which would suggest that these principles extend their validity to special populations.

Processes of Health Services Integration for Chronic Disease Management

The remainder of the review will focus on principles and processes that are either unique and have not been discussed extensively in the general sections of the report (Sections 5.1.3 and 5.1.4, respectively), or that bear particular significance for the management of chronic disease populations.

One of the main concerns in chronic disease management is the lack of continuity of care across the provider systems. Many patients suffering from chronic conditions cycle between hospital, specialist care and community care. Studies document that this lack of continuity is most often experienced during transitions between sites of care, between providers or with major changes in patients' needs highlighting the importance of linkages and communication between the different providers involved (Naithani, Gulliford, & Morgan, 2006). Issues also arise around referrals between systems (appropriateness, timeliness, consistency, etc.), the variability (quality and quantity) of services provided, and patient compliance with treatment (Sales et al., 2005; Szirmai, Arnold, & Farsang, 2005; Williams et al., 1999). Some solutions have been put in place with good success in terms of consistency of referral practices and patient outcomes (Dalal & Evans, 2003; Donohoe et al., 2000; Logan & Proctor, 2003; Mosimaneotsile, Braun, & Tokishi, 2000; Sales et al., 2005; Williams et al., 1999):

- ❖ Chronic disease coordinators/liaisons to track patients' progress, identify potential rehabilitation recipients and arrange for appropriate referrals to community or specialty services
- ❖ Development of guidelines for referrals and collaborative care maps through interprofessional teams in conjunction with provider education
- ❖ Rapid response service for patients with acute episodes
- ❖ Maintenance centres that allow monitoring of patients with a high level of independence
- ❖ Integrated patient approach strategy including patient education and information materials, frequent follow-ups and regular home monitoring
- ❖ Triage systems with immediate access to advice close to the patient's home

A Plan–Do–Study–Act (PDSA) approach of quality improvement initiatives was used by some projects to facilitate integration and the implementation of appropriate strategies (Geatti & Pegoraro, 1999; Wellingham et al., 2003). In the study by Wellingham et al. (2003), the Plan stage consisted of establishing a model for disease management projects that were then carried out during the Do stage. The Study phase entailed an external evaluation of the implemented projects. Based on the evaluation findings, a new generic model for a single disease management process encompassing comorbidity was developed (Act phase). Geatti & Pegoraro (1999) applied the PDSA cycle to the creation of procedures and protocols. Nasmith et al. (2004) described the process of developing an integrated care model for Type 2 diabetes patients. The project started with a comprehensive needs assessment and inventory of existing resources. Elaboration and implementation of the model followed. The implementation strategies focused on the integration of services, patient education, efforts to change

physicians' practice, and community actions. An evaluative assessment concluded the implementation process.

Anderson & Parent (2004) describe six key activities they considered essential for the successful development of an integrated hospice palliative care system: 1) create community networks that use multiple points of access, customize care and ensure minimal standards; 2) establish a province-wide information system; 3) develop a dedicated body to mobilize/coordinate a community response; 4) use innovative collaborative models; 5) promote links between formal and informal caregivers; and 6) examine management models.

Two recent Canadian studies also outline their experiences with the development of integrated cancer networks (Roberge et al., 2004; Thompson & Martin, 2004). The Québec integrated service network (Roberge et al., 2004) includes the establishment of a regional centre of excellence, introduction of nurse navigators to hospital's outpatient clinics, and development of interprofessional teams as key strategies. The authors conclude that the introduction of an integrated network is a long process as it requires collaboration of multiple stakeholders across sectors. In Ontario, 12 different organizations came together to design and implement a new, integrated system within 14 months (Thompson & Martin, 2004). This could only be achieved through the careful planning and coordination of the steps taken, and the high level of commitment from executives at the different organizations as well as in government that allowed having the plans move to execution.

HIV/AIDS

Since the emergence of HIV/AIDS in the early 1980s, the focus of HIV/AIDS treatment has shifted from viral control to infectious diseases and more recently to chronic disease management in the community (Rier & Indyk, 2006). Due to the efficacy of anti-HIV combination therapies, many infected persons enjoy longer life expectancies and a better quality of life (Kalichman, 2004). However, strict adherence to a treatment regimen is required. There is also recognition that many HIV-infected persons have co-morbid psychiatric conditions including substance abuse which may complicate the course of illness as well as the treatment approach (Dodds et al., 2004). As a result, client needs shift between prevention, basic social services, and complex medical and mental health treatment. Managing persons with HIV/AIDS, or those who are at high risk, requires better integration of services such as HIV/AIDS prevention, management and treatment; mental illness and substance abuse; sexually transmitted diseases; family planning and maternal health; and primary care services.

Several U.S. initiatives at the state level described the move from a parallel care approach to integration of service components or programs. Michigan took a regional approach to integrating HIV care and prevention (AIDS Alert, 2002). Prior to integration, prevention services and care services were the responsibilities of different groups. Challenges to integration emerged from different definitions, fears over changes to funds allocation, and lack of trust. The two groups developed a collaborative, integrated model and began holding joint events and education programs. Eventually, the two groups were completely merged. A similar process occurred in Nebraska (AIDS Alert, 2002), which consisted of six regional groups responsible for care and prevention. Due to the low incidence of HIV/AIDS in Nebraska and the large geographic size, merging regional committees made sense and provided efficiencies in terms of resource sharing, communication and coordination of services.

The HIV/AIDS Treatment Adherence, Health Outcomes and Cost Study was the first federally funded multi-agency investigation of the cost-effectiveness of integrated intervention for HIV primary care, mental health and substance abuse (Kalichman, 2004). It was anticipated that the study would lead to a best practice model for triply diagnosed clients that could be applied across a range of local services

and conditions. This is an excellent study and extremely well designed. Although data analyses are still preliminary, it appears that integrated interventions with particular features, such as comprehensive services and strong emphasis on case management and internal and external coordination, are more likely to engage and retain clients which in turn results in improved health outcomes (e.g., physical and mental health functioning, addiction severity). Details of the study are provided in Box 5.13.

Box 5.13 CASE STUDY

HIV/AIDS TREATMENT ADHERENCE, HEALTH OUTCOMES AND COST STUDY – UNITED STATES

- 8 funded sites, using geographically diverse interventions strategies; effectiveness of the intervention strategies are compared to care-as-usual; participants were randomly assigned to intervention or control.
- Standardized protocols across sites for interventions and data collection; each site adopted one or both of the following strategies for integration: 1) Co-location of mental health, substance abuse services and HIV/AIDS care; 2) Interagency coordination of services across sectors.
- All sites aimed to increase coordination of services; variability existed in terms of the strategies e.g. how capacity was increased or the intervention designed depending on client and site characteristics and initial treatment capacity of sites.
- A consumer advisory board provided feedback into study design, policy considerations, quality assurance procedures, etc. Involved from the beginning in a continuous active dialogue.
- High quality (validated) diagnostic and outcome measurement tools are used to capture outcomes and cost-effectiveness.
- Outcomes measured mental health, physical health, psycho-social functioning, quality of life, adherence to medication and care, utilization of services and cost-effectiveness, and engagement in high-risk behaviours.
(Kalichman, 2004)

In another study conducted in the U.S., Dodds and colleagues (2004) specifically addressed needs of women with AIDS/HIV. The Whole Life project integrated at a single site comprehensive mental health services with primary HIV medical care, obstetrical and gynaecological care, case management and social services. The integration model blended elements from models typically used for the delivery of mental health service in primary care settings. Interventions were designed to change organizational structures and behaviours with a phased approach to building collaborative processes. Objectives and implementation strategies targeted both system and service levels. **System level strategies** focused on: 1) linkages between organizations; 2) shared care philosophy; and 3) role enhancement. **Service level strategies** entailed: 1) a specialty mental health liaison team; 2) enhancement of supervision, clinical consultation and training; 3) mental health screening; and 4) documentation and patient charting. Several outcomes were reported:

- ❖ Enhanced mental health-related knowledge and skills by primary care providers
- ❖ Early identification of patient mental health problems

- ❖ Comprehensive and multidisciplinary evaluation and case planning
- ❖ Co-located primary care and mental health services with linkages to more intensive mental health care
- ❖ Patient co-management by primary care and mental health providers
- ❖ Improved primary care case management

It is anticipated that this integration initiative will lead to improved patient outcomes such as reduced distress, improved mental functioning, enhanced health-related behaviours, reduced HIV disease progression and perinatal transmission. In addition, the project was also able to provide valuable data on the extent of the need for mental health services, the complexity of co-morbid mental health problems and its relevance for primary care caseload management, and the importance of a continuum of mental health services in primary care. The authors also provided some valuable lessons, which are discussed in the health systems integration processes section (5.1.4) of this report.

Massachusetts embarked on a state wide initiative to integrate HIV, hepatitis, and addiction services (Hoffman, Castro-Donlan, Johnson, & Church, 2004). Originally funded through separate program funds, efforts were made to integrate services and coordinate funding. The realization that many of these programs serve the same population due to the high rate of co-occurring conditions prompted integration. A project team conducted consumer needs assessments, developed a strategic plan, functional guidelines and policies, and conducted a process evaluation. Project successes included joint education and training, coordination and access to daily consensus information, joint procurement processes and plans for joint program funding. Also, high level executive support throughout the project ensured ongoing commitment to sustaining the pilot.

The Infectious Diseases Society of America (AIDS Alert, 2003) reported the intent to release guidelines for integrating sexually transmitted diseases care (STD) and HIV care. It was argued that many of these clients show similar sexual behaviours as well as several co-infections. STD infected persons also have an increased risk to get infected with HIV. Integrating these services would potentially reduce new HIV infections. Challenges to integration include separate funding streams and fears of merging the departments. The National Alliance of State and Territorial AIDS Directors and the National Coalition of STD Directors have put forward several recommendations for better integration between the two groups (AIDS Alert, 2003) such as:

- ❖ Integrated surveillance systems, data collection, software, and analytic approaches for tracking and evaluation,
- ❖ Co-education of STD and HIV/AIDS health care providers to ensure both HIV/AIDS and STD patients receive education, testing, and support for both diseases, and
- ❖ Integrated STD, HIV, and health sexuality curricula in schools.

Mental Health

“... primary care is now sufficiently mature as a discipline to commission, develop and deliver integrated patient-focused mental health services, grounded in the culture and built on the strengths of primary care.”

(Lester, Glasby, & Tylee, 2004, p.285)

While there were many documents reporting on the integration of mental health services with other sectors of health care, mainly primary care, there is little that is unique to this population. Many of the models and principles reported in the mental health literature are consistent with those discussed in detail in earlier sections (5.1.2 and 5.1.3) of the report. However, the literature provides several good

studies relating evidence for the benefits of integrating mental health services with primary care. It can be argued that these same benefits may be realized with the integration of services through the full continuum of care.

The **models** identified in the mental health care integration literature were, for the most part, comparable to those which are discussed in Section 5.1.2. Several authors discussed models with co-location of primary care and mental health services (Aitken & Curtis, 2004; Bird, Lambert, Hartley, Beeson, & Coburn, 1998; Farrar, Kates, Crustolo, & Nikolaou, 2001; McDevitt, Braun, Noyes, Snyder, & Marion, 2005; University of Texas, 2006) and shared care (Fleury, 2006; Judd et al., 2004); health care professionals such as primary care physicians or nurses who are also trained to diagnose and treat mental illness (Bird et al., 1998; McDevitt et al., 2005); primary care physicians who refer patients to off-site specialty services (Bird et al., 1998), which is similar to the current Canadian health care system; or where practices collaborate (McDevitt et al., 2005; University of Texas, 2006).

Rosenheck, Resnick, & Morrissey (2003) reported on homeless clients with mental illness. Their findings suggested “that both increasing levels of communication, cooperation, and trust among providers, and delivering services in an integrated team, can affect [in a positive way] client access to services” (p.86).

The Vancouver Coastal Health Authority developed an initiative to deliver mental health services to various cultural groups. The goals of the health authority include the provision of a universal standard for mental health care services for cross cultural groups. They propose “a system wide approach to multicultural mental health care” (Ganesan & Janze, 2005, p.480). This includes culturally responsible diagnostic, treatment and rehabilitation activities; matching client and providers in culture and language; inclusion of partners and families in care planning; and, working closely with other community agencies (e.g., school, settlement agency) involved with the client. Multicultural mental health services provide education for staff in the appreciation and understanding of different cultures along with their own cultural values and beliefs. Administrators also work with educational institutions to influence curriculum change to incorporate cultural education. Public education on mental health and services available is also an important component of the services provided. Multicultural mental health services in this health region include nine different programs or activities that are all administered through a single structure. Representation from the various cultural groups is facilitated at all levels; planning, management and provider levels (Ganesan & Janze, 2005, p.480).

A unique area of the literature relates to individuals with co-morbid conditions which historically have been disadvantaged by health care systems that have been designed to treat one disorder at a time. Models of integration for this population differ from those developed specifically for mental health or the general population since having more than one chronic illness or condition is the overarching premise. Minkoff and colleagues (Minkoff, 2001, Minkoff & Cline, 2004) developed the Comprehensive, Continuous, Integrated System of Care (CCISC) model which is relevant for individuals with mental illness and substance abuse but can be applied to integrating services for any co-morbidity populations. There are four basic features to the CCISC model (Minkoff et al., 2004):

- ❖ **System-level change** – The model is intended to be implemented throughout the entire system. “Implementation of the model integrates the use of strategically planned system change technology (e.g. continuous quality improvement) with clinical practice technology at the system level, program level, clinical practice level, and clinician competency level to create comprehensive system change” (p.729).
- ❖ **Efficient use of existing resources** – The model advocates using resources already available instead of requiring huge reallocations in order to proceed. Acquiring new resources may be

necessary at some point in the process, but organizations should start with what they already have.

- ❖ **Incorporation of best practices** - An important aspect of this model is the use of best practice treatment strategies. If a client has co-morbidities, then best practice treatments for each diagnosis should be combined to optimally suit the client.
- ❖ **Integrated treatment philosophy** - Individualized treatment should be adopted, creating a treatment philosophy that makes sense to all providers involved (i.e., different languages for different professional groups).

Minkoff et al. (2004) described the implementation of the CCISC model in Manitoba through the Co-occurring Disorders Initiative (CODI), a joint initiative between the Winnipeg Regional Health Authority, Addictions Foundation of Manitoba, and Manitoba Health. The authors provided guidance and training to the project leadership team throughout the first year, resulting in improvement of system functioning on all levels. Following the first year success, the model was to be implemented across the province.

