

Healthcare Quarterly

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A Conceptual Exploration of
Integrated Care



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**A CONCEPTUAL EXPLORATION OF
INTEGRATED CARE**



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Patient
focused

If health systems in Canada are going to tackle the challenges they are facing, for example, growing and aging populations and an increasing burden of chronic disease, new ways of connecting services and service providers need to be found.

In Alberta, the establishment of Alberta Health Services (AHS) in May 2008 created an opportunity to review what had been and could be achieved in integrating health services to improve the quality and outcomes of health services delivered within the province. With a renewed focus on the patient and organizational goals of quality, access and sustainability, AHS set out to encapsulate the integration experiences from previous regional/provincial health service organizations within Alberta.

Integrating services is a necessary part of improving patient care and efficiently using scarce resources. Integration as a focus of study has been evolving in Canada. By commissioning this special edition, AHS wanted to contribute to a growing body of knowledge regarding integrating health services and integrated care.

... how can complex healthcare systems effectively undertake new ways of delivering services that result in a better patient/client experience, improved clinical outcomes and results on investment?

But how to define integration? While we are challenged by a lack of one common definition, there are relative agreements on what integration is not. Patients' and their family's experiences in healthcare are often characterized by fragmentation, duplication and system or care gaps. What readers will see in this special edition is that integration is a framework – a lens that can be systematically applied to better link patients/clients, healthcare providers and services. Informing this framework are a number of foundational tools and progressive approaches:

creating an operational definition (Kodner; Suter et al.); critical roles for information management (Protti) and knowledge management (Scott et al.); new roles for healthcare leaders as “change leaders” (Silversin) within modified governance structures (Smyth); and the importance of using rigorous improvement methodologies (Murray).

Then, what about the *how* – how can complex healthcare systems effectively undertake new ways of delivering services that result in a better patient/client experience, improved clinical outcomes and results on investment? Readers will also find in this special edition a wealth of experiential knowledge that demonstrates some of the challenges and successes in integrating health services. Examples are provided related to improving access and organizing the care continuum through a number of initiatives: integrated stroke and cardiac care; exploration of various clinician roles, for example, a pharmacist-managed clinic; a systems approach to chronic disease management and prevention; and a community-based approach to medication reconciliation.

Collectively capturing and sharing the key learnings from healthcare leaders and practitioners directly involved in this work not only helped to advance our organizational knowledge about what works and doesn't work. It also helped to break down the “integration silos” that often result from taking on very targeted quality improvement initiatives, thereby preventing missed opportunities for a broader spread of proven methods and innovative solutions.

This edition brings together a mosaic of voices that will hopefully stimulate broader and ongoing conversations with clinicians, researchers, administrators and patients to improve the healthcare system within Canada and beyond. The opinions herein are those of the authors and researchers cited.

We hope you enjoy this special edition on healthcare system integration and find it helpful in your own quests to improve the quality of healthcare services for the patients/clients you serve. As AHS continues to evolve as a renewed provincial healthcare organization, we will surely be adding to our integration journey! Stay tuned!

Dr. Jodi Abbott
Vice President
Quality Performance Improvement

Michele Zielinski
Executive Director
Clinical Practice Improvement

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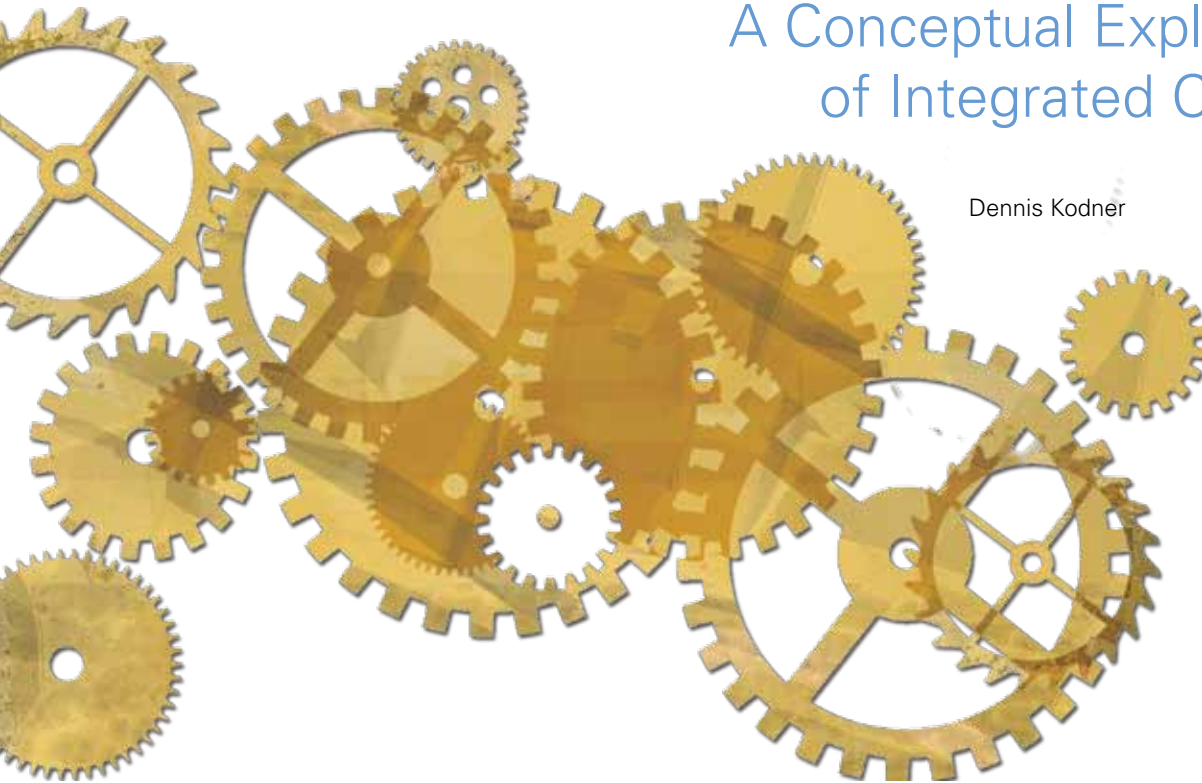
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ALL TOGETHER NOW:

A Conceptual Exploration of Integrated Care

Dennis Kodner



Abstract

Integrated care is a key strategy in reforming health systems around the world. Despite its importance, the concept's polymorphous nature and lack of specificity and clarity significantly hamper systematic understanding, successful application and meaningful evaluation. This article explores the many definitions, concepts, logics and methods found in health system and service integration. In addition to framing this evolving, albeit imprecise field, the article summarizes the main elements or building blocks of integrated care and suggests a way to address its various complexities and unknowns in a real-world sense.

Table 1. Some key definitions of integrated care and related concepts

Original term/Author	Definition
Integrated Care/Øvretveit (1998)	The methods and type of organization that will provide the most cost-effective preventative and caring services to those with the greatest health needs and that will ensure continuity of care and co-ordination between different services
Integration/Leutz (1999)	The search to connect the healthcare system (acute, primary medical and skilled) with other human service systems (e.g., long-term care, education and vocational and housing services) to improve outcomes (clinical, satisfaction and efficiency)
Integrated Care/Gröne and Garcia Barbero (2001)	A concept bringing together inputs, delivery, management and organization of services related to diagnosis, treatment, care, rehabilitation and health promotion...[as] a means to improve the services in relation to access, quality, user satisfaction and efficiency.
Integrated Care/Kodner and Spreeuwenberg(2002)	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 cure and care sectors...[to] enhance quality of care and quality of life, consumer satisfaction and system efficiency for patients with complex problems cutting across multiple services, providers and settings.

Introduction

“Integrated care” is a global buzzword in healthcare and a key concept that has helped to drive and shape major policy- and practice-level changes in the health systems of North America, Europe and other parts of the world for well over two decades. Integration is designed to create coherence and synergy between various parts of the healthcare enterprise in order to enhance system efficiency, quality of care, quality of life and consumer satisfaction, especially for complex and multi-problem patients or clients. In essence, integrated care can be seen as a demand-driven response to what generally ails modern-day healthcare: access concerns, fragmented services, disjointed care, less-than-optimal quality, system inefficiencies and difficult-to-control costs. These challenges are the result of a great many factors (Kodner 2008; Kodner and Kyriacou 2000; Leatt 2002; MacAdam 2008; Solinis 2008). Chief among them are the differentiation, specialization, segmentation and silo mindset deeply embedded in all aspects of the health system (i.e., policy, regulation, financing, organization, service delivery and professional/institutional culture). There is also the serious mismatch between the complex needs of increasing numbers of the frail elderly and people with chronic conditions and disabilities on the one hand, and the health system’s overwhelming and increasingly anachronistic acute, episodic medical orientation on the other (Kodner 2004). See “Drivers of the Integration Imperative” on the next page.

There are many cross-national differences in healthcare policy, funding, infrastructure and provision, yet policy makers, planners and providers in Canada, the United States and a great many other countries are nonetheless increasingly focused on more integrated or coordinated approaches to the organi-

In order to continue providing affordable, quality healthcare, governments have no choice but to restructure the health system in ways that enhance efficiency and reduce fragmentation, and integration is a principal driver of reform

zation and delivery of services across the continuum of care (Delnoij et al. 2002; Ham et al. 2008; Kodner 2002; Suter et al. 2007). In order to continue providing affordable, quality healthcare, governments have no choice but to restructure the health system in ways that enhance efficiency and reduce fragmentation, and integration is a principal driver of reform (Contandriopoulos et al. 2003). Despite the prevalence of this trend, a fundamental challenge has arisen with respect to the lack of a common definition of *integrated care*. Like a Rorschach test, the term is often used by different people to mean different things. It is most frequently equated with *managed care*, *continuity of care*, *case/care management*, *transmural care*, *patient-centred care*, *shared care*, *transitional care* and *integrated delivery systems*, to name the most widespread appellations. Table 1 presents a sampling of some

of the more well-known international definitions. MacAdam (2008) characterizes the terminology as “elastic.” Kodner and Spreeuwenberg (2002) refer to the bewildering array of vague and confusing terms and concepts surrounding integrated care as being akin to the biblical Tower of Babel, while Howarth and Haigh (2007) characterize the many seemingly related and overlapping notions as a “quagmire of definitions and concept analyses.” According to Nolte and McKee (2008), this problem reflects integrated care’s polymorphous nature. Some of these viewpoints are illustrated in “Different Views of Integrated Care” on this page.

Drivers of the Integration Imperative

- Lip service to consumer centredness
- Aging, chronic illness and disability
- Unbalanced “balance of care”
- Service fragmentation, gaps and redundancies
- Access, continuity and coordination problems
- Inefficient use of resources
- Suboptimal outcomes and medical errors
- Mounting, difficult-to-control costs
- Incomplete accountability
- Declining public confidence in health system

Terminology plays a crucial role with respect to how we envision, design, deliver, manage and evaluate healthcare services. The lack of specificity and clarity inherent in the definition of integrated care greatly hampers systematic understanding and successful, real-world application. This is further complicated by the lack of a solid empirical framework (Goodwin et al. 2004). Such a framework is needed to facilitate communication, hypothesis generation, policy formulation, program development and evaluation in the integrated care field (Kodner and Kay Kyriacou 2000). The goal of this article is to provide a better understanding of integrated care by examining definitions, concepts, logics, and methods found in this important and evolving, albeit imprecise field.