Several **principles** of successful integration in mental health care are identified in the literature that are, for the most part, similar to those discussed in the main report (Section 5.1.3). These include the importance of supportive leadership (Fleury, Mercier, & Denis, 2002b) and a champion for change (Lester et al., 2004); interprofessional education and teamwork (Fleury, 2005; Fleury et al., 2002b; Lester et al., 2004; Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005; University of Texas, 2006); appropriate staffing resources (Druss, Rohrbaugh, Levinson, & Rosenheck, 2001); organizational restructuring (Aitken et al., 2004; Bird et al., 1998; Druss et al., 2001; Reiss-Brennan, Briot, Cannon, & James, 2006; University of Texas, 2006); organizational culture (Aitken et al., 2004; Bird et al., 1998; Fleury & Mercier, 2002a; University of Texas, 2006); and governance (Fleury et al., 2002a).

Aitken et al. (2004), reporting on their systematic literature review, found several positive **outcomes** of integrated mental health care. Overall, it was reported that “integrative care produced improved clinical outcomes, increased client and provider satisfaction, and improved cost effectiveness” (p.323). Durbin et al. (2001) report that improved system functioning is achieved through “increased accountability, responsiveness to change, enhanced ability to monitor the system, [and] fuller continuum of services” (p.6). System-level outcomes included reduced emergency department visits, decreased in-patient psychiatric admissions, lower hospital costs but higher community costs, and an improved organizational culture between physicians and mental health care providers (Aitken et al., 2004; Boardman, 2006; Mitton, Adair, McDougall, & Marcourx, 2005; Perkins, Roberts, Sanders, & Rosen, 2006). Provider-level outcomes included increased awareness and attention to patients’ physical health needs, improved working relationships, and greater collaboration between professionals (Eagar et al., 2005; Farrar et al., 2001; Perkins et al., 2006). Client outcomes included increased access to continuity of care; increased preventive care and fewer service interruptions or drop-outs; improved mental health and lower severity of symptoms; improved overall health and quality of life; and greater service satisfaction (Adair et al., 2005; Aitken et al., 2004; Boardman, 2006; Druss et al., 2001; Durbin et al., 2001; Eagar et al., 2005; Perkins et al., 2006).

Aboriginal Populations

The documents regarding integration of health services for Aboriginal populations vary in focus and location. Topics include primary care, holistic health care for women, and diabetes care. Studies have been undertaken in the U.S., Canada and Australia.

Health care services for Aboriginal people should be community centric and controlled by the population they serve (Eby, 1998; Simmons, 2003). Facilitation of self-governance in all settings is critical in ensuring appropriate and acceptable integrated health care systems for this population (Eby, 1998). Currently health care services for Canadian Aboriginal people are provided by various organizations across multiple jurisdictions (e.g., federal government, provincial and territorial governments and Aboriginal organizations). Thus jurisdictional issues in the delivery of health care services are common (- - -, 2005), impacting access, integration of health care, and health outcomes. The Blueprint on Aboriginal Health (2005) recommends a closer partnership between organizations clarifying roles and responsibilities to attend to jurisdictional issues in health services delivery while addressing the population's needs.

Programs and services should recognize the unique health needs and constitutional rights of this population and strive to meet them (- - -, 2005; Eby, 1998). The identification of the determinants of health should be included in the assessment and delivery of health care services with a focus on prevention and health promotion utilizing a holistic approach (- - -, 2005). Aboriginal views on health and wellbeing should be incorporated along with Aboriginal ways of knowing and being (e.g., storytelling, inclusion of meals) (- - -, 2005; Napoli, 2002). Aboriginal cultural traditions must be integrated into health care services as well as the capacity to promote Aboriginal identity. The inclusion of traditional healers (- - -, 2005; Eby, 1998) and Aboriginal health workers are essential in providing culturally safe health care services. In fact, positive health outcomes were noted and attributed in large part to the use of Aboriginal health workers in a diabetes program in Australia (Simmons, 2003).

Children and Youth

Health care providers should be "... dedicated to wrapping services around children and families, and not children and families around services"

(Clode, 2003, p.5)

There are several **reasons why it is especially important to coordinate services** for children and youth. Children and youth are dependent upon their parents and other caregivers to "recognize and respond to their health needs, organize their health care, authorize treatment, and [ensure they] comply with recommended treatment regimens" (Halfon, Inkelas, & Hochstein, 2000, p.457) making them more vulnerable than adults. Early experiences, exposures, and stressors have lifelong effects on health. Alleviating risk factors, such as abuse, neglect, illness, or poverty, as early as possible may be beneficial for future well-being. This requires timely intervention from all appropriate health care professionals, the involvement of parents and caregivers, and an efficient delivery of services.

The majority of documents discussing integrated programs for children and youth described strategies and models similar to those discussed in the main body of the report. Topics included care coordination, cooperation and collaboration for children with special needs (American Academy of Pediatrics, 2005), disabilities (King et al., 2006), or mental health issues (Ministry of Health, 1997); use of complementary and alternative therapies by teenagers (Francoeur, Patterson, Arthur, Noesgaard, & Swinton, 2006); delivery of sexual and reproductive services (Brindis, Loo, Adler, Bolan, & Wasserheit, 2005) including HIV care for homeless and at-risk youth (Woods et al., 1998); and use of electronic resources (Rempel, 2001). Successfully integrated health services for children and youth should be **family-centred** (American Academy of Pediatrics, 2005; Park & Turnbull, 2003). In the United States, the Medical Home is an initiative which is considered the "optimal setting for family-centered care coordination" (American Academy of Pediatrics, 2005, p.1238) at the core of which is the primary care physician who manages and facilitates "all aspects of pediatric care"

(American Academy of Pediatrics, 2004, p.1545). The pediatrician acts as the gatekeeper to all medical and non-medical services required to optimize the child's needs (Utah Collaborative Medical Home Project, 2003).

A second initiative discussed in the literature is **school based health centres** which provide a full range of services, both medical and non-medical, to children and youth (McMahon, Ward, Pruett, Davidson, & Griffith, 2000; Weist, Goldstein, Morris, & Bryant, 2003). The underpinning of this initiative is the co-location of services (for full discussion of the benefits of this principle see Section 5.1.3). The two articles identified by this review discussed this initiative in relation to children living in high-risk environments (McMahon et al, 2000) or those who require, but are unlikely to have, access to mental health services (Weist et al, 2003).

One particular initiative focused on the integration of pediatric psychology with primary care for children infected with HIV (Armstrong et al., 1999). Due to the impact of HIV on growth and development of the central nervous system, continuous monitoring and evaluation of neurocognitive functioning is essential. The initiative describes how comprehensive pediatric psychological services were integrated within the context of a global outpatient development service program. Barriers to integration included primary health care providers' unfamiliarity with the nature and benefits of psychological services for children with AIDS and their families; limitations of space and funding; and the challenges of serving a culturally diverse population. Professional relationships among multiple disciplines needed to be established and ongoing education provided. Through the screening and evaluation approach, children with impaired global functioning were identified early and could be successfully referred to appropriate services. Integration has facilitated assessment and intervention services in this population.

Grimes, Kapunan, & Mullin (2006) examined the effect of type of service delivery on outcomes for children and youth with mental illness. All the youth involved in this study were from an urban area, faced significant barriers to health care, and were at risk for being placed out-of home. Some of the youth were offered care through the Mental Health Services Program for Youth (MHSPY), a "highly coordinated, intentionally integrated 'system of care' "(p.311). The outcomes for these youth were compared to those who received care through private insurance or Medicaid over a four year period. The authors found that, overall, medical expenses for the MHSPY youth were significantly lower. These youth also received more ambulatory care than the Medicaid or privately insured youth. Although the authors agree that further studies are needed, it is evident that the variables of system delivery, "such as the degree of integration, coordination, and home-based availability of care" (p.322), can affect the pattern of service use.

The **benefits** of integrated services for children and youth are reported by Naar-King, Siegel, Smyth, & Simpson (2003). This study was a comparison between integrated clinics where psychological services were part of standard care (80 families) and traditional clinics where psychological services were available by consultation (36 families). The advantages of the integrated model were earlier detection and intervention; easy access for children, youth and parents; and increased acceptability and decreased stigma of receiving mental health services. Outcomes reported indicate that:

- ❖ Children from integrated clinics were diagnosed at a younger age which was attributed to the preponderance of diseases diagnosed at birth,
- ❖ Parents of children attending integrated clinics reported fewer behavioral symptoms,
- ❖ Children who were diagnosed at an older age and received services from integrated clinics had more adaptive skills than those in traditional clinics, and

- ❖ Children in traditional clinics were more likely to have a problem with externalizing behavior and school maladjustment than those in integrated clinics.

Box 5.14 CASE STUDY

SOUTHERN ALBERTA CHILD AND YOUTH HEALTH NETWORK (SACYHN) – ALBERTA, CANADA

The **Southern Alberta Child and Youth Health Network (SACYHN)** is a voluntary collaboration comprised of government ministries, regional health authorities, inter-sectoral service agencies (i.e. health, education, justice, and children's services), and families (both parents and children/youth involved in the Steering Committee, Working groups, and Advisory Councils). SACYHN's guiding principles include supporting programs, services and information resources that are child focused and family centred; located as close to home as possible; inter-sectoral; and concentrate on determinants of health. Initiatives by the network consist of outreach services; a resource centre (electronic and on-site at Alberta Children's Hospital); Whole School Mental Health Promotion Project; and Regional Integrated Teams which evaluate cases of children with complex needs and develop individualized, integrated health plans (Southern Alberta Child & Youth Health Network, 2005). From inception, SACYHN incorporated the development and implementation of a framework and evaluation process to assess the network's effectiveness including a document review; member survey; semi-structured interviews with key stakeholders; Child and Youth Advisory Council focus group; SACYHN Director input; and investigator analysis. Overall, the findings indicate positive outcomes with regards to the implementation of the network (Dolinski, 2005; Popp et al., 2005), and the identification and creation of opportunities for positive change in service delivery (Dolinski, 2005).

Elderly

"With respect to services users, integrated care is especially pertinent to older people, and to those with handicaps and chronic illnesses, among them people with dementia. These groups have multiple and diverse care needs, for longer periods and changing over time, and therefore need flexible and co-ordinated responses."

(Kümpers, 2005, p.18)

Countries around the world are experiencing the impact of an aging population (Kodner, 2006; Nies, 2006). As stated by Kodner (2006), "irrespective of the cross-national differences encountered in policy, funding, infrastructure and provision, countries confront similar long-term care challenges, namely fragmented services, disjointed care, less-than-optimal quality, system inefficiency and difficult-to-control costs" (p.384). The implementation of integrated health care for the elderly is hindered by the complexities and fragmentations of systems; namely organizational, funding and policy systems, health systems and social care systems (Kümpers, 2005; Nies, 2006). Aging is often associated with multiple complex, chronic problems that make the delivery of services difficult. Placing elderly individuals in the hospital may cause their health to decline, beginning a downward spiral of their wellbeing; therefore, keeping them in the community longer is ultimately better (McGuire, 2000).

Three **models** were found in this review; it's likely that many other approaches exist: Program for the All-inclusive Care of the Elderly (PACE), Comprehensive Homes Option of Integrated Care for the Elderly (CHOICE), and Program of Research to Integrate Services for the Maintenance of Autonomy (PRISMA).

The PACE program, begun in the 1970s, is a fully integrated system of long-term care structured around an adult day health centre and is being modeled throughout the U.S. The goal of the PACE program is to keep the elderly (over age 55) in the community as long as possible, postponing institutionalization through integrated, community-based, capitated care. Typically, elderly individuals attend the centre several times a week to receive interdisciplinary care. For those unable to attend the centre, home care services are provided. The “centre operates as a geriatric outpatient clinic with on-site primary and specialty medical care, rehabilitation, ongoing clinical oversight and care management, and social and respite services provided by a multidisciplinary team” (Kodner, 2002, p.309). Some of the services that a participant can receive at the centre include nutrition counselling, recreation therapy, primary care, nursing care, personal care, meals, transportation and chore services (Kodner, 2006; Shannon & Van Reenen, 1998). The typical PACE participant “is an 80-year old woman who lives alone, suffers from several chronic physical problems, and has some degree of cognitive impairment” (Shannon & Van Reenen, 1998, p.43).

A local example of integrated care for the elderly is the CHOICE program in Edmonton, Alberta. A partial replication of the American PACE program, the CHOICE program combines medical, rehabilitative, social and supportive services to older people who are eligible for admission to a continuing care facility and are frequent users of acute care. An interdisciplinary team, using a case management approach, provides 24 hour systematic and coordinated care.

Box 5.15 CASE STUDY

PROGRAM OF RESEARCH TO INTEGRATE SERVICES FOR THE MAINTENANCE OF AUTONOMY (PRISMA) – QUEBEC, CANADA

The Program of Research to Integrate Services for the Maintenance of Autonomy (PRISMA), a Quebec model, focused on delivery of health care services to older people in a given area (Hébert & Veil, 2004). All the public, private, and voluntary health and social service organizations agreed to participate under an umbrella organization while maintaining their own structures. The key to successful implementation of this model is coordination amongst decision makers and managers. At the strategic level, the governing board was comprised of the heads of the various health and social service organizations and community agencies. This group of decision makers agreed on the policies and orientations of the umbrella organization and the allocation of resources. At the tactical level, the service coordination committee, consisting of managers from the various organizations, monitored the system and facilitated its implementation. Finally, at the operational or clinical level, a multidisciplinary team of health care providers evaluated clients' needs and delivered the required care. A single entry point, a case manager, an individualized service plan, a single assessment instrument, and a computerized clinical chart facilitated the implementation and delivery of this health care model.

The **principles** of successful integration for the elderly echo those already mentioned in this review. Principles such as a case management approach, multidisciplinary assessment and teams, joint care planning, single point of entry, shared financial mechanisms, appropriate information and communication technologies, involvement of families and/or informal care givers, and empowerment of the service user themselves (actively involving them in decision making) were identified in the literature (Bernabei et al., 1998; Johri, Beland, & Bergman, 2003; Kodner, 2002, 2006; Landi et al., 1999; Leung, Liu, Chow, & Chi, 2004; Nies, 2006).

It is evident that the **outcomes** of integrated health care delivery for the elderly are very positive. Integrated models of health care appear to be effective at keeping the elderly in the community and out of the hospital or institutional care, which helps maintain their quality of life. As Kodner (2002) stated, “Integrated systems of care should receive wider and more serious attention as a possible means of reforming care of the frail elderly” (p.311). Outcomes reported in the literature include:

System level:

- ❖ Decrease in hospital admission or days in hospital (Johri et al., 2003; Kodner, 2002, 2006; Landi et al., 1999; Shannon et al., 1998),
- ❖ Reduced institutionalization (Hébert & Tourigny, 2003; Johri et al., 2003; Kodner, 2002, 2006; Shannon et al., 1998),
- ❖ Increased use of home and community based services (Kodner, 2002, 2006; Shannon et al., 1998),
- ❖ Decreased costs (Johri et al., 2003; Kodner, 2002, 2006; Landi et al., 1999; Leung et al., 2004; Shannon et al., 1998),
- ❖ Reduction in inpatient separations (Kodner, 2002; Paul & Weatherill, 1999),
- ❖ Reduction in ambulatory visits (Kodner, 2002; Paul et al., 1999),
- ❖ Reduction in number of claims for ambulance services or pharmaceuticals (Kodner, 2002; Paul et al., 1999),

Provider level:

- ❖ Quicker response time by integrated team (Jones, 2004),

Patient level:

- ❖ Positive effect on care giver burden (Hébert et al., 2003; Kodner, 2002, 2006; Paul et al., 1999),
- ❖ Improved quality of life (Brown, Tucker, & Domokos, 2003; Johri et al., 2003; Kodner, 2002; Paul et al., 1999),
- ❖ Higher incidence of self-referral or referral by a family member (Jones, 2004) or use of services (Bartels et al., 2004), and
- ❖ Positive client health status and level of satisfaction with service (Johri et al., 2003; Kodner, 2002, 2006; Leung et al., 2004; Paul et al., 1999; Shannon et al., 1998)

Based on our review of the literature on integration for special populations, we conclude that the principles, processes and outcomes discussed in the general section of the report are likely to have general applicability across jurisdictions and populations. Models, principles and processes particularly relevant to special populations have been highlighted in this section. Outcomes reported indicate the feasibility and benefit of integrating services, especially for groups who frequently access services along the continuum of care (e.g. elderly, chronic disease) or who typically present with co-morbidities (e.g. elderly, HIV/AIDS, mental health). The similarity between the findings reported in

the special populations' literature and the general health systems integration literature provides further validation for the general concepts identified.

Box 5.16 – SPECIAL POPULATIONS KEY POINTS

- Findings are consistent with general population information reported in Section 5.1.
- The Plan-Do-Study-Act approach, discussed in relation to chronic disease management, is a strategy appropriate for health systems integration.
- Integrating special population (e.g. mentally ill, elderly) needs and primary care services resulted in positive outcomes at the system, provider, and patient levels.
- Models developed for special population patients stress the importance of partnerships with patients and communities; a primary health care and population-based approach; and the need to be proactive.
- Early detection of physical or mental problems during childhood or as a youth positively impacts an individual's well-being as an adult. Integration of services to this population improves the likelihood that children or youth will receive care when and where they need it.
- Aging is often associated with multiple complex, chronic problems that make the delivery of services difficult and puts this population at risk. Integrating services along the continuum of care is especially beneficial for this group resulting in positive outcomes at all levels.
- Outcomes reported in the special populations literature make a positive case for the integration of services for these groups. Given the models, principles, and processes discussed for these groups are similar to those reported in the main findings of the report it validates their transferability across populations and jurisdictions.

6.0 SUMMARY AND RECOMMENDATIONS

6.1 Synthesis of Key Points

Recent studies on health care reform have reinforced the view that Canada's current health care system is not sustainable in its present form (Commission on the Future of Health Care in Canada, 2002; Premier's Advisory Council on Health, 2001; The Standing Senate Committee on Social Affairs Science and Technology, 2002). Integrated health systems are considered a solution to that challenge. However, discussions with stakeholders in the Calgary Health Region identified several issues regarding planning and implementation of integrated health systems in the health region. This systematic literature review was undertaken to provide guidance to those decision makers and others who require this information.

It is clear from the literature that there is no universal definition or concept of integration. The word *integration* has been taken to mean the integration of system level organizations such as hospitals but has also been interpreted as the integration at the service delivery level, such as the integration of cancer care services. Furthermore, many different levels of integration have been described in the literature that often have to be managed simultaneously for a fully integrated system. For practical purposes this would suggest that there is a need to clearly identify how integration is defined and what is being integrated to what end. For the purpose of this review we have adopted the definition used by the Canadian Council on Health Services Accreditation (2006): *"services, providers, and organizations from across the continuum working together so that services are complementary, coordinated, in a seamless unified system, with continuity for the client."* This definition implies that integrated health systems cover all levels of care i.e., primary, secondary, tertiary, restorative/rehabilitative, and long term care (Leatt et al., 2000; Shortell et al., 1993b, 1994).

There were multiple models from both the health care and business literature but no definitive model or framework that has consistently been used. System level models focus on change management and key system dimensions. Program level models focus on case management, co-location, home care, population health management, and primary care. Progressive or sequential models were most often cited and these models propose several steps to achieve increasing levels of integration which are adaptable to both system level and program level integration. An important learning is that there is no one model which is appropriate for all organizations and situations. The delivery of health care is too complex for a one-size-fits-all solution; therefore, it is important for decision makers to understand the principles and processes of successfully integrated health care systems in order to choose an optimal set of complementary models according to patient needs across the system.

Despite the lack of a definitive model, decision makers can use the following relatively universal principles, based on literature from a diverse group of health care and business organizations and a range of jurisdictions, as guides in the development of appropriate strategies for planning and implementing successfully integrated health care systems:

1. Comprehensive service offered across the continuum of care,
2. Patient focus,
3. Geographic coverage and rostering,
4. Standardized care delivery through interprofessional teams,
5. Performance management,
6. Appropriate information technology and communication mechanisms,

7. Organizational culture with strong leadership and shared vision,
8. Physician integration,
9. Strong governance structure, and
10. Sound financial management.

In order to successfully integrate health care systems, equal attention must be paid to the processes. Integration takes time and careful planning. Processes need to target all organization levels from administration, financial, organizational, clinical and service delivery. The level, type, and combination of strategies used should be contextual and consider patient needs. The importance of a shared vision and a strong organizational culture that embraces integration demands that staff is being supported in their effort to adapt to changes through education or incentives. Strong management strategies further increase the likelihood of successful integration. Careful review of exemplary cases in the literature suggest that organizations that have successfully integrated health systems have all focused on a combination of, if not all of, the 10 guiding principles outlined above. Furthermore, they have committed resources to the development of processes and strategies that support implementation of these guiding principles. While much of that information came from integration initiatives outside of Canada, these guiding principles are applicable to the Canadian context and in particular to health regions across the country.

Given the increasing demand for accountability, measuring the impact of integration on system, provider and patient levels is essential. It is apparent that several measures have been used throughout the years, and some outcomes have been reported at the system and provider levels. However, there is a lack of standardized, validated tools that have been systematically used to evaluate integration outcomes. Similarly, there is a scarcity of indicators that can be used to monitor level of integration over time. Consequently, there is a paucity of strong empirical evidence for the impact of integration and as a result, the reported impacts are mixed. Nevertheless, some of the positive system level outcomes reported include: reduction in non-emergency cases using the emergency room; reduction in the average length of stay in hospital; better financial performance; and a flatter organizational structure (fewer management tiers). Some of the positive program/provider level outcomes include: increased job satisfaction; increased cooperation with other agencies; and a blending of professional cultures into one shared culture. More research and evaluation is needed to demonstrate potential benefits across systems and jurisdictions.

6.2 Strengths and Limitations of the Review

The strengths and limitation of this review include the following:

Strengths:

- ❖ A strong multidisciplinary knowledge base was brought to the project by the team, which increased validity of the synthesis.
- ❖ The research questions were informed by intended users of this review which should make it more practice relevant and applicable to planners and decision makers.
- ❖ A thorough methodological approach was used for the review. Each article was reviewed by more than one person thus validating the relevancy rating and inclusion criteria. The summaries of each article were also written and validated by two separate readers.
- ❖ The articles which were frequently referenced in the original search documents were reviewed for inclusion thus providing a historical perspective. A second search of the health sciences literature to January 2007 was undertaken to include recent research. Articles identified by the researchers,

aside from those retrieved during the formal systematic literature search, were also reviewed and, if relevant, included in the write-up.

- ❖ This review is unique. There is no known such review available that brings this body of literature together in one place.

Limitations:

- ❖ The peer-reviewed literature search was from health sciences and business databases only. While we are confident that these two databases capture the majority of the literature on integration, there may be relevant peer-reviewed literature in other sectors.
- ❖ Date parameters were the past 5 years (2001-2006) for the business literature and the past 9 years (1998 - January 2007) for the health sciences literature. While this ensured more current articles, historical information was limited to documents frequently referenced in the newer articles and identified for inclusion by the research team.
- ❖ The focus of this review was on integration at the system level, excluding an important aspect of integration relating to the client level.

6.3 Opportunities for Future Research

During the review process it became clear that despite the staggering number of articles discussing integration, well-designed empirical studies are rare and significant gaps in the research literature exist. There were few strong research papers reporting integration outcomes; just 40% and 48% (health sciences and business, respectively) were empirical studies. The gap in the literature was especially apparent with regards to the benefits and financial implications of health systems integration appropriate for the Canadian health care system. Many documents were authored by a group of researchers who have been dominant in the area of integration and who discuss the topic within the context of the United States health system. This is particularly true of the physician integration section; therefore, the findings may lack the diversity needed by Canadian decision makers. Overall, the Canadian content formed a rather small percentage of papers found for this review, although integrating the health care system is a recognized objective in Canada. There appears to be a lack of empirical research dealing with the measurement or evaluation of integration.

In order to move integration successfully forward, decision makers must encourage and support more research in the following areas:

- ❖ A set of clear standards for monitoring success and failure of integrated health systems are needed. However, difficulties exist in detecting and measuring changes in health outcomes which can be slow in developing over time.
- ❖ Along with the standards, appropriate tested and validated measurement tools are required including cost-effective measures.
- ❖ Comprehensive case studies documenting processes, principles and challenges of the planning and implementation of integrated health systems as well as the roles of the different stakeholder groups.
- ❖ Comparative analyses of different approaches to integration in terms of ease of implementation and level of success.

The need for more research underlines the importance of resources for research and evaluation and the continued need for local and national funding agencies to put health system integration research as one of the research priorities.

6.4 *Recommendations for Health Systems*

It is anticipated that the findings in this review will have relevance for policy/decision makers both locally and nationally. In addition to the learnings discussed above (Section 6.1 Synthesis of Key Points), the following recommendations have been produced in order to facilitate decision makers' access and understanding of the evidence-based information on health systems integration and how it might be applied to the local situation. While significant gaps have been identified and "how to" guidelines are unattainable at this point, the review has highlighted areas that require attention and suggested processes for successful integration. It is hoped that this guide will be of value to decision makers and enable them to make evidence-informed policy decisions, ultimately increasing application of the findings of this review. In addition, health systems planners, administrators and decision makers are encouraged to help increase the evidence-base on integration by systematically and enthusiastically demanding and supporting research and evaluation within their area of service.

Based on both the health sciences and business literature from a diverse group of organizations and jurisdictions examined during this review, the following guidelines are offered to decision makers and stakeholders regarding the integration of health care systems or services.

1. Change takes time, commitment, and sufficient resources as well as dedicated strong leadership.
2. Participation of all stakeholders is essential. A clearly defined, common goal for integration must be established early in the process. Implementing change management strategies will facilitate integration.
3. Having a commonly agreed-upon conceptual framework and definitions for mutual understanding by all parties from the beginning is recommended.
4. Primary care and family physicians are often considered a major component of integration in Canada. Strategies to actively engage family physicians should focus on building relationships.
5. Consensus on the steps necessary to achieve integration increases the likelihood of success.
6. Identifying the principles and processes most appropriate for the systems or services to be integrated assists with the development of a suitable model.
7. Evaluation and measurement of the impact of integration provides decision makers and stakeholders with guides for areas of improvement or adjustment. Appropriate tools and indicators should be identified early and be an integral part of the integration process.

Integration is an ongoing process which must be developed and implemented within the context of population needs and focused on the goals of improved health outcomes and higher quality of care.

APPENDIX 1.0 – CONTEXT

Health systems integration has received national and international attention, replacing the formerly prevalent “command and control structures” (Marriott & Mable, 2002). Such interest may be evidence of the perceived ineffectiveness of current health care systems and the potential of integrated health systems for improved patient care. Past and present worldwide integration initiatives provide important information on the successes and challenges of different approaches. The United States, United Kingdom and Australia have been leaders in integration research and a discussion of their experiences provides key lessons for Canadian health providers, decision makers, and other stakeholders. The following sections will provide a brief summary of national and international trends, with particular focus on primary care.

Canada

Over the past decade, Canadian governments at all levels have been reviewing the infrastructure and finances of the health care sector (Marriott et al., 2000; Penning et al., 2002). In particular the delivery of primary care services has been seriously criticized (Haigh-Gidora, Gotto, & Taft, 2004; Pineault et al., 2005). There are claims that the lack of accessibility outside office hours, poor management (The Standing Senate Committee on Social Affairs, 2002), and fragmentation of services hinder the delivery of optimal primary care (Haigh-Gidora et al., 2004). The implementation of multidisciplinary practice, health promotion, and greater attention to psychosocial issues are offered as possible methods of achieving primary care’s full potential (Haigh-Gidora et al., 2004).

Since 1994, the Canadian Government has launched numerous initiatives to reform the health care system (Government of Canada, 1997). Programs such as the Health Transition Fund, Canada Health Information System, the Health Coordination Initiative, and the Community Action Program for Children were created to fund the enhancement of specialized and integrated health services.

Quebec’s publicly funded and closely regulated health system has been viewed as an established base for integrative health initiatives (Fleury, 2004). Over the last two decades, there have been several integrated health care and managed care programs, including organizations to serve the elderly, mentally ill, chronically ill, and those in palliative care. Integration began with partnerships and collaboratives in the 1980s and developed into fully integrated health care delivery networks. While attempts have been made to understand the concepts of integration through these programs (D’Amour et al., 2003; Fleury, 2004), there is little understanding of which conditions and/or frameworks are best for developing an effective integrated health system (Fleury, 2004).

Regionalization of health authorities has gained prevalence for health reform in many Canadian provinces. Health Regions focus on control of providers within a geographic area without funding or significant involvement of physicians or their services (Marriott and Mable, 1998). Regionalization of Alberta’s health system into 17 regions in 1993 and then into nine regions in 2003 resulted in confusion so far as what benefits might be gained by the reforms (Golden-Biddle et al., 2006). Government officials favored regionalization, claiming this resulted in decentralized authority and finances, and anticipating more efficient delivery of health care. Smaller regional authorities that were absorbed into larger regions felt a loss of connection to their communities (Golden-Biddle et al., 2006). Similarly, in 2002 the New Brunswick provincial government created eight regional health authorities with responsibility for assessing the population’s health needs, then structuring services and allocating resources to meet those needs. The health authorities were also required to develop business and health plans identifying priorities and working relationships with other health providers (New Brunswick Department of Health, 2001). Ontario was the last province in Canada to move

towards regionalization by creating Local Health System Integration Networks (LHIN) in 2006. The LHINs must determine the populations' needs, implement strategies and allocate resources to serve those needs (Southeast LHIN, 2006). Additionally, they must report objectives, standards, finances and management of services in order to facilitate a common standard of best practice in the region (Government of Ontario, 2006).