Many Roots and Branches

Like a tree, integrated care has many roots and branches. Following is a discussion of some of the better-known scientific and professional concepts and approaches that have cross-fertilized the broad swath of integrated care.

Organizational, Managerial and Business Foundations

Organizational theory and management science encompass the systematic study of organizations from several different

Different Views of Integrated Care

(Adapted from Lloyd and Wait 2006)

Patients: Easy access and navigation; seamless care

Providers: Interdisciplinary teamwork; coordination of tasks, services and care across professional and institutional boundaries

Managers: Oversight of combined funding streams; coordination of joint performance targets; supervision of enlarged and professionally diverse staff; management of complex organizational structures and inter-agency relationships; building and maintenance of shared culture

Policymakers: Design of integration-friendly policies, regulations and financing arrangements; evaluation of systems/programs on holistic basis

perspectives (i.e., individual and group dynamics, whole organization, and power, culture and networking) and the application of this knowledge to improve business and related practices, including those in healthcare (Robbins 2004).

Effective organizational design and performance depends on achieving a state of integration (Scott 1992; Thompson 1967). All organizations consist of separate but interconnected parts; these parts are supposed to play complementary roles in order to accomplish shared tasks (Pfeffer 1982). However, the division, decentralization and specialization found in the architecture of more complex organizations tend to interfere with efficient operations (Lawrence and Lorsch 1967). The fulfillment of organizational aims demands cooperation and collaboration among and between the various components and processes (Galbraith 1973). Essentially, integration is the glue that bonds the entity together, thus enabling it to achieve common goals and optimal results (Kodner 2002).

In their seminal review of health systems integration, Suter and colleagues (2007) concluded that the principles and lessons of organizational behaviour and management practices in the business sector can contribute to our understanding of integrated care. Businesses have similar goals to those of health-care providers with respect to integration as a structure and

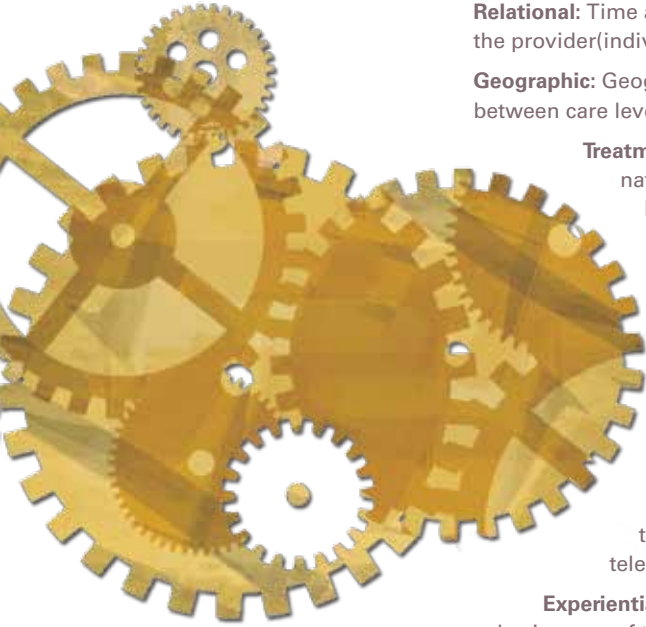


Various Aspects of Continuity of Care

(Adapted from Solinis 2008)

Longitudinal: Period of time over which the patient relates with the provider**Relational:** Time and quality of relationship with the provider(individual or group/team)**Geographic:** Geographic range of the relationship between care levels.**Treatment:** Integrated or fragmented nature of care within the same level.**Continuity as flexibility:**

Capacity to adapt care to the changing needs of the patient.

Informational: Registries and information related to the patient and patient care.**Communications:** Means of distant interaction between the provider and patient (e.g., telephone and Internet).**Experiential:** How patients experience the cohesiveness of their care.

The lack of specificity and clarity inherent in the definition of integrated care greatly hampers systematic understanding and successful, real-world application.

process. Organizational culture has also been identified as a significant barrier to becoming integrated.

Managed Care, Integrated Delivery Systems and Networks

Robinson and Steiner (1998) describe the managed care model as a “health benefit intermediary” (HBI) organization that acts as an insurer and purchaser of services on behalf of subscribers (also known as members) or payer organizations (e.g., government programs like Medicare and Medicaid, and employers). There are many different forms of managed care; a major defining variable is the degree to which managed care plans effectively integrate the direct delivery of services. The best-known managed care prototype is the Health Maintenance Organization (HMO).

Although managed care reflects a unique American orientation to market-based competition and cost containment, a great many of its features in areas such as payment systems (e.g., capitation), organizational design, provider networking, integrated information systems and care coordination have ultimately ended up in present-day integrated care frameworks (Dubbs et al. 2004; Kane et al. 2005; Kodner and Kay Kyriacou 2000; Hunter and Fairfield 1997; Øvretveit 1998; Robinson and Steiner 1998).

Integrated delivery systems (IDSs) – also known as organized delivery systems, integrated delivery networks, integrated service networks and integrated care organizations – are managed care offshoots that generally follow the original framework posited by Shortell et al. (1994). The IDS represents a vertically integrated structure, that is, it brings together healthcare organizations such as hospitals, medical groups and other service providers, uses aligned incentives and is frequently linked to insurance plans. The form began to emerge in the 1990s as a more flexible means of

responding to local market conditions and also to compete with HMOs and other more traditional managed care options (Burns and Pauly 2002). While the IDS model has generally fallen short of expectations, some systems have managed to show modest signs of clinical and financial success. There is interest in Canada and on the other side of the Atlantic in home-grown versions to enhance integrated care (Fulop et al. 2005; Leatt 2002; Leatt et al. 2000; Rosen and Ham 2008).

Managed care plans and IDSs are examples of networks. Networks, which are *de rigueur* in policy and practice circles, represent an important pathway to integrated health and social services (Hudson 2004; Provan and Milward 2006). According to Goodwin et al. (2004), networks are inter-organizational or multi-organizational systems designed to promote integrated or seamless services. They come in four main configurations: *Informational networks* facilitate the sharing of knowledge and ideas. *Coordinated networks* bring together individual provider organizations into cross-institutional partnership but leave the parties separately responsible for clinical and financial outcomes. *Procurement networks* create a comprehensive continuum of care with overall quality and fiscal accountability by linking various providers (and sometimes payers) through contractual arrangements (the IDS falls into this category). Finally, *managed*

networks represent the most structured and fully integrated form wherein the delivery and financing of care are through a single entity or hierarchical structure (HMO-like plans fit under this rubric). As illustrated, network types range from informal to highly organized; they differ largely in terms of network goals, management centrality, resource control and structural complexity. Success through networking demands managerial skill and persistence in the face of multiple challenges associated with a complex and dynamic environment (Goodwin 2004; Huerta et al. 2006).

Continuity of Care and Continuum of Care

Many definitions of integrated care directly or indirectly touch on the theme of continuity of care, and the literature is full of definitions. Freeman et al. (2000) provide an excellent overview of aspects of continuity of care, as summarized by Solinís (2008). See “Various Aspects of Continuity of Care” on the previous page.

The continuum of care is an oft-recommended antidote to fragmented and uncoordinated health and social service systems in which continuity of care is often the victim. It is designed to connect and coordinate an array of providers and points of service capable of matching the needs and preferences of multi-problem patients over time and at various stages of illness and disability (Evashwick 1987).

To sum up, Reid et al. (2002) and Haggerty et al. (2003) conclude that continuity of care is the method by which patients experience the cohesiveness and connectedness of the health system. Clearly, these dimensions are key concerns of integrated care.

The continuum of care is an oft-recommended antidote to fragmented and uncoordinated health and social service systems in which continuity of care is often the victim.

Coordination of Care and Case Management

The terms coordination and integration are frequently used interchangeably (even in this article), although integration seems to some observers to have a more organizational and managerial (and, therefore, less patient-oriented or clinical) tone.

Hofmarcher et al. (2007), in a report published by the Organisation of Economic Co-Operation and Development (OECD), examine the nature of care coordination, its rationale and impact on cost-efficiency. According to the authors, the strategy consists of linking services and making sure they are

delivered in tandem – when and where needed. It specifically targets the frail elderly and other complicated or high-risk groups in order to reduce the need for high-cost hospitalization, ensure that patients receive the appropriate mix of acute and long-term care services, eliminate fragmentation and make service systems more user-friendly. While the evidence presented on cost-efficiency is inconclusive, care coordination programs – including case/care management and disease management – do appear to improve quality. Clearly, care coordination is crucial to achieving quality outcomes, although by itself it is too limiting to achieve overall integration.

Case management is one of the better-known care coordination approaches¹ and is an essential integrated care tool. It is a comprehensive and systematic process of case finding/screening, assessing, planning, arranging, coordinating and monitoring multiple services for clients with long-term care needs and other complex or high-risk conditions across time, setting and discipline (Kodner 1993). This proactive process operates at multiple levels (administrative, service delivery and/or clinical) (Kodner 2003) and has at least three main goals: (1) improve appropriateness, coordination and consistency between services, (2) enhance choice and flexibility in service delivery, and (3) improve service efficiency and patient outcomes (Davies 1994; Kane et al. 2005). Case management programs can be effective. However, Kane et al. (2005) conclude that results for patients with chronic conditions are for the most part equivocal.

Management of Chronic Conditions

Disease management was the earliest phase in the worldwide effort to prevent and manage chronic conditions (Boston Consulting Group 1993). The strategy emerged in the US during the decade of the 1990s and has quickly spread to other countries. There are multiple and competing definitions, as with all the integrated care-related terms presented in this paper. Disease management is a systematic, population-based approach involving the identification of people at risk of a particular disease, intervention throughout the condition's lifecycle, and the packaging and management of treatments and services across the entire care and disease spectrum in order to achieve better and more cost-effective health outcomes. Programs target individual chronic conditions (e.g., diabetes, asthma, cardiac disorders and depression, to name the most obvious) rather than their underlying causes. A variety of tools (case management, clinical protocols and practice guidelines, and patient education) are employed. Several meta-analyses show that disease management yields modest positive effects (Krause 2005; Mattke et al. 2007; Tsai et al. 2005). However, it is unclear which disease management components or combinations are the most effective (Weingarten et al. 2002).

The Chronic Care Model (CCM), developed by Wagner and collaborators, offers a more all-encompassing and collabo-

rative approach to chronic illness management than conventional disease management. The CCM is essentially an idealized, evidence-based framework that rests on more than 30 specific interventions spanning six key areas: healthcare organization, community resources, self-management support, delivery system design, decision support and clinical information systems (Wagner et al. 1996). These elements cut across the health system and community setting and are designed to engage informed patients in productive interaction with an experienced, proactive, interdisciplinary provider team. Unlike narrow, medically oriented disease management programs, the CCM recognizes the importance of building links outside the health system, since this is where much of the work of chronic care takes place (Bodenheimer et al. 2002a). In addition to incorporating the role of primary care, it actively promotes greater reliance on patient self-management (Bodenheimer et al. 2002b). A great many health systems in Canada and the US (e.g., Alberta Health Services in both Calgary and Edmonton, and the US Department of Veteran's Affairs) and in other countries (e.g., the United Kingdom, New Zealand) have at least partially adapted the CCM, thus making it the world's best-known framework.

Singh and Ham (2006) reviewed 44 international studies and found the CCM a robust model that is positively associated with better processes and outcomes of care, satisfaction and costs. However, like disease management and other forms of care coordination, it remains uncertain which components are specifically responsible for observed improvements.

The Integration "Nest"

Integration is a nested concept (Kodner 2008; MacAdam 2008; Nolte and McKee 2008). The following five dimensions are helpful in differentiating integrated care archetypes²:

Foci of Integration

According to Kodner (2008), integration efforts can focus on (1) entire communities or enrolled/rostered populations irrespective of health status, (2) vulnerable client sub-groups (e.g., the frail elderly and persons with disabilities), or (3) patients with complex illnesses (e.g., chronic conditions, some cancers). Vulnerable and complex patients need and benefit the most from integrated care (e.g., see Leutz 1999).

Types of Integration

There are six types of integration: (1) functional integration (the degree to which back-office and support functions are coordinated across all units), (2) organizational integration (relationships between healthcare organizations), (3) professional integration (provider relationships within and between organizations), (4) service or clinical integration (coordination of services and the integration of care in a single process across

Typical Range of Integrated Care Methods and Tools

Funding:

Pooling of funds (at various levels)
Prepaid capitation (at various levels)

Administrative:

Consolidation of responsibilities/functions
Inter-sectoral planning
Needs assessment/allocation chain
Joint purchasing or commissioning

Organizational:

Co-location of services
Discharge and transfer agreements
Inter-agency planning and/or budgeting
Service affiliation or contracting
Jointly managed programs/services
Strategic alliances or care networks
Consolidation, common ownership or merger

Service delivery:

Joint training
Centralized information, intake and referral
Case management
Disease management
Interdisciplinary team work
Around-the-clock (on call) coverage
Integrated information systems

Clinical:

Standard diagnostic criteria (e.g., DMS IV)
Uniform, comprehensive assessment procedures
Joint care planning
Shared clinical record(s)
Continuous patient monitoring
Common decision support tools (i.e., practice guidelines and protocols)
Regular patient/family contact and ongoing support



time, place and discipline), (5) normative integration (shared mission, work values and organizational/professional culture), and (6) systemic integration (alignment of policies and incentives at the organizational level) (Contandriopoulos et al. 2001; Fulop et al. 2005; Nolte and McKee 2008; Shortell 2000).

Levels of Integration

Closely related to the above dimension, integrated care also operates on five different levels: (1) funding, (2) administrative, (3) organizational, (4) service delivery, and (5) clinical (Kodner and Spreeuwenberg 2002).³ It is thought that interventions that span multiple, interlocking domains both in terms of levels and types of integration allow for better patient outcomes and system-level performance (Kodner and Kay Kyriacou 2000).

Breadth of Integration

Organizations link up to provide a range of clinical and functional services in two ways: (1) horizontal integration, wherein similar organizations/units at the same level join together (e.g., two hospitals), and (2) vertical integration, which involves the combination of different organizations/units at different levels (e.g., hospital, community health centre, home care agency and nursing home) (Shortell et al. 1994). Vertically integrated solutions, whether hierarchical or virtual in nature, are a major ingredient of integrated care.⁴

Degree of Integration

Walter Leutz is the author of perhaps the most well-known framework for health-related service integration. According to Leutz (1999), there are three different configurations: (1) linkage, the least-change approach, entails providers working together on an ad hoc basis within major system constraints, (2) coordination is a structured, inter-organizational response involving defined mechanisms to facilitate communication, information-sharing and collaboration while retaining separate eligibility criteria, service responsibilities and funding, and (3) full integration, the most transformative combination, refers to a “new” entity that consolidates responsibilities, resources and financing in a single organization or system in order to deliver and pay for the entire continuum of care.⁵

A Bundle of Technologies

Integrated care is also characterized by the use of various technologies (Kodner 2008). It is beyond the scope of this paper to describe each and every technique available. Nonetheless, Kodner and Spreeuwenberg (2002) identified a wide range of methods and tools, and organized them according to the five aforementioned integrated care levels (see “Typical Range of Integrated Care Methods and Tools”). A study of several vertically integrated eldercare models in North America concluded, for example, that the following cluster of methods and tools

appear to be responsible for their success: a closely-knit organizational structure; case-managed, inter-professional care with a single point-of-entry and the use of comprehensive service packages; an organized provider network with defined referral and service procedures and enhanced information management; and the pooling of funds (i.e., a single funding envelope) (Kodner 2008).

Integrated care as a concept is an imprecise hodgepodge. Its meanings are as diverse as the numerous actors involved.

Key Conclusions

Integrated care is essential to sustaining our health systems. It is a multi-level, multi-modal, demand-driven and patient-centred strategy designed to address complex and costly health needs by achieving better coordination of services across the entire care continuum. Not an end in itself, integrated care is a means of optimizing system performance and attaining quality patient outcomes. While there is growing consensus that high-performing healthcare organizations cannot do without health system integration in order to meet changing patient needs and community expectations, there is much less agreement on the best ways to accomplish the goal of integrated care. The purpose of this review was to explore and provide a clearer picture of integrated care. Our conclusions are that:

Integrated care as a concept is an imprecise hodgepodge. Its meanings are as diverse as the numerous actors involved. This poses difficulties for policy makers, planners, managers, clinicians and researchers with an interest in promoting, implementing and studying integrated care. In the end, it would be very helpful to somehow develop broad consensus around a common terminology and typology (or taxonomy).

Integrated care is at once global, systematic and comprehensive in its orientation to needs-based healthcare. It is built around related notions of continuity of care and coordinated care. Together, they form the backbone of health system and service integration efforts.

Integrated care offers an opportunity to address overall healthcare efficiency and effectiveness concerns. However, it is especially relevant for multi-problem patients like the elderly and persons with chronic, disabling, medically fragile or high-risk conditions. These populations bear the brunt of access, continuity, fragmentation and quality problems found in all health systems.

Integrated care entails achieving connectivity, alignment and collaboration within and between the “cure” and “care” sectors. It accomplishes this by ensuring easy links and seamless transitions for patients – both sequentially and simultaneously – at various points along the continuum of care, that is, between primary, secondary and tertiary care; between ambulatory, home- and community-based and institutional care; and between medical/acute care, long-term care, mental health care, social services, and so forth.

Integrated care depends on a tailor-made combination of structures, processes and techniques to address unique patient needs and system–institutional–community circumstances. To use a medical analogy, integrated care is more a precise surgical procedure than a broad-spectrum antibiotic. There are no “one size fits all” or “magic bullet” approaches to integrating health systems or services.

Integrated care frequently makes use of organizational structures or networking arrangements to bring together institutions and providers in a systematic whole. It also draws on a wide range of techniques – case management and disease management being the most prominent – to deliver appropriate, high-quality care within an integrated framework. These techniques are frequently confused with being integrated care; they are, however, only part of the means to achieve that end.

Integrated care is like a country. It demands a culture of its own, one that spans differing organizational and professional mindsets, eliminates boundaries and biases, and creates a shared space to facilitate much-needed inter-agency collaboration and interdisciplinary teamwork on behalf of the patient.

Integrated care appears to be associated with a number of positive outcomes, including improved system performance, better clinical results and enhanced quality and patient satisfaction. However, the accumulating evidence on effectiveness is indirectly derived from studies of different models and separate components (e.g., case management, disease management, etc.). Furthermore, there is less certainty with respect to which bundle of strategies produces the best results or whether integrated care generates cost savings, at least in the long run. Clearly, much more sophisticated work needs to be done to expand the evidence base on integrated care.

The theory behind integrated care owes much to management science. On a more practical level, practices and lessons in the world of business shed important light on what, and what not, to do in integrating health systems and services.

Integrated care is not only a difficult concept to understand, but also one that in the final analysis is enormously challenging to implement and manage.

Having set out to explore and describe the realm of integrated care, it is impossible to escape the conclusion that we are speaking about an unfolding field, one that lacks a clear and complete knowledge base. In some ways, we are like blind men and the proverbial elephant, each aware only of the part of the animal touched and with no experience of the whole; the reality of integrated care still depends in part on one's own perspective. Nonetheless, as this paper demonstrates, we have gone beyond the intuitive belief that integration is a good thing that can ultimately lead to better health services and outcomes. Experience tells us that integrated care does work, and that there are a number of basic building blocks and lessons that are responsible. To sum up, whatever the dilemmas and unknowns inherent in integrated care, it is nonetheless still possible to make it happen. It may not be easy, but with clear vision, the right combination of strategies and resources, and the circumstances to support it, we can bring the many benefits of integration to populations with the greatest need as well as to the health system at large.

Notes

1. The OECD report and others in the field make what this author believes to be an artificial distinction between case and care management. Case management, which began in the 1950s in the US mental health system, has since been applied to the long-term-care elderly and persons with disabilities, patients with medically complex, high-risk and high-cost conditions, and other populations in the health and human service fields. Programs differ in terms of targeting, setting, intensity, duration, type, (e.g., individual versus team), caseload size, control over services/resources and professional background of the case manager.
2. Nolte and McKee (2008) suggest a sixth dimension, namely the processes of integration. In addition to the ubiquitous structural integration, Fabricotti (2007) observes that there are three other processes or “streams” that should be taken into account: (1) cultural; (2) social; and (3) those related to objectives, interests, power and resources.
3. Other authors view healthcare integration from the perspective of the macro, meso and micro levels (Nolte and McKee 2008; Epping-Jordan et al. 2004). The two approaches are not mutually exclusive. Kodner and Spreeuwenberg's policy and funding levels, for example, fit comfortably within the macro domain.