It has been suggested that “family medicine is the key to health-system integration” (Rosser & Kasperski, 1999, p.5) and **primary care** has been considered an essential ingredient to the successful implementation of health service delivery integration in several Canadian jurisdictions. In British Columbia, a successful example of a comprehensive primary care service is the Cool Aid Society community based care clinic. The downtown Victoria clinic integrates the services of a family physician, advanced nurse practitioners, social workers, mental health counselors and, a dental practice. By having flexible clinic hours, a subsidy program, and electronic connectivity to other community services, at-risk and low-income patients access care efficiently regardless of their location in the community. The clinic has been shown to be very efficient with resources and is highly praised by both providers and receivers of care (Haigh-Gidora et al., 2004). Alberta focused on a community health approach driven by patient outcomes rather than hospitalization or finances (Martin & Rushforth, 1998) with increased attention to primary care services (Hasselback et al., 2003). A successful example of a Primary Care Initiative in Alberta is the Taber Integrated Primary Care Project (Hasselback et al., 2003) in which improved health care, more efficient utilization of resources, and more satisfied patients were reported. In Saskatchewan, an Integrated Primary Health Care Working Group with members from eight different professional organizations reported on the potential barriers to integration in the province (---, 1998b). These are reported in Section 5.1.3. In Ontario, primary care models such as Family Health Teams, Family Health Groups and Family Health Networks, were developed to achieve medical and fiscal balance (Boadway et al., 1997). These groups facilitated access to other health services and coordinated the fee-for-service compensation between involved providers. In 2000, an Ontario initiative involved the use of a multidisciplinary team model to provide services in the home for patients with an acute, complex illness. Additional funding was required by home care to implement the program, but there was an overall cost savings for hospital care. Care givers, patients, physicians and other health care professionals all reported a higher level of satisfaction than those of the control group. Despite these advantages there were some challenges. These included appropriate remuneration and incentives for physicians and other health care professionals as well as the shortage of skilled nurses, nurse practitioners and family physicians. To continue this type of program the authors (Stewart et al., 2002) suggest that significant system redesign, funding and professional regulations would need to be addressed.

United States

In the United States there is no single authority responsible for health services or their restructuring. However, integration and other reforms do occur. Rather than government policy, consumer demand is one of the principal drivers of change. Integration has also been undertaken to address issues of cost, fragmentation, and the need to focus on outcomes (Budetti et al., 2002).

Both vertical and horizontal integration models have been used to incorporate services and providers (Wilkin, 2002) into integrated systems such as Integrated Health Networks or Integrated Delivery Systems. This includes the integration of hospitals, home care, nursing homes, physician groups (primary care and specialists), and other facilities into a single large system which delivers a variety of services from primary to tertiary care (---, 2003a). There are three interrelated goals of these networks, “increased value for patients and purchasers of care; a sustainable competitive advantage

for their sponsors (usually physicians and hospitals); and, an improved working environment for physicians and others involved in the delivery of care” (Fischer et al., 1998, p.42).

Since health care is not publicly funded, individuals with poor insurance coverage or no insurance may not receive essential health services. In recent years, there has been a movement towards integration for these populations with a focus on primary care. Organizations such as the Health Disparities Collaborative mediate the integration of health centres, to provide essential and accessible primary care services to all Americans using the Managed Care Model (Health Disparities Collaborative, 2006). Furthermore, it seems there is recognition of the need for private-public collaboration in health care. For example, the Markle Foundation initiated a network of information technology so that health care providers from either system may access patient information for the delivery of safe, evidenced-based care (The Data Standards Working Group, 2003).

United Kingdom

The United Kingdom has become one of the world’s leaders in health integration of publicly funded systems. The UK’s National Health System (NHS) implemented an integrated strategy aimed at consolidating the responsibilities of the various boards in the governance of the health care system (Deighan & Moore, 2004). Through the incremental creation of integrated organizations, rather than regionalization, (Marriott & Mable, 2002), a gradual trial-and-error integration was possible.

With changes in policy and funding arrangements, Primary Care Groups (PCGs) were formed and consisted of all local primary care physicians, networking them through virtual integration (Glendinning, 2003; Marriott & Mable, 2002; Rogers & Sheaff, 2000). These groups were responsible for the implementation of national health policies and services at the local level, improved population health outcomes and comprehensive primary care and community health services (Glendinning, 2003). Budgets for primary care and community care were amalgamated (Glendinning, 2003) and general practitioners became fundholders (Rogers & Sheaff, 2000). PCGs evolved into Primary Care Trusts (PCTs) which are semi-autonomous but accountable to the NHS for performance (Glendinning, 2003; Marriott & Mable, 2000). They are independent of local health authorities and electronically integrated (Marriott & Mable, 2000). PCTs encompass a wide scope of services (Marriott & Mable, 2000) and are responsible for all health (primary, community and hospital services) and welfare services for a defined population (Glendinning, 2003; Wilkin, 2002). They are required to consult with communities and provide services in response to the identified needs and preferences (Wilkin, 2002) as well as social and environmental issues related to health (Glendinning, 2003). Strong linkages amongst independent providers, other NHS organisations, and public and private institutions facilitate collaboration and partnerships (Glendinning, 2003; Wilkin, 2002). This is accomplished through incentives, payment models, and regulatory policies. Governance is an Executive Committee, which is responsible to the Ministry of Health, made up of primary care physicians, managers, nurses and others. Decision making, in large part, has been downloaded to primary care providers (Wilkin, 2002). Some PCTs have pooled budgets for health and social services while others have integrated key services for specific client groups (Wilkin, 2002). Departments within the PCT have joint meetings, staff training, shared records and integrated nursing teams. Through the development of PCTs, public health and primary care have started to work more closely together. Disease prevention, health promotion, and community participation through consultation and management of health care service decisions are key components (Bradley & McKelvey, 2005). Health care professionals are encouraged to take a broad view of health, including the determinants of health, and consider the demographics of their population (Mullan & Epstein, 2002).

Integration efforts such as the National Primary Care Collaborative, said to be the largest in the world with 2000 practices serving 11.5 million patients (Knight, 2004), make the UK a strong candidate for health planners who are interested in health system integration to follow.

Australia

Australia's health system is funded with both public and private monies (Batterham et al., 2002) and reforms have focused on a continuum care approach rather than regionalization (Marriott & Mable, 2002). Integration has been promoted by the Australian government and various health organizations, particularly between the health system and the area of general practice (Powell Davies, 1996). Batterham et al. (2002) suggest that a focus on primary health care reform is essential and integrating primary care physicians is a critical component to reform initiatives, as they are usually the first point of contact for care as well as responsible for providing continuity of care (Batterham, et al., 2002). Divisions of General Practice were developed in the late 1990s to support primary care physicians in their practice (Batterham, et al., 2002). A discussion paper (---, 2004) on GP Teams emphasized the importance of multidisciplinary team integration into primary care. It was proposed that physicians take a central role in the team with nurses undertaking a key role.

Australia is still exploring different methods of achieving an efficient integrated system through the Coordinated Care Trials, established in 1996 (Marriott & Mable, 2000). The Coordinated Care model (Feek, 1998) attempts to manage chronic illness and disability more effectively at the community level and entails the integration of community care, primary care, and hospital services. The goal is to reduce demand on hospital care and provide care more effectively in the community. Resources are deployed to programs with a preventative focus.

Australia also piloted seven GP-hospital integration projects. Significant value was found in the development of collaborative relationships between hospitals and general practitioners. Success of the projects was facilitated by a major focus on communication and appropriate structures and resources. Patients benefited through better continuity of care, shorter waiting times, greater convenience, fewer complications following discharge, improved standards for sharing information, and overall reduction in their anxiety. Physicians benefited with better communication and sharing of information, the ability to be more involved in acute care and hospital decisions. The system also benefited through strengthened relationships between the parties, the ability to care for more patients, and improvements in efficiency and quality of care. Challenges included managing expectations and time issues (Lloyd & Powell Davies, 2000).

New Zealand

New Zealand has struggled to consolidate its health regions and to ensure universally accessible basic health services. Although minors and select groups of adult populations are publicly funded, most adults must privately fund their health care (Marriott & Mable, 2000). General practitioners are independent providers (Wilkin, 2002) who, due to a lack of funding, formed Independent Practice Associations to negotiate with funders to provide services and participate in quality initiatives (Wilkin, 2002) or joined primary care organizations (Marriott & Mable, 2000). In 2000, New Zealand introduced Primary Health Organizations to provide services for a rostered population (Wilkin, 2002) and to facilitate continuity and quality of care (Meriwether, 2004). General practitioners, other health care professionals, and lay people made up the governing boards which facilitated addressing the needs of the rostered patients (Wilkin, 2002). The Local Government Act of 2002 gave local health authorities the incentive and resources to explore and address their population's environmental and health care needs (Auckland Regional Public Health Service, 2006).

The Netherlands

The Dutch health care system has made impressive advances in the area of integration, with a focus on primary care (Grol, 2006). Primary care physicians play a central role in care coordination (Ministry of Health Welfare and Sport, 2004) while more complex patients are supported by a team of health care professionals (Ministry of Health Welfare and Sport, 2004). The health care system has adapted to increasing demand from the aging population and shortage of health professionals by implementing the Social Support Act thereby creating integrated local health authorities which provide health services guided by population health needs (Ross-van Dorp, 2004). In 2006, the government introduced compulsory health insurance, regardless of income, in an attempt to increase cost-awareness amongst consumers and to create competitive market conditions for health insurers (Ministry of Health Welfare and Sport, 2006).

Finland

In Finland, primary care services have been valued as the national health delivery system of choice for over three decades; however it has been overloaded in recent years, thus disrupting continuity (Järvelin, 2002). The integrated care strategy was developed in 1996, with strong support across the country, encompassing all areas of the health system (Hänninen, 2004). Integration initiatives included systems which incorporated public, private, and not-for-profit health and social organizations. Models were based on patient needs, supported by multiprofessional teams and information systems (Vaarama, 1999). Regions incorporated regional information networking with integrated care models designed to provide services for various defined populations (Hänninen, 2004). Like many systems elsewhere, Finnish health care is continuously changing to adapt to population needs.

Greece

Not unlike other jurisdictions, Greece is attempting to realign their primary care health system. Currently, primary care services are delivered through a variety of multidisciplinary clinics funded through private insurance contracts, with one large provider servicing 55% of Greece's insured population, most of whom reside in urban centres (Souliotis et al., 2004). These authors propose an integrated primary health care system based on equity, efficiency, and effectiveness. Services must be comprehensive and coordinated across the continuum of care. Physicians would have a central role by providing a variety of services such as chronic disease management, developmental follow-up, and vaccination as well as focusing on health promotion, disease prevention, and the management of risk factors. Health information and data systems would support both clinical care and measurement, as well as on-line clinical resources to support evidence-based practice. Evaluation and measurement of interventions was seen as critical to successful change.

Other International Jurisdictions

The direction of health reforms differs among countries. Belgium has a fee-for-service health system comparable to Canada's, except with 359 local authorities, which may have led to the government's change of policies to limit growth of the health budget to 1.5% annually (Kerr, 2000). In Norway, individual wellbeing is viewed as a responsibility of society, thus the government has incorporated health and community service into their integration policies (Royal Ministry of Justice and Police, 2002). Most of Germany's health reforms involve cost-containment rather than integration, as many long-term care services have surpassed their annual budgets (Busse & Riesberg, 2004). Post-cold war politics and a lack of focused public spending have increasingly hampered advances in health care reform in the Czech Republic (Rokosová & Háva, 2005).

APPENDIX 2.0 – METHODS

Peer-reviewed Search Parameters

Abstract Rating Criteria

Article Classification

Empirical Article Quality Rating

Non-empirical Article Quality Rating

PEER-REVIEWED SEARCH PARAMETERS

| Business Databases: | | | | |
|----------------------------------|--|------------------------------------|-------|----------|
| Database | Search Terms | Limits | Yield | Comments |
| ABI Inform Global AND CBCA | organizational integration OR integrated delivery systems (in Citation and Document Text) | 2001-2006 scholarly journals | 1104 | |
| Business Source Premier | organizational integration OR integrated delivery systems (click off the "suggest subject terms" box) | 2001-2006 scholarly journals | 31 | |

| Health Databases: | | | | |
|------------------------------|--|--|-------|-----------------------------|
| Database | Search Terms | Limits | Yield | Comments |
| Medline | Delivery of health care, integrated | 1998-2006 English; focused; All subheadings except history and ethics | 1712 | |
| EMBASE CINAHL PsycInfo | Delivery of health care, integrated OR organizational integration OR integrated health services OR integrated health care OR integrated care OR integrated service delivery systems OR care co-ordination OR health services integration | 1998-2006 English | 1806 | all duplicates were removed |

ABSTRACT RATING CRITERIA

YES Abstracts

The central focus is integration or regionalization, either health services integration or organizational integration. Integration is not just a narrow component of the paper or simply mentioned in passing, but is central to the purpose of the article.

AND at least one of the following is also included:

- ❖ Research evidence on the effectiveness of integration is presented. This evidence is empirical, systematically collected qualitative or quantitative data, and present clear outcomes.
- ❖ The abstract represents a review of other work on the topic.

- ❖ The abstract suggests that the article makes research recommendations or proposes a research agenda.
- ❖ Experience that is likely reproducible or that sounds innovative is presented. This might include experience on the implementation of an integrated system.
- ❖ The concept is presented without data, but the discussion suggests the paper is important in terms of depth of conceptual development or potential impact.
- ❖ A local example of integration (within Alberta).
- ❖ A clear, small scale example of integration that presents outcomes that may be reproducible on a larger scale.

MAYBE Abstracts

The topic is integration, however the type of integration that is discussed focuses on some very narrow or tangential aspect e.g. IT that does not necessarily provide us with the necessary breadth for answering the research questions.

AND

Either: the research evidence that reports on the effectiveness of the above is presented. This evidence is empirical, systematically collected qualitative or quantitative data. It might be interpreted as evidence for implementing a specific aspect of integrated service delivery.

Or: the focus of the abstract is on a special population (i.e. children's health, mental health, women's health, chronic pain).

NO Abstracts

The abstract is not specific to health services integration or organizational integration, even when these phrases are used. For example there is a mathematical use of the word integration and a socio-cultural use as in integration of new immigrants.

OR

The abstract is too specific to a type of integration that is beyond our scope.

ARTICLE CLASSIFICATION

Reader's initials: _____

Article #: _____

First author surname / year of publication: _____ / _____

Instructions: after the initial reading, please classify this paper on the following items.