4. Jeff Goldsmith (1994) and others argue that hierarchical or structured approaches to vertical integration (i.e., where a single, consolidated provider entity is in charge) are more costly and less flexible than “virtual” arrangements achieved through contracting, joint venturing or alliance building.
5. Leutz’s framework also associates each level with particular dimensions of need and priority clinical tasks. For example, low-risk patients with stable, mild to moderate conditions and the need for a few services are best served in linkage models where the emphasis is on referral and follow-up, as well as the identification of emerging problems. On the other hand, high-risk patients with complex, long-term, severe and unstable needs belong in fully integrated models where interdisciplinary teams manage comprehensive services across the entire continuum, and funding is pooled. **HQ**

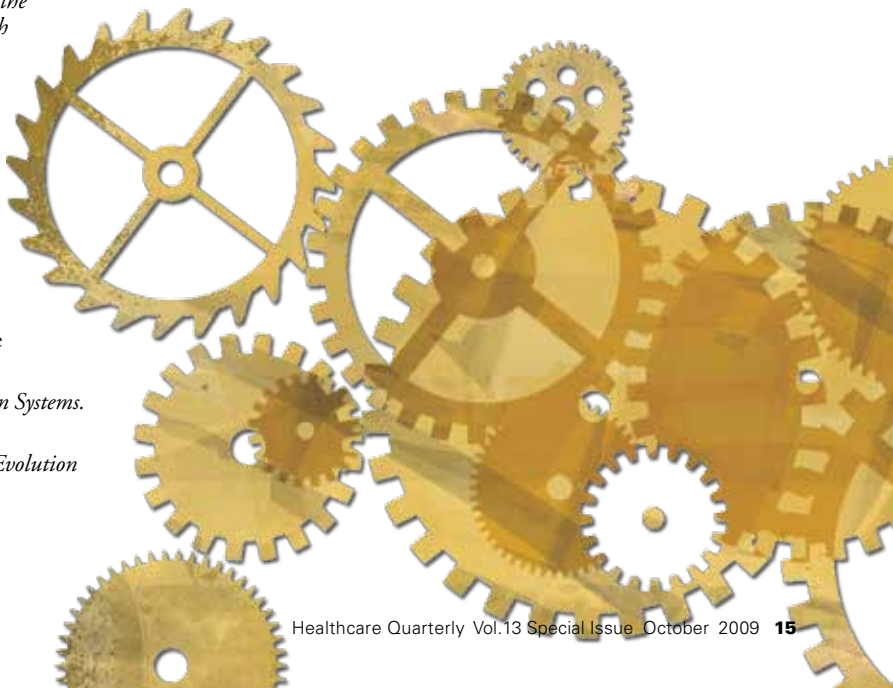
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Ten Key Principles for Successful Health Systems Integration

Esther Suter, Nelly D. Oelke, Carol E. Adair and Gail D. Armitage

Abstract

Integrated health systems are considered part of the solution to the challenge of sustaining Canada's healthcare system. This systematic literature review was undertaken to guide decision-makers and others to plan for and implement integrated health systems.

This review identified 10 universal principles of successfully integrated healthcare systems which

may be used by decision-makers to assist with integration efforts. These principles define key areas for restructuring and allow organizational flexibility and adaptation to local context. The literature does not contain a one-size-fits-all model or process for successful integration, nor is there a firm empirical foundation for specific integration strategies and processes.

Introduction

Staff shortages, continuing cost inflation and service demand have intensified the call for more effective and efficient use of scarce resources through integrated service delivery models (Fleury 2006; Powell Davies 1996). 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 outcomes have not been fully demonstrated (Gillies et al. 2006). Despite the growing enthusiasm for integration, information related to implementing and evaluating integration-related initiatives is dispersed and not easily accessible. There is little guidance for planners and decision-makers on how to plan and implement integrated health systems. With evidence-informed decision-making as an expectation in healthcare management and policy (Cookson 2005), there is a need to seek out and apply current knowledge on health systems integration to advance effective service delivery. Systematic reviews can serve as a tool for evidence-based decision-making for health planners and policy makers (Cookson 2005; Fox 2005; Lavis et al. 2004; Moynihan 2004).

A systematic review was conducted with the goal of summarizing the current research literature on health systems integration. It focused on definitions, processes and impact of integrated health service delivery systems. The review was undertaken in response to the information needs expressed by some health system managers and administrators in Alberta charged with the mandate to plan for and implement integrated service delivery models (Suter et al. 2007). This article will highlight the principles that were frequently and consistently presented as key elements for successful integration in the reviewed literature. The full report is accessible at <http://www.calgaryhealthregion.ca/hswru/>.

Methods

The methods of this review were based on recommendations for systematic review for evidence-based clinical practice (Higgins and Green 2006; Khan et al. 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 et al. 2004). Before initiating the search, draft research questions were validated by 21 decision makers in Alberta to ensure practice relevancy.

The health sciences literature (Medline, EMBASE, CINAHL, PsychINFO) for years 1998–2006 and business literature (ABI/Inform Global, CBCA, Business Source Premier) for years 2001–2006 were

Table 1. Ten key principles for integration

I. Comprehensive services across the care continuum

- Cooperation between health and social care organizations
- Access to care continuum with multiple points of access
- Emphasis on wellness, health promotion and primary care

II. Patient focus

- Patient-centred philosophy; focusing on patients' needs
- Patient engagement and participation
- Population-based needs assessment; focus on defined population

III. Geographic coverage and rostering

- Maximize patient accessibility and minimize duplication of services
- Roster: responsibility for identified population; right of patient to choose and exit

IV. Standardized care delivery through interprofessional teams

- Interprofessional teams across the continuum of care
- Provider-developed, evidence-based care guidelines and protocols to enforce one standard of care regardless of where patients are treated

V. Performance management

- Committed to quality of services, evaluation and continuous care improvement
- Diagnosis, treatment and care interventions linked to clinical outcomes

VI. Information systems

- State of the art information systems to collect, track and report activities
- Efficient information systems that enhance communication and information flow across the continuum of care

VII. Organizational culture and leadership

- Organizational support with demonstration of commitment
- Leaders with vision who are able to instill a strong, cohesive culture

VIII. Physician integration

- Physicians are the gateway to integrated healthcare delivery systems
- Pivotal in the creation and maintenance of the single-point-of-entry or universal electronic patient record
- Engage physicians in leading role, participation on Board to promote buy-in

IX. Governance structure

- Strong, focused, diverse governance represented by a comprehensive membership from all stakeholder groups
- Organizational structure that promotes coordination across settings and levels of care

X. Financial management

- Aligning service funding to ensure equitable funding distribution for different services or levels of services
- Funding mechanisms must promote interprofessional teamwork and health promotion
- Sufficient funding to ensure adequate resources for sustainable change

searched for relevant articles. Search terms included *delivery of healthcare, integrated, organizational integration, integrated health services, integrated healthcare, care coordination and health services integration*. This yielded 3,234 health sciences abstracts and 1135 business abstracts that were reviewed and rated for relevancy by three investigators; from those abstracts, 266 health sciences articles and 60 business articles were selected for full review. Each article was rated for quality, and key information was extracted and validated by more than one investigator. Based on the quality and relevancy ratings, 190 health sciences articles and 29 business articles were included in the review.

Despite the diversity of approaches and strategies for health systems integration found, authors across articles associated a number of principles with successful integration processes and models. These principles were independent of type of integration model, healthcare context or patient population served.

Results

No unified or commonly agreed upon conceptual model for health systems integration was found in the literature reviewed. Despite the diversity of approaches and strategies for health systems integration found, authors across articles associated a number of principles with successful integration processes and models. These principles were independent of type of integration model, healthcare context or patient population served. From the many principles described, 10 were frequently and consistently presented (Table 1) and are discussed below.

I. Comprehensive Services across the Continuum of Care

One principle of integrated health systems is the comprehensive scope of clinical and health-related services 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 and Mable 1998, 2000). This includes services from primary through tertiary care as well as cooperation between health and social care organizations (Simoens and Scott 2005). A population health focus is considered essential by some authors to achieve a fully integrated health system (Byrnes 1998).

The degree of integration is determined by factors such as the extent to which providers are assimilated into 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).

II. Patient Focus

Rogers and Sheaff remind us that the “justification for integrated delivery systems is to meet patients’ needs rather than providers’” (2000: 53). Organizations that fail to place the patient at the centre of their integration efforts are unlikely to succeed (Coddington et al. 2001a).

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), ensuring the patient receives the “right care at the right place at the right time” (Shortell et al. 2000: 36). This requires a thorough understanding of the way in which patients move within and between different health and social care providers (Rogers and Sheaff 2000).

Integrated health systems should be easy for patients to navigate (Linenkugel 2001), and the importance of involving and being representative of the communities served has been stressed (Marriott and Mable 1998). Patient engagement and participation is desired, and consumers are presented with opportunities for input on various levels (Hunter 1999; Wilson et al. 2003).

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.

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.

III. Geographic Coverage and Rostering

Many integrated health systems provide geographic coverage to maximize patient access to the services they provide and to minimize duplication (Coddington et al. 2001b; Leatt et al. 2000; Marriott and 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 et al. 1996; Marriott and 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 and LeClair 2000). Only in Canada's most populous areas is this patient base achievable; this type of integration is difficult or indeed impossible to achieve in the rural and remote northern areas (Leggat and Walsh 2000). Further research on rostering and geographic coverage is needed to better understand how it works in the Canadian context.

IV. Standardized Care Delivery through Interprofessional Teams

Standardized care delivered by interprofessional teams promotes continuity of the care process. Within effective interprofessional teams, all professionals are considered equal members; professional autonomy is maintained, and incentives are provided to meet performance and efficiency standards (Robinson and Casalino 1996). Roles and responsibilities of all team members are clearly identified to ensure smooth transitions of patients from one type of care to another (Robinson and Casalino 1996). Shared protocols based on evidence, such as best practice guidelines, clinical care pathways and decision-making tools, are essential to the functioning of interprofessional teams and help to standardize care across services and sites, thus enhancing quality of care.

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 role clarity (Appleby et al. 1999; Stewart et al. 2003), professional self-interest, competing ideologies and values, lack of mutual trust and conflicting views about client interests and roles (Burns and Pauly 2002; Coxon 2005; Hardy et al. 1999) challenge the collaborative process.

Closely related to the issue of interprofessional collaboration is communication (Appleby et al. 1999; Coburn 2001; O'Connell et al. 2000; Stewart et al. 2003). Barnsley et al. emphasize the importance of "an organic structure with diverse communication channels that efficiently transfer information across organizational boundaries" (1998: 19). Co-location of services (Appleby et al. 1999; Coburn 2001; Kolbasovsky and Reich 2005), frequent team meetings (Baxter et al. 2002) and the use of electronic information systems facilitate effective communication (Coburn 2001; Coddington 2001c; Hurst et al. 2002; Lin and Wan 1999).

V. Performance Management

The success of integrated health systems is felt to depend on well-developed performance monitoring systems that include 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. Some 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 2001c; Leatt et al. 2000).

Another cultural barrier to integration is an acute care mindset, which places the hospital at the centre of the integration process.

VI. Information Systems

Many of the processes previously discussed are only possible with the support of state-of-the-art system-wide computerized information systems that allow data management and effective tracking of utilization and outcomes. Quality information systems also enhance communication capacity and information flow across integrated pathways (Coddington et al. 2001d; Hunter 1999; Leatt et al. 2000; Wilson et al. 2003). Electronic health records link consumers, payers and providers across the continuum of care and provide relevant information to these stakeholder groups. 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 information system should also enable system-wide patient registration and scheduling coordination as well as management of clinical data. 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 and Mable 1998, 2000).

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 all contribute to failure of information integration (Closson 2000; Drazen and Kueber 1998; Hurst et al. 2002).

VII. Organizational Culture and Leadership

Implementation and operation of an integrated health system requires leadership with vision as well as an organizational culture that is congruent with the vision. Clashing cultures, such as differences between providers of medical services and long-term care services (Hardy et al. 1999; Coburn 2001), or between physicians and other service providers (Friedman and Goes 2001; Hawkins 1998), is one of the reasons named for failed integration efforts. Another cultural barrier to integration is an acute care mindset, which places the hospital at the centre of the integration process (Shortell et al. 1993). This runs counter to the concept of integrated, population-based healthcare delivery (Coddington et al. 2001b; Shortell et al. 1994).

Bringing different cultures together demands committed and visible leadership with clear communication processes (Hunter 1999; Wilson et al. 2003). Leaders need to promote the new vision and mission of integration among their staff to help them take ownership of the process (Drazen et al. 1998; Friedman et al. 2001; Miller 2000; Shortell et al. 2000). 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).

Leaders need to promote the new vision and mission of integration among their staff to help them take ownership of the process.

VIII. Physician Integration

Physicians need to be effectively integrated at all levels of the system and play leadership roles in the design, implementation and operation of an integrated health system (Appleby et al. 1999; Burns 1999; Coddington et al. 2001d; Hawkins 1998). Several challenges have been highlighted in the literature reporting experiences with physician integration. The perceived loss of power, prestige, income or change in practice style can result in physician discontent, resentment and resistance to change (Anderson 1998; Appleby et al. 1999; Budetti et al. 2002; Coddington et al. 2001d; Hawkins 1998). For some physicians, working in an interprofessional, integrated care system with shared decision-making responsibility was “unpalatable” (Hawkins 1998: 22).

Taking advantage of existing networks, informal linkages among practitioners and a strong patient focus has been reported to facilitate physician integration (Gillies et al. 2001; Lester et al. 1998). Integrating primary care physicians economically

and ensuring recruitment and retention through compensation mechanisms, financial incentives and ways to improve quality of working life is also noted to be critical to success. Despite the number of barriers documented, it is believed “stronger physician–system alignment is desirable and worthy of time, attention, and resources” (Gillies et al. 2001: 100).

IX. Governance Structure

Bringing together organizations and services into an integrated health system through contractual relationships or networks typically requires development of governance structures that promote coordination (Hawkins 1998). Governance must be diversified, ensuring representation from a variety of stakeholder groups that understand the delivery of healthcare along its continuum, including physicians and the community (Coddington 2001c; Hawkins 1998; Shortell et al. 2000).

A flatter, more responsive organizational structure (Hurst et al. 2002) that fully uses the skills and talents of employees and is independent of, but accountable to, government and the health organization’s rostered members and providers (Marriott and Mable 1998, 2000) facilitates integration. 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. The complexity of these systems requires effective mechanisms for accountability and decision making (Friedman and Goes 2001).

Cost control was one of the major original incentives for health systems integration in the United States.... Many authors claim, however, that integration processes may result in increased costs before they provide savings.

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). Many authors claim, however, that integration processes may result in increased costs before they provide savings (Coburn 2001). The way services are funded is therefore an important consideration of integrated models (Leatt et al. 2000).

A major barrier to integration in some jurisdictions is differentiated service funding for home care, long-term care, social care, mental health, acute care and primary care (Appleby et al. 1999; Clague 2004; Mur-Veeman et al. 1999). Financing mechanisms are needed that allow pooling of funds across

services (Hardy et al. 1999; Lin et al. 1999). Global capitation (e.g., population-needs-based funding) is one common form of funding. System funding will pay for all insured health (and specific social) services required by the enrolled population for a predetermined period of time (Leatt et al. 2000). The amount of money per enrollee is set prospectively and is adjusted to ensure an equitable distribution of funds using factors such as gender, age or geography. In Canada, remuneration for physicians in an integrated delivery system has become a challenge to integration, resulting in ongoing debate (Leatt et al. 2000; Marriott and Mable 2000).

Implications

Careful review of exemplary cases in the literature suggests organizations that have successfully integrated health systems have all focused on a combination of many, 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 the information in this review came from integration initiatives outside Canada, the 10 guiding principles are applicable to the Canadian context and were evident in many of the cases presented during the symposium's Integration Rounds. In our own organization, service planners will apply the 10 principles to the East Calgary Health Services Initiative. The initiative focuses on improving health outcomes of a geographic service area in East Calgary by customizing services to meet the needs of the community and by partnering with agencies and organizations that work outside the health sector. A framework comprising the 10 principles will be used for strategy formation and implementation to better achieve integrated health services.

Processes and strategies must be implemented that align with and support these guiding principles and integration structures (such as co-location of services, information systems); otherwise, the desired outcomes may not be achieved (Burns et al. 2001; Fawcett and Cooper 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 and Jackson (2001) suggest integration strategies that target communication and access; culture, values and teamwork; and commitments and incentives to deliver integrated care. Conrad's suggestions (1993) were aimed at information provision, care management strategies, a common clinical culture and common educational programming. While the proposed strategies differ, there is consensus that multiple processes are necessary to ensure successful integration.

Consideration also needs to be given to the social, economic and political context that affects legal aspects, funding streams and broader integrating mechanisms, as they constitute significant determinants of the success of integrated service delivery models (Hardy 1999; Mur-Veeman 2003).

Conclusions

Recent reports on healthcare reform have reinforced the view that Canada's current healthcare system is not sustainable in its present form (Canadian Health Services Research Foundation 2007; Commission on the Future of Health Care in Canada 2002; Lee 2007; Premier's Advisory Council on Health 2001; Skinner et al. 2007). Integrated health systems are considered at least in part a solution to the challenge of sustainability. This systematic literature review was undertaken to provide guidance to decision makers and others who require information on how to plan for and implement integrated health systems.

An important learning of this review is that there is a wide spectrum of models for health systems integration. Based on the literature from a diverse group of healthcare and business organizations and a range of jurisdictions, 10 relatively universal principles of successfully integrated healthcare systems have been identified. The 10 principles define the key areas for restructuring while at the same time allowing for organizational flexibility and adaptation to local context (Marriott et al. 2000). These principles may be used by decision-makers to assist with focusing and guiding integration efforts, but much more needs to be learned about specific structures and mechanisms for success. It is important to emphasize that the literature does not contain a one-size-fits-all model or process for successful integration, nor is there a firm empirical foundation for specific integration strategies and processes. **HQ**

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Integrated Care Needs Integrated Information Management and Technology

Denis Protti

Abstract

Integrated care entails professionals from different organizations have to work together in a team-oriented way to provide high-quality care for a patient. This requires that healthcare professionals share information about – and with – patients at appropriate points in the care or treatment process. The necessary infrastructural arrangements – such as shared patient records, regional collaboration and a clear, transparent incentive structure -- must be in place. It is increasingly hard to imagine integrative initiatives without a strong information management and technology component. However, information is a necessary condition but not sufficient to achieve integrated care; organizational change is the more critical component.

Introduction

Integration, the bringing of different entities into unrestricted and equal association, is usually non-trivial and often resource intensive – particularly when health systems or organizations are being integrated. According to Lloyd and Wait (2006), integrated healthcare seeks to close the traditional division between health and social care. In doing so, it:

- Addresses the changing demand for care arising from the aging of the population;
- Offers care that is person-centred, recognizing that health and social care outcomes are interdependent;
- Facilitates the social integration of society's more vulnerable groups through better access to flexible community services; and
- Leads to better system efficiency through better coordination of care.

As responsibilities for providing healthcare are increasingly shared between different organizations, awareness of the need for integrated care increases (Haux 2006). Integrated care can be defined as an organizational principle encompassing continuity of care, shared care and seamless care. In integrated care, professionals from different organizations have to work together in a team-oriented way to provide high-quality care for a patient. This requires high-quality collaborative working relationships, clarity and commonality of objectives, frequent communication among team members, a clear understanding and respect of individual roles and skills within the team, and the general flexibility of practitioners.

In a hospital or a clinic, coordination between healthcare workers is facilitated by frequent formal or informal meetings and by a large number of exchanged, and available, documents such as electronic health records and laboratory results. In areas such as home care, however, the team consists of distributed

healthcare professionals who rarely meet and therefore have trouble coordinating their work. Despite the mobile nature of home care, mobile information technology (IT) tools giving access to electronic health records are rarely available. Generally, documentation is performed on stand-alone systems or more likely on paper, and the systems used in different organizations are generally autonomous and incompatible. In non-integrated organizational structures and information systems, professionals often spend time searching for information instead of taking care of patients.

As Kwo and Irani (2008) recently published, integration can be considered from several perspectives and it can serve as a means to achieve several goals. International literature on integration of healthcare systems offers several examples of two widely used models of integration – horizontal and vertical healthcare integration. Each of these approaches has its supporters and critics as well as successes and failures. Horizontal integration aims to consolidate comparable types of organizations for increasing the size and activity scope of the sector through acquisition, collaboration or other forms of cooperation, with the providers offering a similar kind and range of services. Alberta's primary care networks are Canadian examples of horizontal integration. Vertical integration commonly refers to the ability of one provider system to provide the full range, levels and intensities of service to patients and healthcare consumers from a geographically contiguous region when clients present themselves to that system; the Veterans Health Administration and Kaiser Permanente in the United States are classic examples. The health regions, common across Canada save for Ontario, are examples of partial vertical integration. Either type of integration requires clinical integration with or without corresponding organizational integration. When both clinical and organization integration are linked and empower each other, success is more likely.

Good communication across organizational and professional boundaries is arguably the most crucial aspect to successful integrated care programs (Winthereik and Bansler 2007). Effective integration of care requires that healthcare professionals share information about – and with – patients at appropriate points in the care or treatment process. This, however, will be possible only if the necessary infrastructural arrangements – such as shared patient records, regional collaboration and a clear, transparent incentive structure are in place. It is increasingly hard to imagine integrative initiatives without a strong IM (information management) and ICT (information and communication technology) component. However, research on organizational communication has consistently shown that working across functional boundaries and sharing knowledge is extremely difficult, because knowledge is always localized, embedded and invested in practice. The boundaries within healthcare have evolved over time and cannot simply

be eliminated or done away with. Thus, the development of successful information and communication systems for integrated care inevitably requires attending to the rationales of existing boundaries and practices and focusing on the extra work it takes to implement ICT to span specialized domains of practice.

Technical Approaches to Integration

A key issue in supporting cooperation and collaboration required in today's healthcare systems is the need for information sharing between different care providers (Hagglund 2007). Today, shared patient care is hampered due to the existence of numerous electronic and paper-based information systems. These are usually unable to communicate and share information. To achieve a seamless and secure information transfer between different information systems, different levels of interoperability need to be considered.