1. **Content:** ___ business ___ health (specify: FP NFP U) ___ public/gov't
2. **Article relevancy** (based on original criteria): ___ NOT relevant (**stop here**) ___ relevant (**continue**)
3. **Setting of study** - city, province/state, country (not country of publication): _____
4. **Type and/or name of organisation:** _____
5. **Type of research:**
 ___ non-empirical (e.g. general principles, letters to editor, local experience w/o data)
 ___ empirical (e.g. data/info of at least an observational level was collected)
 ___ systematic literature review
6. **Level of integration:** ___ organisational ___ services/programs
7. **Model or framework:** ___ no ___ yes (specify) _____
8. **Definitions:** ___ no ___ yes (check all applicable options)
 ___ vertical integration ___ horizontal integration ___ virtual integration
 ___ clinical integration ___ functional integration
 other _____
9. **Topics** (check **all** applicable options, **circle primary topic**)
 ___ characteristics ___ barriers/facilitators ___ outcomes/impacts ___ tools
 ___ processes ___ measurements ___ rural ___ children/youth
 ___ elderly ___ First Nations ___ cancer ___ HIV/AIDS
 ___ mental health ___ palliative care ___ community ___ physician
 ___ supply chain management ___ knowledge management ___ enterprise resource planning
 ___ complementary/alternative medicine
 chronic disease (specify) _____
 vulnerable populations (specify) _____
 other _____

Notes/comments

EMPIRICAL ARTICLE QUALITY RATING

Reader's initials: _____

Article #: _____

First author surname / year of publication: _____ / _____

Score

0 = not present or reported anywhere in the article

1 = present but low quality

2 = present and mid-range quality

3 = present and high quality

- ___ 1. **Literature review** – directly related recent literature is reviewed and research gap(s) identified.
- ___ 2. **Research questions and design** – a priori research questions are stated and hypotheses, a research purpose statement, and/or a general line of inquiry are outlined. A study design or research approach is articulated.
- ___ 3. **Population and sampling** – the setting, target population, participants and approach to sampling are outlined in detail.
- ___ 4. **Data collection and capture** – key concepts/measure/variables are defined. A systematic approach to data collection is reported. Response or participation rate and/or completeness of information capture is reported.
- ___ 5. **Analysis and reporting of results** – an approach to analysis and a plan to carry out that analysis is specified. Results are clear and comprehensive. Conclusions follow logically from findings.

___ / 15 = Total score

NON-EMPIRICAL ARTICLE QUALITY RATING

Reader's initials: _____

Article #: _____

First author surname / year of publication: _____ / _____

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|-----------------------------|--|---|---|---|--|---|---|--|---|--|
| | <ul style="list-style-type: none"> • barely relevant • poor writing style • poor logic • local experience • narrow frame of reference • obscure journal • commentator with low-level, non-research related credentials • at old edge of date range (1998-2000) | | <ul style="list-style-type: none"> • 1 or 2 interesting ideas, but not innovative • fairly unknown journal and authors • a bit stale or ideas covered in more recent material • redundant | | <ul style="list-style-type: none"> • relevant and a few interesting ideas • of average interest • not sure of authors credentials • not sure about the journal • mid-date range (2001-2003) | | | <ul style="list-style-type: none"> • quite good • on topic • raises new issues • highlights some interesting ideas • good journal • quite recent | | <ul style="list-style-type: none"> • pre-eminent, ground-breaking paper by leading researcher in field • directly on topic • progressive • evidence of critical thought • strong conceptualization • leading edge • prestigious journal • very recent (2004 - present) |
| Circle recommended decision | Best not to include | | Will not be missed | | May reinforce key ideas; perhaps should include | | | Definitely include | | Critical to include |

APPENDIX 3.0 – TERMS AND DEFINITIONS

| Term | Definition | Reference |
|--------------------------------------|--|---|
| Backward integration | “Backward integration of the patient-care process occurs when the hospital combines with physician groups, other ambulatory care facilities and outpatient surgery centers.” | Wang et al., 2001, p.182 |
| Backward vertical integration | “Toward the inputs of production (e.g. medical supplies and equipment)” | Gillies et al., 1993, p.469 |
| Capitation | A method of provider or facility payment that, in essence, pre-pays the provider for care. The methods place the provider or facility “at risk” and potentially leads to under utilization of services. | Ennis & Meneses, 1998, p.23 |
| Care management | Sophisticated, interdependent process that plays a central role in clinical integration. It combines clinical, fiscal, and information science to manage the continuum of health care to achieve best practice. It represents a system of organizing care that is efficient, effective and timely. | Hill, 1998, p.15 |
| Care program | Emphasizes the patient-centered organization of care around the major patient categories. Is typified by the integration of activities between disciplines, professions, departments and, in the case of multi-organizational care path, organizations. Care programs are about tackling professional and organizational quality simultaneously: optimizing effectiveness, efficiency, patient-centeredness and safety through integrating (not: running side-by-side) professional and organizational “best practices”. | Berg et al., 2005, p.77 |
| Clinical integration | “The extent to which patient care services are coordinated across various functions, activities, and operating units of a system. It is viewed as the most important form of integration because it is the primary means by which organized delivery systems are able to provide cost effective, quality care in a managed care environment, particularly under capitated payment structures.” | Aikman, 1998 p.6; Coburn, 2001, p.390; Devers et al., 1994, p.8; Fleury, Mercier, & Denis, 2002; Gillies et al., 1993; Lukas, et al., 2002, p.2; Morrissey et al., 1999, p.3; Shortell, 1993b, p.22; Shortell, 1994, p.52 |
| | “A strategic behavior used to coordinate services within the internal environment of the hospital and to link it with the external environment.” | Lee & Wan, 2002, p.235 |
| | “Groups together various intervention practices and procedures that facilitate coordination and continuity of the care and activities needed to treat a population. Such integration is established on a horizontal and vertical plane: that is, among the various services offered for the same period of care (e.g. follow-up in the community and job market integration), and among the various levels associated with this process (e.g. between hospitalization and post-hospital follow-up).” | Fleury & Mercier, 2002, p.59 |

| Term | Definition | Reference |
|--|--|--|
| | "Refers to the coordination of clinical activities across providers and venues where services are offered." | Weiss, 1998, p.10 |
| | "Clinical integration refers to the merging of clinical systems and functions." | Drazen, 1998, p.35 |
| | "Relates to efforts by hospitals to coordinate or streamline the processes by which clinical practice is delivered." | Morrissey et al., 1999, p.6 |
| Co-location | "Behavioral health and medical services are located in the same suite of offices sharing office staff and waiting facilities." | Blount, 2003, p.5 |
| Comprehensive Health Organization program (CHO) | A fully integrated, not-for-profit, health corporation, which assumes responsibility for providing or purchasing the delivery of a full range of vertically integrated health and health-related services to a defined population. | Marriott & Mable, 2000, p.79 |
| Continuity of care | "The continuation of services from different points in time from prevention or screening, to identification and treatment." | Browne, et al., 2004, p.2 |
| Cooperation | "Where network managers are appointed to improve the contacts between the organizational units involved, but these units are still quite independent." | Ahgren & Axelsson, 2005, p.2 |
| Coordinated care | "The explicit process of planning and organizing the provision of services through the pooling of funds, within current resource levels, and the development of agreed individual care plans for people who have difficulty accessing appropriate services and/or self managing their care needs over long periods of time." | Simmons, 2000, p.118-9 |
| Coordinated services | "Services which exchange information about their activities and expand or restrict their activities in relation to each other, but each remains autonomous in its functioning and its approach to a problem." | Collins & Turner, 2000, p.244 |
| Coordination | "Explicit structures and individual managers are installed to coordinate benefits and care across acute and other systems." | Leutz, 1999, p.85 |
| Coordination in networks | "Is a more structured type of integration [than is linkage], but it still operates largely through existing organizational units. The aim is to coordinate different health services, to share clinical information, and to manage the transition of patients between different units. Chains of care and other health care networks are included in this form of integration, but there are usually no network managers appointed. The existence of such managers would entail a higher degree of integration." | Ahgren & Axelsson, 2005, p.2 |
| Differentiation | "The number of different products/services that the organization offers reflected in the development of specialized knowledge, functions, departments, and viewpoints." | Bazzoli, Shortell, Dubbs, Chan, & Kralovec, 1999, p.1686 |

| Term | Definition | Reference |
|-------------------------------------|--|--|
| External integration | “The integration between NPD [new product development] teams and groups such as customers and suppliers.” | Millson & Wilemon, 2001, p.7 |
| Forward vertical integration | “Toward the customer or patient (e.g. linking with physician group practices).” | Gillies et al., 1993, p.469 |
| Full integration | “Implied that resources of different organizational units are pooled in order to create a new organization. The aim is to develop comprehensive services attuned to the needs of specific patient groups. The comprehensive services are managed through the new organization, which includes close cooperation between different professional groups. The most pressing issues in connection with this form of integration are to define target groups, to assemble the necessary services, and to allocate appropriate resources.” | Ahgren & Axelsson, 2005, p.2 |
| | “Creates new programs or units where resources from multiple systems are pooled.” | Leutz, 1999, p.85 |
| | “The integrated organization is responsible for all services, either under one structure or by contracting some services with other organizations.” | Hébert et al., 2004, p.2 |
| Full segregation | “The absence of any form of integration between services or units.” | Ahgren & Axelsson, 2005, p.2 |
| Functional integration | “The extent to which administrative and other support functions and activities are coordinated within and across organizational units.” | Coburn, 2001, p.390 |
| | “The extent to which key support functions and activities such as finance, human resources, strategic planning, information management, marketing, and quality assurance/improvement are coordinated across units.” | Shortell et al., 1993b, p.22 |
| | “The extent to which key support functions and activities such as financial management, human resources, strategic planning, information management, and quality improvement could be coordinated across operating units.” | Devers et al., 1994, p.8; Gillies et al., 1993 |
| | “Effectively coordinating services to patients across the range of care.” | Byrne & Ashton, 1999, p.37 |
| | “The extent to which key support functions and activities are coordinated across operating units of the system to realize the greatest value.” | Conrad & Shortell, 1996, p.5 |
| | “Groups together procedures that align mechanisms of governance, management, resource allocation, and data collection and processing, with the workings of an integrated system or a group of organizations.” | Fleury & Mercier, 2002, p.59 |
| | “Includes procedures that align mechanisms of management, resource allocation, and data collection and processing, with the workings of an integrated system or a group of organizations.” | Fleury, Mercier, & Denis, 2002, p.320 |

| Term | Definition | Reference |
|--|---|------------------------------|
| Global capitation (e.g. population needs-based funding) | The system funding that will pay for all insured health (and specific social) services required by the enrolled population for a predetermined period of time (for example for one year). | Leatt et al., 2000, p.23 |
| Health Maintenance Organization (HMO) | An organization that provides health care to voluntarily enrolled members in return for a predetermined sum of money determined by an agreed upon formula. This system combines the delivery and financing of health care under one umbrella. | Ennis & Meneses, 1998, p.23 |
| Horizontal integration | “The coordination of functions, activities, or operating units that are at the same stage in the process of delivering services.” | Gillies et al., 1993, p.468 |
| | Involves the affiliation of organizations that provide a similar level of care under one management umbrella. | Leatt et al., 2000, p.14 |
| | “The integration of services provided at the same level, such as family planning and vaccination.” | Briggs et al., 2006, p.4 |
| | “In health care, involves affiliation under one management umbrella of organizations that provide a similar level of care. Usually involves consolidation of resources among the organizations with the goals of increasing efficiency and taking advantage of economies of scale.” | Conrad & Shortell, 1996, p.7 |
| | “To apply concurrent engineering to support cooperative design and to manufacture the products.” (Business definition) | Dan et al., 2005, p.2634 |
| | “The coordination of activities across operating units that are at the same stage in the process of delivering services, such as acute hospital care.” | Shortell et al., 1993b, p.22 |
| | “To lump together several locations of the same production stages.” (Business definition) | Lin et al., 1999, p.468 |
| | “Horizontally integrated systems are created when the organization expands with similar products and services, such as in multihospital systems.” | Newhouse et al., 1999, p.1 |
| | “A process by which two or more entities establish linkages for the purpose of improving outcomes for needy people.” | Konrad, 1996, p.6 |
| Integrate | “Information system that provides a basis for implementing standards of care across the IDSs.” | Drazen, 1998, p.35 |
| | Macquarie Dictionary: [bringing] together into a whole, [combining] systems previously segregated into one uniform system, [amalgamating] with the rest of the community. | de Jong et al., 2001, p.71 |

| Term | Definition | Reference |
|------------------------|---|--|
| | Organic or reunited parts of a whole. | Kodner, 2002, p.1 |
| | Combine into a whole, bring or come together into equal membership of society, complete by addition of parts. | Wilson et al., 2003, p.43 |
| Integrated care | Well-planned and well-organized set of services and care processes, targeted at the multidimensional needs/problems of an individual client, or a category of persons with similar needs/problems ... built up by elements of acute health care, long-term care, social care, housing and services such as transport and meals. It should also address empowerment of older persons, to enable them to live their lives as independently as possible. | Billings, 2005, p.6 |
| | Methods and organizations to provide the most cost-effective and caring services to those with the greatest health needs and to ensure continuity of care and coordination between services. | Coster, 1998, p.2; Feek, 1998, p.1 |
| | Continuum from simple collaboration between different providers to provide ease of access to patient services to “managed care” which represents a fundamental shift of professional loyalty from an individual patient’s health to the health of populations. | Feek, 1998, p.1 |
| | The coordination of community and hospital based health and disability support services, and is aimed at providing quality, access and health outcomes. | Coster, 1998, p.1 |
| | Coherent set of products and services, delivered by collaborating local and regional health care agencies. | Hardy, 1999, p.99 |
| | Organizational process of coordination which seeks to achieve seamless and continuous care, tailored to the patients’ needs and based on a holistic view of the patient. | Mur-Veeman, Hardy, Steenbergen, & Wistow, 2003 |
| | A coherent set of products and services, delivered by collaborating local and regional health care agencies to multi-problem patients. | Kodner, 2002, p.3 |
| | Collaborative actions or activity, undertaken between health and social service organizations and practitioners ... with the ultimate aim of providing an improved service to the client or patient. | Billings, 2005, p.6 |
| | “The increased collaboration of mental health professionals within primary care settings.” | Aitken & Curtis, 2004, p.322 |
| | “Care in which there is one treatment plan with behavioral and medical elements, rather than two treatment plans.” | Blount, 2003, p.6 |