There are three general approaches to interoperability and integration:

- **Message-based integration** is characterized by data communication between systems that rely on message communication protocols, with data structures and message content following a standardized structure. A message-based integration approach is useful mainly when the type of information to be communicated and shared is selected beforehand, as well as the destination, and is used for sharing segments of an electronic health record. Denmark is well known as the world leader of this style of integration (Protti 2007).
- **Virtually federated integration**, also referred to as indexing or pointing, implies that information remains within the data storage of feeder systems, and the role of the integration functionality is to keep track of where information is stored and how to access it. Each feeder system regularly sends updates of its index information, a set of structured pointers referencing location of the data, but the actual information is kept in its original storage. Federated solutions to integration provide a uniform way to access patient data from different clinical information systems and provide an environment for integrated access to clinical information. Using a virtually federated integration ownership of information is straightforward, and information is stored in only one place. It is also relatively easy to add or remove feeder systems. All feeder systems must, however, be online when information is requested. Virtually federated integration is most suitable for so-called vertical integration, showing information from one feeder system at a time. The method is used mainly for accessing information, and not for interacting with or updating it. The Regione Lombardia in Northern Italy is taking this approach to its electronic health record (Beretta 2007).

- **Physically federated integration**, or publishing, implies separate data storage in the form of a mediator, or publication, database to which feeder systems publish agreed-upon information on a regular basis, triggered by a set time frame or by user-activated functions in the system. In a physically federated integration, issues of ownership and responsibility for information stored in separate data storage are more complicated to handle. It is also more difficult to add new feeder systems; a mapping process for each system is needed before information can be stored in the separate storage. The benefits are that feeder systems need not be online for information access, and it is easier to create a horizontal integration showing information from several different feeder systems in one view. Furthermore, interaction with feeder systems can be implemented, and updated or added information can be published back to the respective feeder system. In addition, information that is not available in the feeder systems, such as multimedia or information used for communication between different care providers, can be stored. The emerging Summary Care Record in the United Kingdom is a classic example of this approach (NHS Department of Health 2008).

In the United States, the generally favoured approach is to use a health information exchange (HIE) that mobilizes healthcare information electronically across organizations within a region or community, linking the personal information of a single individual held on different databases while maintaining the relevance and meaning of the information being exchanged (Protti 2008). HIE facilitates access to and retrieval of clinical data to provide more timely, efficient, effective, equitable, patient-centred care. Regional health information organizations (RHIO) are geographically defined entities that, using a range of business and financing models, develop and manage a set of contractual conventions and terms, arranged for the means of electronic exchange of information, and develop and maintain HIE standards.

Information exchange and sharing is complex, especially in the real world of disparate legacy systems and lack of implemented interoperability standards. HIE needs interfacing and aggregating mechanisms that circumvent the lack of standardization and provide an affordable migration path for data from legacy systems into newer technologies as they become available. This requires a secure and ethical environment for informed consent, patient identification, data encryption, extraction, linkage, aggregation and exchange within Internet-based service-oriented architectures. Solutions need to be low-cost, modular, reconfigurable and adaptable.

Challenges to Interoperable Approaches

Pirnejad et al. (2007) reported on a project that encountered numerous integration problems, many of which persisted even

after extensive technical intervention. An analysis of the problems revealed that they were mostly rooted either in problematic integration of work processes or in the way the system was used. Despite the project's ideal technical condition, the integration could be accomplished only by applying human interfaces.

For an integration process to succeed, it is necessary to combine diverse items of patient data stored in a variety of information systems (data integration) and to prevent data loss or distortion (data integrity). Many have evaluated the challenges inherent in the replacement of paper-based communication with IT communication networks or in the technical integration of diverse information systems or different standards for incorporating patient data. In several studies, the heterogeneity of information systems and standards is referred to as the main impediment to building interoperable communication networks. Pirnejad, however, showed that social and organizational factors are also paramount. He and others have pointed out that lack of attention to how the technological artifact will affect and be affected by the organization in which it becomes embedded lies at the core of many technological failures. Building an interoperable communication network through the integration of information systems, therefore, requires changes in the organization of care practices and the way people use the system.

As Pirnejad reported, two approaches can be distinguished in developing a communication network. The first, a "decentralized approach," is a bottom-up development, starting from micro-level changes among the parties that want to build communication networks. This approach consists of scattered projects based on local IT procurement and the minimal infrastructures to support local communication initiatives – as has been demonstrated in Denmark and New Zealand (Protti et al. 2007). The development process is not necessarily steered by a centrally designed plan or a detailed strategy. Rather, it usually follows a pragmatic approach with the aim of trying to address the parties' immediate needs, albeit in some structured manner. The development proceeds by small incremental advances that are the products of a dynamic negotiation among the parties that have horizontal relationships with each other in the development process. In effect, the process of network building is manageable to local circumstances, and its speed is congruent to the creation of shared interests. Since these networks develop regionally, it is a challenge to manage any macro-level changes (e.g., policy making, legislation) that are necessary for a nationwide integration.

The second approach is in many aspects the converse of the decentralized approach; hence it can be called a "centralized approach." It consists of a single large-scale project that is governed by a central party, often determined by some form of government. The central party has the power to arrange the required macro-level changes for networking, such as providing the necessary infrastructure and supporting IT policy and laws. The course and the goals are predetermined, and there is a

strategy that offers the best solutions for potential development problems. The implementation is top-down, and the deadlines in this approach ensure that the development will progress at a desired pace. However, the speed of the process challenges the ability of the development strategy to address unexpected problems and changes. Examples of this approach are Kaiser Permanente and the Veterans Health Administration in the United States, and the region of Andalusia in Spain.

Proven “Centralized” Integrated Care Success Stories

Kaiser Permanente (KP) in California and the Veterans Health Administration in the United States are classic examples of a vertically integrated organization. KP's history of providing cradle-to-grave integrated care to over 8 million patients in its constituency has had a significant influence on previous integrated-care experiments around the world, particularly in the United Kingdom (Lewis and Colin-Thomé 2008).

The amazing success story of the Veterans Health Administration (VHA) within the US Department of Veterans Affairs has been well documented and is generally well known (Protti 2007). The Asch RAND study found that the VHA outperforms all other sectors of American healthcare. The Congressional Budget Office interim report (2007) on the VHA model found that the key factors behind the VHA's high quality of care included:

- Organizational restructuring designed to share decision making authority between officials in the central office, regional managers, and key personnel at dispersed medical facilities; and
- Extensive use of health information and technology systems.

Both KP and VHA have what could be called a centralized or “single-record” clinical information system. Their systems have a striking number of similar characteristics, described below.

The KP and VHA Information Systems Are Based around a Single Electronic Health Record

Both information systems are centred on the detailed patient record, known as the electronic health record (EHR). The EHR contains the full patient clinical record in terms of what clinicians will use as their primary record for seeing and treating patients. The EHR forms the core of the information systems architecture. Outside the core are other information systems in the first “ring,” including pathology, radiology and prescribing systems. The next ring comprises the information systems to support clinical specialties (the “ologies”) such as oncology, cardiology, surgery, pediatrics and dermatology.

The EHR is an active, real-time information system that supports individual patient care including clinical assessments,

care planning, charting and other clinical documentation, multi-disciplinary care plans and care pathways, active alerts and reminders, scheduling, test requesting, results reporting, drug prescribing and administration, clinical decision support, clinical communications (e.g., letters, discharge summaries) and clinical coding, as well as support for specialties such as accident and emergency, radiology, dermatology, diabetes and endoscopy. The KP and VHA EHRs are integrated because they provide all these functions within a single overall system, with a common look and feel and a single record for each patient in the database that all caregivers with appropriate access can share at the same time. Each patient has a “home” location designated in the EHR system. If the patient travels to an area outside “home,” the healthcare facility, if it is part of the KP family or the VHA, can instantly access the detailed patient record, including digital images, in a quick and secure way.

In both cases, the EHR works across all primary, community and hospital care settings. This means that the primary care doctor can see the whole, detailed patient record, including past hospital and community clinic encounters. The EHR is not a summary record; it includes all the patient details.

The KP and VHA Information Systems Support Major Care Components

In addition to being integrated, in terms of providing cross-setting and detailed patient records, the KP and VHA information systems also support two other important and related elements: population care and clinical protocols.

Embedded Chronic Care Management

Along with other health systems around the world, both KP and the VHA are targeting chronic conditions such as diabetes, congestive heart failure and asthma on a population basis. Doctors enrol their patients in one or more disease populations and add them to disease registries, based on data extracts from the EHR, in accordance with the patient's condition(s) and risk factors. The information system then helps the doctors and chronic care teams to apply monitoring protocols to prevent disease, keep the patients out of the hospital and maintain health and, of course, reduce the costs of chronic care. As consolidated disease registries, the EHRs ensure that essential clinical markers for each patient are tracked across all the patient's chronic conditions and that those co-morbidities are documented and managed through coordinated alerts and reminders.

One of the tools KP uses to operate their population-based care is the case management process, where a case manager role is assigned to keep patients on track with the disease protocol across care settings, including the patient's home (Kwo and Irani 2008). KP's EHR system supports case management processes by, for instance, sending an automatic email reminder to patients with type II diabetes to make an appointment for

a retinopathy test at the local ophthalmology screening clinic. Similarly, it helps community clinics to notify a patient who has been prescribed with an anticoagulant such as warfarin to attend a clinic to ensure proper drug compliance.

Embedded Clinical Protocols

KP and the VHA both run clinical peer reviews to assess and develop clinical protocols – which are embedded into the EHR systems. Typically, the clinician uses the EHR to document assessment findings and will select structured diagnostic term(s) in the patient's electronic health record. If the patient has a condition for which a clinical protocol has been deployed, a screen appears with the appropriate protocol for the clinician to follow in terms of recommended tests, drugs and other actions. At that point, the clinician has a choice to either agree with the recommended protocol or override it and follow a different course of action. Both EHRs thus accumulate a large and growing number of detailed patient records. These separate data warehouses enable KP and the VHA to identify which clinicians have accepted the clinical protocols and which have elected to override them, and to see how patient outcomes differ between these groups.

Both KP and the VHA have reported that as more clinical data are available – both in terms of the complexity of clinical detail for each patient and the total volume of patient records – and as more overall data accumulate, their clinicians and managers find a greater appetite for analysis and gaining insight into how their organization performs clinically, operationally and financially (Kwo and Irani 2008). Integrated care requires not only integrated transaction systems (systems that handle large volumes of real-time patient activity data) but also the ability to analyze data at various levels of the organization, including at the group, hospital, clinic, clinician and patient levels (Sanders 2007).

KP and VHA Have Adopted the Philosophy of “Think Globally, Act Locally”

Both organizations report that they worked hard to achieve agreement on basic technical norms, or standards, for information systems investments across the organization. However, they worked equally hard to ensure that local provider organizations could determine their own local flavours of deploying the EHR: how to deploy, when to deploy, how quickly and so forth. This meant that ownership of deployment results was maintained by the local clinical/management team. Both organizations have learned that “the larger the scale, the less effective central command and control becomes.” (Kwo and Irani 2008).

Both KP and VHA Have Reported Clinical Outcome and Economic Benefits from Their EHR System

The EHR records clinical events and proactively embeds intelligence in terms of clinical protocols and guidelines. For instance,

if the patient had an MRI a week ago, the system shows this to the doctor, along with the MRI image and report, and asks the doctor if another is needed. Both organizations have reported that clinical efficacy, outcomes (e.g., for smoking cessation and weight loss) and patient satisfaction measures have improved as result of their integrated information systems. Both have indicated that improved clinical care through the EHR has saved money due to fewer duplicate tests, reduced adverse drug events and increases in patient safety (Asch et al. 2004).

Patients Have Electronic Access to Their Doctor and Health Record

KP's patients can use secure email to contact their doctor, thereby reducing the number of visits required. At the same time, patients can access their own electronic health record, what they sometimes call a self-service record, in order to organize repeat prescriptions and access information such as immunization records for children. The VHA's veteran web portal, HealtheVet, gives veterans access to their EHR, but on a very limited basis, as yet. This project has been slow to roll out; however, it may get renewed impetus with the new administration in Washington.

If a truly patient-centred approach at the local health community level is the desired goal, there is a need to support the adoption of a patient portal providing, among other things, access to patient records (including the ability to add to them and initiate corrections as well as schedule appointments online) and to clinical knowledge in a patient-digestible form (Protti 2007). The successful exploitation of such a portal will require extensive education of both patients and healthcare professionals, and will support – and require – re-engineering of the care process.

A patient-centred approach will also stimulate the creation of personal health records (PHR). PHRs are Internet-based records that are under the full control of the individual. They are becoming more common, particularly in the United States. They are gradually being recognized as an important aspect of healthcare reform because they encourage patients to take a more active role in their health and treatment processes. These types of change are the cornerstone of making patients and caregivers the *primus inter pares* (first among equals) of their care teams, and of encouraging patients to assume responsibility for their health.

Conclusion

In recent articles on integrated care organizations, there is always mention of the need for better information to achieve integrated care in terms of local population health data, outcomes measures and information to support the planning and monitoring of integrated care. But one of the key messages from KP and the VHA is that information is a necessary condition but not sufficient to achieve integrated care. Information systems, and

integrated ones, are needed, in addition to information, in order to (a) help clinicians work in virtual teams to deliver patient care across care settings, (b) help clinicians deliver protocol-driven, population-based chronic care across care settings and disease conditions, (c) help clinicians and managers generate increasingly complex information to drive commissioning, outcomes measurement and research, and (d) help make the patient experience seamless across the care continuum.

Interpersonal sharing requires connectedness and semantic standards; sharing among information systems requires interoperability (technical, syntactic and semantic) standards. Optimal information sharing and exchange requires informed patients and providers; accurate, secure and confidential identification of patient, provider and location; accurate and standardized information; robust and secure information systems; and well-grounded standard operating procedures and governance protocols.

It is also essential to recognize that important organizational and cultural changes are to be expected when setting up an integrated communications network or system in healthcare. Pirnejad argued that introducing such a network in an environment where there is insufficient political determination and commitment to adopt the changes is bound to fail; significant changes will emerge only by means of changes at the level of "system incentives." However, the best solution has to be sought in a combination of the centralized and decentralized approaches. Local communication initiatives have to be supervised and supported; incentives at the organizations' interest level have to be created to encourage the stakeholder organizations to adopt the necessary changes.

There are many reasons for failure when implementing ICT in and across healthcare organizations. One of them relates to the confidentiality of patient information, another to the fact that ICT systems introduce new ways of working at all levels of an organization; the paper records in use today have co-evolved with working practices over many years. Politicians, technology designers and managers often underestimate the time and effort it takes to successfully adapt and incorporate a new technology into the existing "information ecology," that is, the existing system of people, practices, terminologies, and information and communication technologies in the local environment. Successful implementation is difficult to achieve, because information ecologies are diverse and continually evolving, and there are strong inter-relationships and dependencies among the different parts. **HQ**

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Integrated Health Systems and Integrated Knowledge: Creating Space for Putting Knowledge into Action

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Abstract

The capacity to innovate and share knowledge is not well developed within health systems. In this paper we highlight essential structures, principles and processes for successful implementation of knowledge utilization strategies in complex health systems. We demonstrate essential links between systems that support knowledge utilization and governance, change management, information management and process improvement.

“The multiplicity of terms complicates working in this field....what is needed is not the specific term, but rather the shared understanding”

— Birdsell and Omelchuk 2006

Introduction

A number of articles of this special edition of *Healthcare Quarterly* highlight the complexity of integrated health care systems. While there is no, “one size fits all” approach to integration, common principles (Suter et al. 2009) and lessons can be learned across these examples. This compilation of practice examples illustrates a point that has been made repeatedly in recent years (Birdsell et. al. 2005; Birdsell and Olmechuk 2006; Scott and Gall 2006; Saskatchewan Health Research Foundation [SHRF] 2007):

tremendous work is being undertaken throughout the health system to create environments that support the provision of high-quality care. It is rare, however, that promising practices are spread effectively throughout the system. What is also evident is that the capacity to innovate and share knowledge is not well developed within health systems, and few resources are dedicated to these important activities. When good ideas succeed, it is more often due to the creativity, determination and hard work of the people involved than to explicit strategies for supporting the development and spread of their innovations. Alberta Health Services, through embedding a specific knowledge function within its organizational structure, is clearly communicating that knowledge systems are fundamental to overall health system integration and improvement.

Just as the definition of integration continues to evolve, so too does our understanding of strategies to effectively use knowledge in health systems. Over the past 30 years, an extensive body of evidence has accumulated from a range of disciplines and practice settings to guide evidence-informed planning and practice and to promote knowledge utilization (Hazlett et al. 2008). The application of such evidence to inform clinical practice, policy development and decision making in health systems remains, however, haphazard, inconsistent and unpredictable (Eccles et al. 2005). Despite this, there are lessons to be learned from a range of innovative practice experiments taking place across Canada.

Since 2001, Rehabilitation Services within the former Calgary Health Region has offered a Time Grants Program which recognizes that employees need dedicated, protected time for assessing research evidence and moving evidence into practice. In addition to time away from work to focus on a project, grant recipients are provided with mentoring, particularly at the beginning of a project, to help clarify project goals and methods, and again at the end, to help with data analysis, presentations or writing for publication.

The program is funded by unused salary dollars to pay relief staff on the days that grantees are working on their projects. For Rehabilitation Services, costs amount to about half a full-time job per year. During the first five years of the program (2001–2006), 34 time grants were awarded to teams involving 57 employees. A little more than half the projects were completed, and a third are in progress. The remaining projects were discontinued due to staff changes. Two thirds of the completed projects were accepted for publication.

Results of participant interviews indicate that more than eight in ten participants (83%) reported positive changes in patient care. More than nine in ten (92%) reported improvement in their ability to employ evidence-based practice. What is particularly interesting about this model, however, is that participants have also reported positive changes in their professional lives. These include more confidence in their skills and knowledge and a greater overall sense of professional competence (CHSRF 2008).

While the “tools” described in this section are inextricably linked, some might say that they are in need of integration. The focus of this paper is on moving what we know about what works into action – from clinical guidelines to community care processes to policy development. We will draw from current evidence to illustrate a range of principles and strategies for creating knowledge-rich healthcare environments – for integrating knowledge use into practice. This overview will demonstrate essential links between systems that support knowledge utilization and other “tools” such as governance, change management, information management and process improvement.

Evidence and Knowledge: Moving toward a Shared Understanding

Practitioners and decision makers in health systems increasingly recognize the need for strategies to make better use of evidence to fundamentally improve practice. This reflects an understanding of healthcare as a knowledge-intensive field (Birdsell

and Omelchuk 2006; Lomas 2000). Across Canada, there are exemplar programs that focus on building capacity for evidence-informed decision making (e.g., SEARCH Canada training programs, CHSRF-EXTRA [Canadian Health Services Research Foundation – Executive Training for Research Application] fellowships and regional training programs) (Conrad 2008) and integrating knowledge synthesis and application into ongoing operations (e.g., by creating embedded knowledge transfer, research and evaluation units and functions within the health-care system). In spite of these initiatives, however, there is little practical guidance for programs on how to make better use of knowledge in complex health systems.

When good ideas succeed, it is more often due to the creativity, determination and hard work of the people involved than to explicit strategies for supporting the development and spread of their innovations.

Our understanding of evidence and knowledge is informed by results from recent reviews (Birdsell and Omelchuk 2006; Grimshaw and Graham 2004; SHRF 2007; Scott and Gall 2006) which indicate that, generally, most people prefer the use of basic descriptive terms and encourage a move away from jargon. We conceptualize evidence as being derived from a variety of sources – not only research, but also clinical experience; patient, family and care-provider experience; and local context and environment (Bowen and Zwi 2005; Rycroft-Malone et al. 2004). This expanded notion of evidence to inform decision making is critical. Knowledge is generated from practical use or application of evidence. It involves personal experience to interpret and apply the evidence and consists of facts, beliefs, perspectives, concepts, judgment and expectations (Seidel et al. 2009). Knowledge is gathered, assessed, adapted and applied over time to manage specific situations and challenges (Rycroft-Malone et al. 2004; Scott and Gall 2006; Seidel et al. 2009). Knowledge may be exchanged either explicitly (e.g., verbally or in written form) or tacitly (e.g., through action). In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes and practices (Knowledge Exchange Centre [KEC] 2005; Scott and Gall 2006). For evidence to be effectively used in practice, people need to process different sources of evidence (i.e., generate knowledge) at different times in the decision-making process, in ways that are meaningful to their context.

Currently, many terms are used to describe using evidence in practice. *Knowledge transfer, knowledge translation, knowl-*

edge exchange and *knowledge utilization* are just a few of these terms. Each is defined somewhat differently and implies a particular approach to the application of evidence in practice (Scott and Gall 2006). Knowledge transfer refers specifically to making relevant information accessible and available to end users (KEC 2005). In this case, movement of information is either academically driven (push) or user driven (pull). Definitions of knowledge translation differ, but most emphasize a more active connection between the researchers and users of research findings than is implied by the term *knowledge transfer* (Canadian Institutes of Health Research 2006; Davis et al. 2003). Knowledge exchange (KE) refers to “collaborative problem-solving between researchers and decision makers” (Canadian Health Services Research Foundation 2009) and multi-directional learning, whereas knowledge utilization refers to the application of evidence in practice settings. Increasingly, emphasis has shifted from bridging the diverse research and practitioner cultures to a focus on developing effective partnerships that integrate the specific skills and knowledge and of both researchers and practitioners along the entire decision-making continuum (Bowen et al. 2005).

Knowledge must not be seen as a product to be inserted into existing planning and decision-making processes but must be used to inform the way planning and decision making takes place.