| Term | Definition | Reference |
|--|--|-------------------------------|
| Integrated community teams | “A group of professionals and others working together towards the same goal – to provide the best care possible for patients . . . in the community.” | Hurst et al., 2002, p.464 |
| Integrated delivery networks | “Vertical combinations include acquisition of primary care physicians, strategic alliances with physicians in physician-hospital organizations and management services organizations, and the developments of health maintenance organizations. Horizontal combinations include the formation of multihospital systems, mergers, and strategic alliances with neighboring hospitals to form local networks.” | Burns & Pauly, 2002, p.128 |
| Integrated Delivery System (IDS) | A group of health care facilities aligned either horizontally or vertically to provide care across the continuum. This organization can compete for managed care contracts and frequently obtains economies of scale. | Ennis & Meneses, 1998, p.23 |
| | “Networks that provide a full and coordinated range of services to a defined population for whom they are held accountable for clinical and fiscal outcomes.” | Weiss, 1998, p.9 |
| Integrated health care system | Provides a comprehensive spectrum of high-quality, well-coordinated health care services on a cost-effective basis to residents of its service area. To accomplish this, physicians, hospitals, and other health care providers work together for the benefit of customers. | Coddington et al., 2001c, p.8 |
| Integrated health delivery system | “A network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically accountable for the outcomes and the health status of the population served.” | Leggat et al., 1997, p.11 |
| | “A roster-based, not-for-profit corporation, built on a primary care foundation that is fully vertically-integrated in terms of both responsibility for (centrally-defined) core services and all the associated funding through weighted capitation, to support the provision or purchase of all required services to meet the needs of its population.” | Leggat et al., 1997, p.11 |
| Integrated health networks | “A health care system which combines physicians, hospitals, and other medical services with a health plan to provide the complete spectrum of medical care for its customers. In a fully integrated system, the three key elements – physicians, hospital, and health plan membership – are in balance in terms of matching medical resources with the needs of purchasers and patients.” | Luke & Begun, 2001, p.47 |
| | “An organization which, through ownership or roam agreements, aligns health care facilities in order to deliver integrated health care services by improving quality and reducing costs to a defined geographical area. These organizations are formed with the intent to market themselves as one unit to payers.” | Luke & Begun, 2001, p.48 |

| Term | Definition | Reference |
|---|---|-----------------------------|
| | "IHNs represent people, processes, and the infrastructure needed to support the system. . . . (T)he heart of any IHN is the patient and the need to ensure that this person receives the highest quality care in the most cost-effective manner possible." | Friedman et al., 2001, p.10 |
| | "Integrated arrangement that combines acute care, pre- and post-care, and insurance activities, a conceptualization consistent with some of the more comprehensive definitions." | Luke & Begun, 2001, p.47 |
| | A network of organizations that provides or arranges to provide a coordinated continuum of services to a defined community and is held fiscally accountable for the outcome and health status of those served. | Adamson et al., 2000 p.34 |
| | "The successful integrated health system of the <i>next</i> decade may be the one that starts first with a deep understanding of the health and health care needs of its communities and patients, and builds an organization and integrated system around those needs." | Friedman et al., 2001, p.54 |
| Integrated healthcare delivery systems | "Structures in which the various types of organizations are connected together along a continuum of care, using horizontal and vertical integration." | Lin et al., 1999, p.468 |
| | "Network of organizations that provides or arranges to provide a coordinated continuum of services and is willing to be held clinically and fiscally accountable for the outcomes and health status of the population served." | Lukas, et al., 2002, p.2 |
| Integrated Healthcare Network (IHN) | An organization which, through ownership or formal agreements, aligns health care facilities in order to deliver Integrated health care services by improving quality and reducing costs to a defined geographic area. | Wan et al., 2003, p.117 |
| | "An organization that, through ownership or formal agreements, vertically and horizontally aligns health care facilities, programs, or services in order to offer a coordinated continuum of health care to a defined geographic population and is willing to be held responsible clinically (i.e., improving quality) and fiscally (i.e. reducing costs) for the health status of the population; the health care facilities, programs, or services can be health plans, medical group practices, pharmacies, hospitals, subacute care services, long-term care services, occupational services, rehabilitation services, surgical centres, or various wellness and patient education programs." | Lin et al., 1999, p.468-9 |

| Term | Definition | Reference |
|---|--|----------------------------------|
| Integrated healthcare system | “An integrated health care system provides a comprehensive spectrum of high-quality, well-coordinated health care services on a cost-effective basis to residents of its service area. To accomplish this, physicians, hospitals, and other health care providers work together for the benefit of customers.” | Coddington, 2001, p.33 |
| Integrated or organized delivery systems | Aggregation of individual components of the financing and delivery system into a vertically and horizontally integrated organization, usually under a single corporate structure. The promise of these systems is the delivery of “seamless” care to a population for a fixed price for whom they are then clinically and financially accountable. | Brickman et al., 1998, p.143 |
| Integrated services | “Services requiring a team approach to an individual client problem or a community problem.” | Collins & Turner, 2000, p.244 |
| Integration | Coordination and reorganization of various health care units (such as home health care, acute hospital care, and skilled nursing facilities) either horizontally or vertically, or via a combination of both. | Ennis & Meneses, 1998 |
| | The combination of diverse elements of perception. | Wilson et al., 2003, p.43 |
| | Linking together by various means the services of two or more providers to allow an individual's or family's needs to be addressed in a more coordinated and comprehensive manner. | Wilson et al., 2003, p.43-44 |
| | Can occur at the policy, finance, management and clinical levels; includes joint planning, training, decision making, instrumentation, information systems, purchasing, service delivery, monitoring and feedback. | Wilson et al., 2003, p.44 |
| | The quality of the state of collaboration that exists among departments that are required to achieve unity of effort by demands of the environment. | Stonebraker et al., 2004, p.1135 |
| | The incorporation of equals into a common way of being. | Boon et al., 2004b, p.50 |
| | Integer (Latin) to complete. | Kodner, 2002, p.1 |
| | Bringing together of inputs, delivery, management and organization of services as a means [of] improving access, quality, user satisfaction and efficiency. | Kodner, 2002, p.2 |

| Term | Definition | Reference |
|------|---|------------------------------|
| | Is a coherent set of methods and models on the funding, administrative, organizational, service delivery and clinical levels designed to create connectivity, alignment and collaboration within and between the care sectors. The goal of these methods and models is to enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex, long term problems cutting across multiple services, providers and settings. The result of such multi-pronged efforts to promote integration for the benefit of these special patient groups is called “integrated care”. | Kodner, 2002, p.3 |
| | Working together for market advantage. (Business definition) | de Jong et al., 2001, p.71 |
| | Service coordination, linkage, care collaboration or multidisciplinary management. | de Jong et al., 2001, p.71 |
| | “The activities and mechanisms used to achieve unity of effort across the different specialized areas.” | Bazzoli et al., 1999, p.1686 |
| | “The quality of the state of collaboration existing among the departments that are required to achieve unity of effort by the demand coming from the environment.” | Beretta, 2004, p.69 |
| | “Co-ordination of different activities to ensure harmonious functioning.” | Briggs et al., 2006, p.2 |
| | “The extent to which functions and activities are appropriately coordinated across operating units – that is, any organization within the system that is involved in the provision of health care services such as acute care and specialty hospitals, home health agencies, nursing home facilities, and single and multispecialty group practices – so as to maximize the value of services delivered to patients.” | Gillies et al., 1993, p.468 |
| | “Combining previously separate and independent functions, resources, and organizations into a new, united structure.” | Lee & Wan, 2002, p.234 |
| | “The search to connect the health care system (acute, primary medical, and skilled) with other human service systems in order to improve outcomes.” | Leutz, 1999, p.77-78 |
| | “The coordination of work across the organization.” | Weiss, 1998, p.10 |
| | “The nature of integration is that diverse organizations are welded into one seamless system that shares a common mission, set of values and work ethic ... [which] involves a transformation of the existing organization into an organization that is more diverse and complex.” | Miller, 2000, p.7 |
| | “The bringing together into a more unified structure of previously independent administrative and service functions, services, and/or organizations.” | Coburn, 2001, p.389 |

| Term | Definition | Reference |
|---|---|------------------------------|
| | “The core value of integration, that of improving the coordination and interaction of different parts of a community health care system to improve the quality of patient experiences and health outcomes.” | Friedman et al., 2001, p.24 |
| | “All health care is local, and that integration models must be tailored to the unique needs and market context of the local or regional community.” | Friedman et al., 2001, p.53 |
| | “‘A point on a continuum of the various levels and types of interrelationship in any service integrated initiative’ in order to achieve the missions and goals of health services organizations.” | Lin et al., 1999, p.468 |
| Integration | “Working together for market advantage.” (Business definition) | de Jong et al., 2001, p.71 |
| | “Service co-ordination, linkage, care collaboration or multidisciplinary management.” | de Jong et al., 2001, p.71 |
| Integration model | “A set of structures, regulations, and planned strategies developed in relation to the socioeconomic and cultural health care environment.” | Fleury & Mercier, 2002, p.58 |
| Integration of professional regulation | “Consists in structuring the division of work, training and modes of remuneration accordingly with the network system objectives. More specifically, physicians’ integration in the system, which results from their participation in service distribution and in the governance and management of the system, is considered central because of physicians’ influence in the supply of service.” | Fleury & Mercier, 2002, p.59 |
| Integrative health care | <p>Seeks, through partnership of patient and practitioner, to treat the whole person, to assist the innate healing properties of each person, and to promote health and wellness as well as the prevention of disease (philosophy and/or value)</p> <ul style="list-style-type: none"> - Is an interdisciplinary, non-hierarchical blending of both conventional and complementary and alternative health care that provides a seamless continuum of decision making and patient-centred care (structure) - Employs a collaborative team approach guided by consensus building, mutual respect, and shared vision of health care that permits each practitioner and the patient to contribute their particular knowledge and skills within the context of shared, synergistically charged care (process) - Results in more effective and cost-effective care by synergistically combining therapies and services in a manner that exceeds collective effect of the individual practices (outcomes) | Boon et al., 2004b, p.55 |

| Term | Definition | Reference |
|-----------------------------------|---|------------------------------|
| Interdisciplinary practice | Tends to support greater integration of care as the members of the clinical team deliberately coordinate their services across their various disciplines. | Boon et al., 2004b, p.52 |
| Internal integration | “The relationship between NPD [new product development] teams and supporting functional groups within a new product producing firm.” (Business definition) | Millson & Wilemon, 2001, p.7 |
| Linkage | “Allows individuals with mild to moderate or new disabilities to be cared for appropriately in systems that serve the whole population without having to rely on outside systems for special relationships.” | Leutz, 1999, p.84 |
| | “Takes place between existing organizational units. It aims at an adequate referral of patients to the right unit at the right time and good communication between the professionals involved in order to promote continuity of care. The different units and professionals understand who is responsible for each type of service, and there is no cost shifting between them. Clinical guidelines describing what shall be done by whom and when, are examples of mechanisms used in this form of integration.” | Ahgren & Axelsson, 2005, p.2 |
| Loose alliances | A coupled arrangement among existing organizations, designed to achieve some long-term strategic purpose not possible to achieve by any single organization. | Adamson et al., 2000, p.34 |
| Multidisciplinary practice | A clinical group whose members each practice with an awareness and toleration of other disciplines. | Boon et al., 2004b, p.52 |
| Network | “A collection of programs and services that span a broad range of cooperating but legally autonomous organizations.” | Provan et al., 2001, p.417 |
| Operational integration | “Redundant corporate services and functions are consolidated into a central process that addresses overall IDS performance.” | Drazen, 1998, p.35 |
| Organization integration | “On the one hand, the organization integration for networked manufacturing is not only enterprise integration of manufacturer and its suppliers, distributors and retailers, but also the integration of the manufacturer and other partners, such as research institutes, universities, consultant firms, training organizations, etc. On the other hand, the organization integration for networked manufacturing is the integration of various functional areas within a company, such as departments, design cells, and manufacturing cells.” (Business definition) | Dan et al., 2005, p.2635 |
| | “The degree of cooperation and communication between internal and external NPD [new product development] ‘support groups’ and NPD teams.” | Millson & Wilemon, 2001, p.1 |

| Term | Definition | Reference |
|--|--|-----------------------------------|
| | “The extent to which distinct and interdependent organizational components constitute a unified whole. In this definition, the term component refers to organizational units, departments, or partners and includes the business processes, people, and technology involved.” | Barki & Pinsonneault, 2005, p.166 |
| Organizational system | “A set of interdependent parts that relate in the accomplishment of a common goal.” | Devers et al., 1994 |
| Organized delivery system | “An organized delivery system is a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally accountable for the outcomes and the health status of the population served.” | Shortell et al., 1993a, p.447 |
| | “An organized delivery system is a network of organizations that provides or arranges to provide a coordinated continuum of services to a defined population and is willing to be held fiscally and clinically accountable for the health status of that population served.” | Shortell et al., 1993b, p.22 |
| | “An organized delivery system (ODS) is a network of organizations (e.g., ambulatory care clinics, physician groups, diagnostic centers, hospitals, nursing homes, home health care agencies) usually under common ownership which provides, or arranges to provide, a coordinated continuum of services to a defined population and is willing to be held clinically and fiscally responsible for the health status of that population. These systems often own, or are closely aligned with, an insurance product.” | Devers et al., 1994, p.8 |
| | Networks of organizations that provide or arrange to provide a coordinated continuum of services to a defined population and who are willing to be held clinically and fiscally accountable for the outcomes and the health status of the population being served. | Leatt et al., 2000, p.14 |
| Physician Hospital Organization (PHO) | An organization formed by a hospital and its physicians usually to enhance contract negotiating power with managed care organizations. | Ennis & Meneses, 1998, p.23 |
| Physician integration | “Relates to efforts on the part of hospitals to either establish structural linkages with physicians through such efforts as contracting vehicles (i.e. PHOs, MSOs, etc.) and operational linkages.” | Morrissey et al., 1999, p.6 |
| Physician practice management groups | Often publicly traded companies that purchased physician practices and run them administratively. The benefits include economics of scale and less day-to-day headaches for the physicians, on the negative side many physicians feel they have lost autonomy when they sell to these groups. | Ennis & Meneses, 1998, p.23 |

| Term | Definition | Reference |
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| Physician-hospital integration | “Defined by the kinds of arrangements that a hospital has with physicians.” Four levels of physician–hospital integration: 1. no physician-hospital integration strategy; 2. a contract arrangement; 3. an ownership arrangement; 4. a hybrid arrangement. | Lee & Wan, 2002, p.236 |
| Physician-system integration | “Physicians being more economically linked to individual systems, using a particular system’s facilities and services somewhat more exclusively, and participating more actively in planning, management and governance.” | Conrad & Shortell, 1996, p.7 |
| | “The extent to which physicians are economically linked to a system; use its facilities and services; and actively participate in its planning, management, and governance.” | Gillies et al., 1993, p.468 |
| | “Is the ‘extent to which physicians identify with a system, use the system, and actively participate in its planning, management, and governance.’” | Shamian et al., 2000 p.72 |
| | “The extent to which physicians are economically committed to the system, use its facilities and services, work cooperatively to promote the continuity of patient care, and are involved in all levels of system management and governance.” | Shortell et al., 1994, p.52 |
| | “The extent to which physicians could identify with the system and actively participate in its planning, management, and governance.” | Morrissey et al., 1999, p.3 |
| | “The extent to which physicians benefit economically through their affiliation with the system, are committed to using the system, and have substantive administrative involvement with the system.” | Devers et al., 1994, p.8 |
| Process integration | “Competencies and capabilities are ‘collective and cross-functional – a small part of many people’s jobs, not a large part of a few’, and they encompass ‘the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies.’” | Fawcett & Cooper, 2001, p.396 |
| Professional/medical integration | “Consists in structuring the division of work, training and modes of remuneration.” | Fleury et al., 2002b, p.320 |
| Public networks | “The goal of most public networks is to enhance client services through improved access, utilization, responsiveness, and integration, while maintaining or reducing costs.” | Provan et al., 2001, p.417 |
| Service integration | “Types of collaboration, partnerships or networks whereby different services that are usually autonomous organizations, work together for specific community residents to improve health and social care.” | Browne et al., 2004, p.1 |
| Services integration strategies | Designed to change services delivered for individual clients. | Messeri et al., 2003, p.26 |

| Term | Definition | Reference |
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| Shared care | "Involves the sharing of responsibilities between a variety of health care professionals, specifically, specialist medical staff and general practitioners, nurses, patients and patients' families." | O'Connell et al., 2000, p.164 |
| Shared protocols aka integrated care pathways or multidisciplinary care paths | "A multidisciplinary process of patient-focused care, which specifies key events, test and assessments occurring in a timely fashion to produce the best prescribed outcome within the resources and activities available for an appropriate episode of care." | Hurst et al., 2002, p.471 |
| Strategic hospital alliance | "Clusters of two or more hospitals in the same urban market." | Luke et al., 2001, p.49 |
| Structural clinical integration | "Reflects the degree of clinical integration achieved by hospitals from a structural perspective. Four dimensions of structural integration: 1. integration across sites of care; 2. integration across divisions of care; 3. integration of physicians; and 4. integration of the information technology." | Lee & Wan, 2002, p.235 |
| Structural integration | Bringing together staff and resources in one single organization under a single unified hierarchical structure. | Billings, 2004, p.3 |
| | Individual components are owned by the organization. | Ennis & Meneses, 1998, p.35 |
| | "Requires ownership of the range of health care services necessary for maintenance or improvements in patients' health." | Byrne & Ashton, 1999, p.37 |
| | "Structural integration involves integrating governance and organizational strategies." | Drazen et al., 1998, p.33 |
| | "Breadth of integration ... refers to the number of different services provided along a continuum of care, and the depth of integration ... refers to the number of different operating units in a system providing a given service." | Coburn, 2001, p.389-90 |
| Supply chain | Different processes and activities that produce in the hands of the ultimate customer. | Stonebraker et al., 2004, p.1131-32 |
| | The connected series of activities concerned with the planning and controlling of raw materials, components, and finished products from suppliers to the final customer. | Stonebraker et al., 2004, p.1132 |
| Systems integration | Assumes that inter-domain coordination and collaborative planning, programming, resource sharing, communication, or other forms of partnering are administratively sanctioned toward the end of services integration. | Dodds et al., 2004, p.50 |
| | Two or more entities develop linkages to improve outcomes for their clients. | Dodds et al., 2004, p.50 |
| | "Refers to attempts to improve the service system for a defined population as a whole rather than for individual clients and can vary in the level of the system addressed, | Cocozza et al., 2000, p.397 |

| Term | Definition | Reference |
|-----------------------------|--|-------------------------------|
| | i.e., service delivery level, program level, policy level.” | |
| | “A continuum varying from activities characterized by information sharing and communication to full integration.” | Cocozza et al., 2000, p.397 |
| Vertical integration | Organizing various independent businesses into one focused unit. | Ennis & Meneses, 1998, p.34 |
| | Involves affiliation of organizations providing different levels of care under one management. | Leatt et al., 2000, p.14 |
| | “Ownership of the various services and programs of the continuum of care.” | Bazzoli, et al., 1999, p.1686 |
| | “Integration of services provided at different levels such as hospital consultant providing primary care.” | Briggs et al., 2006, p.4 |
| | “A vertically integrated firm is one in which there is common ownership of two or more enterprises, one of which uses as input the output of the other ...Vertical integration is often undertaken with the goal of increasing profits, and this goal will be achieved if vertical integration allows for efficiency gains within the organization.” | Byrne & Ashton, 1999, p.35 |
| | “Attempts to bring under one organizational roof all of the different health care activities that are necessary for the production of improved patient health. This type of patient-centred vertical integration requires two components: structural integration and functional integration.” | Byrne & Ashton, 1999, p.37 |
| | “In health care, involves affiliation under one management umbrella of organizations that provide different levels of care. Goals include increasing efficiency, enhancing coordination of care along the continuum, and providing ‘one-stop-shopping’ for managed care purchasers and payers.” | Conrad & Shortell, 1996, p.9 |
| | “To integrate the operation processes through product lifecycle, including order procurement, product design, material supply, product manufacturing, delivery, and after-sales service.” (Business definition) | Dan et al., 2005, p.2634 |
| | “A hierarchical organization in which a specific provider offers a majority of diversified services to a given clientele and coordinates the basic aspects of the other services offered to that clientele within the system.” | Fleury & Mercier, 2002, p.58 |
| | “The coordination of functions, activities, or operating units that are at different stages of the process involved in delivering patient services.” | Gillies et al., 1993, p.469 |

| Term | Definition | Reference |
|--|--|-------------------------------|
| | “The coordination of services among operating units that are at different stages of the process of delivering patient services.” | Shortell et al., 1993b, p.22 |
| | “Vertical integration occurs when multiple services are provided and care can be delivered to the patient in a continuum of services managed by the integrated system.” | Newhouse et al., 1999, p.1 |
| | “To integrate different stages of productions.” (Business definition) | Lin et al., 1999, p.468 |
| Vertical integration (hospital) | “The affiliation under an umbrella of organizations that provide different levels of care ... It's purposes are to increase efficiency, enhance coordination of care and provided the 'one-stop shopping' preferred by managed care payers and their enrollees.” | Wang et al., 2001, p.182 |
| Vertically integrated system | “Vertically integrated systems provide health services and products to patients at multiple points along the patient's life cycle. A vertically integrated system 'has the capacity to provide, or arrange for the provision of, all types and levels of care required by its client population'.” | Newhouse et al., 1999, p.1 |
| | “Vertically integrated system as a linkage of health care delivery systems across a continuum of care that includes hospitals and other health care services.” | Newhouse et al., 1999, p.4 |
| Virtual integration | Health care organizations exist within a network of organizations working towards a common goal of providing health care to a given population but without common ownership. | Leatt et al., 2000, p.23 |
| | Various components of a system are tied together contractually (rather than owned). | Coddington et al., 2001c, p.9 |
| | A network of companies strategically aligned to develop and deliver continuum of services. No transfers of assets to a centralized organization occur, rather a series of contractual agreements among members is developed. | Ennis & Meneses, 1998, p.35 |
| | Integrating the “various services and programs of the continuum of care ... through contractual relationships.” | Bazzoli et al., 1999, p.1686 |
| | “The combination of vertically related stages of the value chain through combinations of long-term, exclusive contracts, operating agreements, franchise arrangements, and formal affiliation.” | Conrad & Shortell, 1996, p.10 |
| | “Structured around an asset of service distributors that coordinate their actions so as to offer diversified, continuous services to a system's clientele.” | Fleury & Mercier, 2002, p.58 |

APPENDIX 4.0 – INDICATORS AND OUTCOMES

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
|--|---|--|--|---|-------------------------------|
| Ahgren & Axelsson, 2005 | Two out of the three Swedish county councils restructured their health care delivery systems and implemented a system of "Local Health Care." | <ol style="list-style-type: none"> 1. Intra-organizational integration 2. Inter-organizational integration 3. Horizontal integration 4. Vertical integration | A ratio scale measures these types of integration. The first step in determining the integration rank was to identify the highest integration category. Second, a rank was assigned to the relationship between each unit within the network by choosing the appropriate category square which illustrated the relative number of cases in the different categories. The rank between units is a consensus amongst different professional groups within the health care units. Each health care unit undertook this ranking exercise for all other units. The health care units were also asked to include what they thought was the optimum rank of integration with each other unit using the same scale of integration. | None reported | None reported |
| Baxter, Levin, Legaspi, Bailey & Brown, 2002 | Looking at the networks of Community Health Centres (CHC) in the United States. | The integrative efforts of seven CHC-led networks in the core areas of managed care, clinical, administrative, information, and finance. | This study relied solely on interviews with key representatives from each of the seven networks, with the intention of highlighting the network's accomplishments and the critical success factors and outcomes of their integration efforts. | <p>Overall, the information gathered from the seven networks brought about the following conclusions:</p> <ul style="list-style-type: none"> ○ CHCs have gained improved visibility in the marketplace, greater purchasing power, improved efficiencies, and the chance to learn from each other. ○ The alliances between the CHCs have enhanced communication and improved relationships with local hospitals and group practices. ○ Successful alliances require a strong reliance on mutual benefit and reciprocity. The affiliated | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
|---|---|--|---|---|-------------------------------|
| | | | | <p>organizations must agree to cooperate and forego their right to pursue individual interests for the sake of the network's interests, but with the understanding that they will also benefit individually.</p> <ul style="list-style-type: none"> ○ A high level of trust between networks seems to reduce the perceived risk inherent in strategic alliances. | |
| Browne, Roberts, Gafni, Byrne, Kertyzia & Loney, 2004 | Describes a three-dimensional model of service integration and a measure of human services integration. | <p>Three aspects of integration measured:</p> <ol style="list-style-type: none"> 1. extent – “the identification of services and the number of services within a number of programs” (p.5) 2. scope – number of services with awareness of link with others 3. depth – “depth of links among all services and each services, along a continuum of involvement” (p.5). | Service providers rated their perceived level of integration with other services on a five point continuum. | The author's provided an example of the score grid to illustrate the application of the indicators. | None reported |
| Collins & Turner, 2000 | The Bentley Bayside Community Health Service was evaluated in 1985 and | Evaluate the integration and coordination of treatments and health promotion activities. | <p>Data gathered in 1985 was compared with that gathered in 2000.</p> <p>Several methods were used to gather the data:</p> <ol style="list-style-type: none"> 1. Case record review 2. Staff questionnaires | <p>Outcomes were grouped into four categories:</p> <p>Case coordination:</p> <ul style="list-style-type: none"> ○ Proportion of patients who accessed more than one discipline remained constant | <p>System</p> <p>Provider</p> |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
|-------------|--|--|---|---|-------------------------------|
| | again in 2000 as a provider of coordinated and integrated services. | | 3. The work of the centre was evaluated based on fourteen criteria established through a literature review of community health. | <ul style="list-style-type: none"> Personal contact with external agencies decreased Face to face contact with physicians remained constant, correspondence increased, telephone calls decreased <p>Coordination of services:</p> <ul style="list-style-type: none"> Referrals for multidisciplinary clients increased from GPs and other agencies but decreased from hospitals <p>Health promotion and disease prevention:</p> <ul style="list-style-type: none"> Integrated health promotion occurred in a variety of programs which fell into several main categories including: three-year projects, school programs, short courses, self help and support groups, participation in community activities, and planning community action <p>Program coordination:</p> <ul style="list-style-type: none"> Part time employment and staff turnover created problems in ensuring continuity in case conferences and in the ability to effectively carry out health promotion projects. | |
| Coxon, 2005 | As part of the PROCARE study, this paper looks at the experiences of the front line staff working in | The experiences of frontline staff in integrated care. | Questionnaires and interviews were used to generate insights from staff and managers. Focus groups were also conducted. | <p>Benefits of integrated working:</p> <ul style="list-style-type: none"> Improved job satisfaction because the service could be more responsive to the needs of the client Good teamwork Good communication Enhanced cooperation with other | System Provider |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
|-------------------------|--|--|---|---|-------------------------------|
| | integrated health and social care organizations. | | | agencies <ul style="list-style-type: none"> ○ The development of a shared culture between professions improved relationships Disadvantages of integrated working: <ul style="list-style-type: none"> ○ Working alongside doctors, hospitals and the medical profession generally (the 'medical/social divide') ○ Unrealistic expectations placed on providers ○ The realization that resources are finite | |
| de Jong & Jackson, 2001 | Implementation and evaluation of integrated health service delivery. | Three objectives of integration: <ol style="list-style-type: none"> 1. communication/ access 2. culture, values and teamwork 3. commitment and incentives | <ol style="list-style-type: none"> 1. Communication/access was measured by determining the extent to which objectives have been implemented (protocols produced and applied); patient records are complete; and timely transfer of patient records information. 2. Culture, values, and teamwork were measured by determining the extent to which objectives had been implemented such as involvement of the appropriate stakeholders. 3. Commitment and incentives were measured by determining the extent to which guidelines had been developed and implemented; cost-effectiveness such as length of stay, readmission rates, and reduction in duplication of test; and formal organizational commitment such as the number of memorandum of agreements. | None reported | None reported |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
|--|--|--|--|--|-------------------------------|
| Devers, Shortell, Gillies, Anderson, Mitchell & Erickson, 1994 | National (U.S.) study of nine organized delivery systems | <p>Three types of integration with multiple measures (in brackets) each:</p> <ol style="list-style-type: none"> functional integration: human resources (12), financial management (12), support services (6), quality assurance and improvement (7), strategic planning (5), information services (1), culture (3), and other (3); physician-system integration: economic involvement (15), administrative involvement (3), group practice formation (5), shared accountability (5); and clinical integration: clinical protocol (2), medical records accessibility (5), clinical outcome data utilization (2), shared programmatic and planning efforts (4), clinical support services (2), and shared clinical services (2). | <p>A questionnaire, completed by “appropriate personnel in the system and operating unit offices (e.g., the physician-system integration section was completed by personnel in the corporate physician affairs office, staff in physician groups, etc.)”, with a series of yes/no questions, yes responses indicated integration (p.10).</p> <p>The questionnaire used to measure functional integration is included with the article.</p> <p>Descriptions of the indicators used to measure physician-system integration and clinical integration are also discussed.</p> | The authors provide descriptive summary statistics of physician-system integration measures and clinical integration measures in nine United States organized delivery systems. However, the focus is on using these measures as a “scorecard” to assess progress toward achieving integration not on the success of integration implementation. | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| Gillies, Shortell, Anderson, Mitchell & Morgan, 1993 | Findings from the Health Systems Integration Study were presented. | <ol style="list-style-type: none"> 1. The respondent's perceived degree of functional, clinical, and physician-system integration. 2. Overall functional integration | <p>Nine health care systems participated in this study.</p> <ol style="list-style-type: none"> 1. Perceptions of integration: <ul style="list-style-type: none"> - A self-administered, 43-item five point Likert scale questionnaire was completed by managers, board members, and physician leaders. 2. Overall functional integration: <ul style="list-style-type: none"> - A score was computed using all 43 items from the questionnaire. | <ul style="list-style-type: none"> o Overall, functional integration was found to be at a moderate level, and physician-system integration and clinical integration were at relatively low levels. o Some areas appeared to be easier and quicker to integrate (human resources, culture, strategic planning, financial management, resource allocation, and financial management operating policies). Six other areas appeared to be more difficult to integrate (physician integration, support services, information systems, clinical integration, marketing, and quality assurance). o No one system showed a tendency towards high integration. o Corporate personnel typically perceived the functional areas of their health system as more integrated, and effective, than did the operating unit personnel. As well, corporate managers believed that the system was more integrated if they had more control; conversely, operating unit managers believed the system was more integrated when they had more of the control. o Overall, there was general consensus that clinical integration was not being achieved. o There was a positive relationship between perceived integration and perceived effectiveness. | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| Jha, Perlin, Kizer & Dudley, 2003 | In the mid 1990s, the Department of Veteran's Affairs launched a major reengineering of its health care system with aims that included better use of information technology, measurement and reporting of performance, and integration of services and realigned payment policies. | Changes to quality of care from 1994 through 2000. | Data from the VA's External Peer Review Program including: <ul style="list-style-type: none"> ○ preventive care e.g. number of mammographies, influenza vaccinations ○ outpatient care e.g. blood pressure in patients diagnosed with hypertension ○ inpatient care e.g. number of patients admitted with acute myocardial infarction who rec'd smoking cessation counselling | <ul style="list-style-type: none"> ○ Performance improved steadily through 2000. ○ By 2000, there were high rates of screening and vaccination, management of chronic diseases, and inpatient care. ○ For the 13 measures for which multiyear data were available, there were significant improvements in 12 measures. | System |
| Lee & Wan, 2002 | The objective of this study was to examine the effects of hospitals' structural clinical integration on efficiency and outcomes for | The research questions were: <ol style="list-style-type: none"> 1. Is structural clinical integration positively related to the performance of the care process (efficiency)? 2. Is the performance of the care process (efficiency) positively | Structural clinical integration: <ul style="list-style-type: none"> ○ Integration across sites of care: measured by the number of pre-acute and sub-acute facilities either in a hospital or as a subsidiary of a hospital. ○ Integration across divisions of care: measured by breadth of services (availability of care units, facilities, and services within a hospital) and case management (whether or not it is offered). | <p>Relationship of clinical integration to process performance:</p> <ul style="list-style-type: none"> ○ Strategic changes of hospitals' structure toward more integration do not immediately improve the financial performance. <p>Relationship between performance and outcomes measures:</p> <ul style="list-style-type: none"> ○ A higher average total charge had a positive influence on surgical | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| | the patient. | related to patient outcomes? | <ul style="list-style-type: none"> Integration of physicians: four levels were identified: 1) no physician-hospital integration strategy, 2) a contract arrangement, 3) an ownership arrangement, or 4) a hybrid arrangement. Integration of the information technology measured by the number of application systems in each function area (administration, management and clinical function). The more applications in each functional area was assumed to indicate a higher level of clinical integration in the hospital. <p>Process Performance:</p> <ul style="list-style-type: none"> Measured by the average total charge per discharge. <p>Patient Outcomes:</p> <ul style="list-style-type: none"> Measured by two indicators: risk-adjusted, surgical complication ratio; and risk-adjusted, in-hospital mortality ratio. | <p>complications, and a higher complication ratio was positively associated with the in-hospital mortality ratio.</p> <p>Overall:</p> <ul style="list-style-type: none"> Direct relationships were found between structural clinical integration and process (average total charge), and between process and patient outcomes (surgical outcomes). Structure indirectly relates to the end result of care, through an intermediate outcome of the care process. | |
| Leggat & Leatt, 1997 | Introduced a framework for monitoring and evaluating the performance of an integrated health delivery system that can be used by government and governing bodies. | <ol style="list-style-type: none"> Are the appropriate structures in place to achieve integration and the intended outcomes? Is the integrated delivery system “conforming to its intended structure and integrating mechanisms?” (p.12) Has the integrated delivery system achieved its outcomes at an acceptable cost? | <p>A variety of indicators were used to collect the data necessary to evaluate the integration process.</p> <p>Article did not provide details.</p> | None reported | None reported |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| Lukas, Meterko, Lowcock, Donaldson-Parlier, Blakely, Davies, et al., 2002 | Evaluation by The Veterans' Affairs Upper Midwest Health Care Network. | A network of five medical centres developed a scorecard to measure integration structures, system integration, and improved system performance. | <ol style="list-style-type: none"> 1. Integration structures were measured by a service line inventory and determined the existing structures that support and promote integration such as the activities, functions, and responsibilities of the integration structures. 2. System integration was measured using a staff integration survey to assess the extent to which the parts of the system were working together [focus of the article is the development of this survey]. 3. Improved system performance was measured by network performance indicators such as access, cost, quality, and patient satisfaction. | <ol style="list-style-type: none"> 1. Staff and clinicians reported that system and facility leaders clearly articulate system goals and objectives about half the time (3.6/7.0 and 3.6/7.0). 2. Cooperation amongst staff across facilities occurs sometimes as reported by staff and clinicians (2.4/7.0 and 2.6/7.0 respectively). 3. According to staff and clinicians, alignment of network goals with facility leadership and priorities without the loss of local needs and priorities rated very low (2.1/7.0, 2.5/7.0 respectively). 4. Problem solving, benchmarking performance, and administrative coordination across facilities was almost never done as reported by staff and clinicians (1.7/7.0 and 1.6/7.0, respectively). 5. Clinical coordination across facilities was reported as occurring less than sometimes by clinicians and managers (2.8/7.0 and 2.3/7.0, respectively). 6. Overall, managers rated all aspects of system integration, except clinical coordination, higher than did staff and clinicians. | System Provider |
| Messeri, Kim & Whetten, 2003 | The purpose of this article was to measure | The main variable being measured was Service Integration, which was measured in two parts: | <ol style="list-style-type: none"> 1. Structural features of the service delivery system <ul style="list-style-type: none"> - Grantee informants were asked to confirm the linkage development | <ol style="list-style-type: none"> 1. Structural features of service delivery systems <ul style="list-style-type: none"> - Service integration activities were not always fully | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| | service integration activity. Data was collected as part of a larger evaluation study of 34 HIV/AIDS service delivery demonstration grants. | <ol style="list-style-type: none"> Features of the service delivery system Interagency interactions | <p>activities and client-centred integration activities they tried to implement during the grant cycle.</p> <ul style="list-style-type: none"> - Structured data was collected on the level of integration between four core services: medical, mental health, substance abuse, and housing. - A final level of implementation for program-centred service integration activities was rated on a five point scale. <ol style="list-style-type: none"> Transactional measures of interagency interactions <ul style="list-style-type: none"> - A structured questionnaire, key information interviews, and provider surveys were used. - Measured interagency awareness, satisfaction, communication and client referrals. | <p>implemented as planned or sustained for the duration of the grant cycle. Some barriers identified included geographic distance between agencies, staff turnover, different agency culture, agency non-compliance, increased capacity to provide services oneself, lack of available resources, needs of clients or providers not being met, lack of communication, personality issues, politics, and bureaucracy.</p> <ul style="list-style-type: none"> - Linkages between core services were most likely to take the form of service integration activities that attempted to coordinate the efforts of providers working in different agencies. - The grantees concentrated their efforts of developing linkages on the coordination of medical care with the three other core services (mental health, drug treatment, and housing). - When grantees were organized by level of integration intensity (based on the Kagan-Konrad scale), commonalities in the integration approaches could be seen. As the level of intensity increased, so did the number of formal linkages. <ol style="list-style-type: none"> Transactional measures of | |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| | | | | interagency interactions - Baseline and follow up data was only available from 14 of the grantees, and no clear trend toward either consistent increase or decline in interagency density could be found. | |
| Millson & Willemon, 2001 (Business literature) | Research looking at the impact of organizational integration (OI) on new product development (NPD) success. | The relationships between: 1. organization integration and new product market success 2. organizational integration and NPD process proficiency 3. NPD process proficiency and new product market success | A field study was conducted including firms in the medical instruments, electrical equipment, and heavy construction equipment industries. A mail questionnaire was sent to individuals from the companies. | 1. Organizational integration and product market success - The data showed that a high degree of overall organizational integration was associated with high profit when organizational integration was measured over the entire NPD process but was not significantly associated with the other three measures of new product market success 2. Organizational integration and NPD proficiency - The correlation between OI and NPD proficiency was significant. As well, increased levels of integration with less proficient NPD teams can increase the market success of new products. 3. NPD proficiency and new product market success - Increased task proficiency over the entire NPD process and especially during the development-and-launch and post-launch NPD stages were significantly associated with sales. | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| Newhouse & Mills, 1999 | This article examined the implications of integration on nurse administrators. | Nurse administrators were asked to report on the: <ol style="list-style-type: none"> 1. structure of the vertically integrated system 2. process of integration 3. outcomes of integration within their organizations. | Structured interviews were conducted with eight nurse administrators, from seven facilities, with key responsibilities in planning and managing integrated health systems. | <ol style="list-style-type: none"> 1. Decisions regarding integration were made above the level of the nurse administrator. 2. Human resources, financial operations, and information systems were functions most often integrated. 3. Quality assurance measurement was usually at the organizational level. 4. Integration resulted in uncertain role changes. 5. Nurse administrators considered their jobs and responsibilities from a system perspective rather than their own organization. | System |
| Provan & Milward, 2001 | The authors evaluated publicly funded health and human services | Networks effectiveness at three levels: <ol style="list-style-type: none"> 1. community level 2. network level 3. organization/participant level | <ol style="list-style-type: none"> 1. Network effectiveness at community level was measured by assessing aggregate outcomes for the population being served by the network and determining the overall costs of providing those services. 2. Effectiveness at the network level was measured by determining the ebb and flow of agencies to and from the network; extent to which services needed by clients were provided by the network; strength of the relationships amongst the network members. 3. Effectiveness at the organization/participant level was measured by determining the client outcomes, legitimacy, resource acquisition, and cost to the agency of membership in the network. | None reported | None reported |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| Suter, Hyman & Oelke, 2007 | The authors evaluated integration in a community health centre. | <ol style="list-style-type: none"> 1. Functional integration 2. Clinical integration 3. Community integration 4. Physician integration 5. Access | <ol style="list-style-type: none"> 1. Clinical Microsystem Assessment Tool 2. Referral tracking 3. Corporate utilization data | <ol style="list-style-type: none"> 1. Functional integration: central registration process provided adequate access to client information and computer support 2. Clinical integration: few clients were being formally referred 3. Community integration: not well integrated 4. Physician integration: not well integrated 5. Access: centre was well utilized by the community residents | System |
| Wang, Wan, Clement & Begun, 2001 | Examining the relationship between managed care and hospital vertical integration strategies. As well, the various types of vertical integration were studied in relation to hospital efficiency and financial performance | <ol style="list-style-type: none"> 1. Impact of managed care on vertical integration 2. Effect of vertical integration on performance | <p>Data was gathered from 363 California short-term general hospitals.</p> <p>Variables:</p> <ol style="list-style-type: none"> 1. Managed care concentration – measured by the volume of patients served by a hospital that is covered by managed care arrangements. Indicators include percentage of patient days from managed care contracts, the number of HMO contracts in each hospital, the number of lives covered under a capitated payment arrangement in each hospital, the number of PPO contracts in each hospital, and the percentage of outpatient visits covered by managed care contracts. 2. Vertical integration strategies – measured by backward and forward integration constructs. Backward integration was measured by the number of non-hospital-based physicians on medical staff in the hospital, the number of ambulatory care visits, and the number of outpatient | <ol style="list-style-type: none"> 1. Managed care and vertical integration strategies <ul style="list-style-type: none"> - There was strong support for the association between managed care and both forms of vertical integration - The results confirm that in response to managed care, hospitals are prompted to seek more backward integrative relationships with physicians or to expand their outpatient services and day surgeries. 2. Vertical integration strategies and hospital performance <ul style="list-style-type: none"> - Hospitals that are integrated with physician groups and provide ambulatory care services are not necessarily likely to have higher productivity. - Hospitals that integrate with | System |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| | | | <p>surgeries. Forward integration was measured by the number of available skilled nursing care beds within the hospital, the number of home health visits, and the number of available inpatient rehabilitation beds.</p> <p>3. Performance – measured by indicators of productivity and financial success/viability. Indicators of productivity are adjusted admissions per bed, measured by hospital admissions divided by total staffed beds, and adjusted admissions per FTE, measured by hospital admissions divided by total full time employees. Financial success is measured by the following indicators: return on assets, operating margin, net cash flow, and adjusted net patient revenue.</p> | <p>physician groups and provide outpatient services are associated with better financial performance in terms of operating margin, return on assets, and net cash flow.</p> <ul style="list-style-type: none"> - Inpatient utilization is higher if a hospital can provide integrated services such as skilled nursing, intermediate nursing, and rehabilitation services. - Hospitals have a lower level of financial performance if they provide long-term care services. | |
| Wells & Weiner, 2005 | The purpose of the study was to create a framework, using the Balanced Scorecard, depicting the benefits of integrated health care for vulnerable populations. | <p>The research questions were:</p> <ol style="list-style-type: none"> 1. What are the financial and non-financial benefits of integrated functions for organizations within CHC-led networks, their staff, and the patients they serve? 2. What patterns exist in terms of what functions are reported to yield which benefits? | Twelve integrated functions, across seven CHC-led networks around the U.S. were evaluated. Interviews were conducted with staff from all levels from front line staff to board level. Documents from the organizations were also reviewed. | <p>The authors used the Balanced Scorecard to characterize the benefits of integration as identified in their study.</p> <ol style="list-style-type: none"> 1. Financial Perspective: <ul style="list-style-type: none"> - Improved leverage and public visibility - Efficiencies in asset utilization, development of system capacities in IT, compliance and research 2. Customer Perspective: <ul style="list-style-type: none"> - Improved data quality and access to services 3. Internal Business Perspective: <ul style="list-style-type: none"> - Improvements which enhanced | <p>System</p> <p>Provider</p> |

| Author(s) | Context | What was being measured? | How was it being measured? | What were the findings? | Level(s) of outcomes reported |
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| | | | | <p>efficiency, quality improvements, and compliance</p> <ul style="list-style-type: none"> - Workload decreased so focus could remain on core aspects of job roles <p>4. Learning and Growth Perspective:</p> <ul style="list-style-type: none"> - Employee capabilities – growth in functional capabilities and increased capacity to collaborate - Information capabilities – improved information systems capabilities, ability to benchmark against other clinics, staff provided IT resources, quicker problem detection - Motivation, empowerment and enlightenment – improved overall morale | |

APPENDIX 5.0 – REFERENCES

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