Efforts to embed evidence-informed practice are challenged not only by a lack of understanding of what works well in complex health systems, but also by the many terms that are used. We echo the sentiments of Birdsell and Omelchuk when they stated: “The multiplicity of terms complicates working in this field....what is needed is not the specific term, but rather the shared understanding” (2006: pp. 17-18). There will always be differences in preferred terminology across disciplines, and it is not productive to expend energy in these debates; the field will advance as we look across the wealth of evidence to define common structures, principles and processes for generating and using knowledge in health systems.

Creating “Space” for Knowledge Utilization

While there are few overarching models to guide this work, a great deal is known about what needs to be in place for effective knowledge utilization to occur in complex health systems, and a combination of systems-level and individual-level approaches is required. Findings from a number of studies in a range of

contexts have highlighted both high-level and more detailed understanding of the characteristics of the social and physical “spaces” for embedding knowledge utilization in systems to support change. Knowledge must not be seen as a product to be inserted into existing planning and decision-making processes but must be used to inform the way planning and decision making takes place (Bowen et al. 2009). System- and practice-level changes are influenced not only by individual-level readiness for change but also by:

- The characteristics of the context within which people work (i.e., organizational readiness for change, absorptive capacity and culture) (Greenhalgh et al. 2005; Scott and Gall 2006; Snowden and Boone 2007);
- The attributes of the proposed change (e.g., usefulness of the innovation);
- Organizational structures and processes that facilitate or constrain uptake of evidence; and
- The nature of interpersonal relationships (e.g., trusting relationships that support the introduction of new ideas) (Scott and Gall 2006).

Similarly, Rycroft-Malone et al. (2002) suggest that successful uptake of evidence in practice (successful implementation [SI]) is a function of the complex interplay between the nature of the evidence being used (E), the quality of the context (C), and the types of facilitation (F) needed to ensure a successful change process (i.e., $SI = f[E, C, F]$). To be effective and sustainable, strategies designed to support utilization of evidence and practice change must take this complexity into account. Success is contingent on organizational capacity to engage in and use evidence, emphasizing the need for collaboration and participatory processes, stewardship and supportive environments (Scott and Gall 2006).

At a more detailed level, the following points highlight essential structures, principles and processes for successful implementation of knowledge-utilization strategies (Estabrooks et al. 2008; Scott and Gall 2006; Seidel et al. 2009):

Supporting strong leaders and leadership approaches that reflect understanding of, and support for, knowledge integration and reflective practice as an essential part of providing excellent care:

- In this sense, leadership is equated not only with people in senior executive positions but is also distributed with people throughout the organizational structure who are actively engaged in, and accountable for, knowledge generation and use.
- Leaders who facilitate knowledge work within organizations are those who model and actively demonstrate their commitment to reflection on practice.
- Supports for such work include explicit mechanisms for recognizing and rewarding such leadership in organizational recruitment and evaluation activities.

Creating environments in which people are encouraged and supported to challenge and change practice based on evidence that they trust:

- Systems-level supports are essential for enabling individual-level change. In creating systems that support knowledge use, there is a tendency to gravitate toward the quick fixes – changing structures, putting information on a website and ensuring people have access to electronic communication devices – but these tools may hinder or support change, depending on how well they function and how they are used. Sustained systems change requires people who see and feel the need for change and then act upon those feelings.
- Supporting change also requires finding mechanisms to give voice to people who are traditionally silent within the system (e.g., patients, staff who continue to work in hierarchical and/or punitive working environments).
- Celebrating learning and change is an explicit way of demonstrating the value placed on the work being done.
- Support also involves placing value on time in ways that permit reflection within practice (CHSRF 2008).

Creating the reflective space needed to integrate knowledge with practice:

- Time is set aside in regularly scheduled meetings to review evidence and evaluate progress. While not all staff will necessarily be actively engaged in research and evaluation, these activities can be integrated into operational activities.
- The strategy of promoting collaborative approaches builds capacity for evaluative thinking while at the same time developing a shared understanding of issues and potential solutions.

Investing in relationships:

- Collaborative and positive working relationships among clinicians, administrators, researchers, patients and families fundamentally enhance evidence generation and use.
- People who generate and use evidence to inform practice (e.g., in planning, policy development, research and evaluation processes) are involved early and genuinely in projects.

Comprehensive communication strategies that support interpersonal interaction, which may include but are not limited to:

- Communities of practice
- Deliberative processes
- Web-based technologies
- Video-conferencing

(Cautionary notes about the use of email are emerging from recent studies. These results suggest that email may actually be a disabler rather than an enabler of knowledge flow when it is seen as a substitute for face-to-face communication [Bowen et al. 2009; Hazlett et al. 2008]).

Matching the strategy to the context (contextualizing strategies):

- Strategies that work well in acute care settings may be ineffective in community contexts. Similarly, strategies that work in acute care in urban areas need to be assessed for applicability in rural and remote areas.
- Research evidence is rarely sufficient to support decisions made for health system policy and planning. It is essential that we begin to articulate explicit criteria for valuing a range of evidence sources, criteria that consider not only the quality of evidence but also its relevance for different contexts, at different times and for different kinds of decisions.

Embedding research and evaluation in practice settings and strengthening linkages with universities:

- Investing in internal capacity for evaluation, research and use of evidence;
- Establishing dedicated positions or, in larger organizations, creation of specific units providing “real time” synthesis, evaluation, and research services in response to priority issues identified by the organization;
- Implementing mechanisms for sharing research findings;
- Undertaking collaborative research on topics relevant to practitioners and decision makers; and
- Developing explicit linkage between health and research systems.

These connections are described as fundamental to strengthening health systems. In part, this is accomplished by strengthening applied research to improve population health outcomes and by focusing on systems-level initiatives (Seidel et al. 2009; World Health Organization 2004).

People who generate and use evidence to inform practice (e.g., in planning, policy development, research and evaluation processes) are involved early and genuinely in projects.

Making decision-support tools and resources available (e.g., practice guidelines, databases, information systems, communications technology, library services):

- The use of technology must never be considered the solution to the knowledge utilization puzzle. Decision-support tools and resources are a valuable adjunct to this work but must always be combined with strategies that support interpersonal interaction, dialogue and collaborative processes (Johnson et al. 2007).

Implementing strategies to ensure the sustainability of initiatives when warranted:

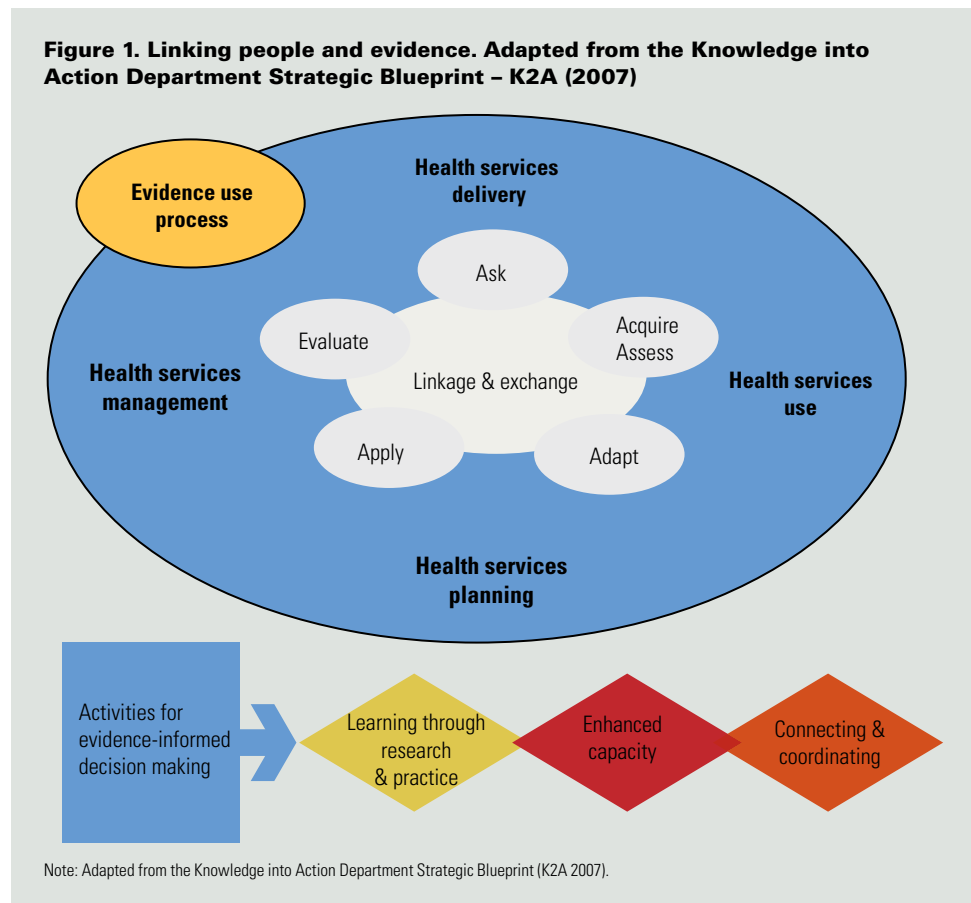
- Critical review of current practice to ensure that what is being done continues to meet the needs it was designed for. When warranted, the potential for sustaining programs and practices is supported if the knowledge gained through their application is synthesized and shared in other contexts.

Embedding knowledge utilization in health systems requires explicit strategies for linking people with evidence in ways that reflect the structures, principles and processes illustrated above. There are differing approaches to knowledge translation/transfer/exchange; unfortunately these have remained limited to focus on the use of research evidence typically generated by university-based researchers (Birdsell et al. 2005; Graham and Logan 2004). Different models are required when we begin to think of strategies for knowledge utilization that are embedded in health systems and where the research is responsive to issues of concern to the healthcare system. In these contexts, ongoing investment in capacity, relationships and reflection becomes paramount.

The model illustrated in Figure 1 was developed based on a review of practice and research evidence. It provided the foundation for the development of the Knowledge into Action department within the Calgary Health Region in 2006. Using evidence in decision making for health services planning, policy development, management, delivery and use (that is, by patients and families) involves an iterative process of:

- Clearly articulating the problems we are dealing with in order to ask good questions;
- Acquiring and assessing the various sources of evidence that are relevant to the questions asked and to the context;
- Adapting evidence as needed to apply it in context; and
- Evaluating the strategies that are developed based on the best available evidence.

Figure 1. Linking people and evidence. Adapted from the Knowledge into Action Department Strategic Blueprint – K2A (2007)



If, however, there is commitment to fundamentally changing health systems to better meet the needs of the population within resource constraints, there is no question that the ways in which we organize ourselves and work with one another have to change. The creation of social (i.e., organizational structures, principles and processes) and physical spaces that promote the generation and use of knowledge through collaborative processes is fundamental to systems change, so that we are able to build on what is known about what works and what does not work in different contexts. We must move beyond a focus on individual professional development and focus instead on strategies designed to engage staff and patients in process and system improvements. Such strategies will contribute not only to staff recruitment and retention but ultimately to improvements in patient and staff experience, safety and quality. The structures, principles and processes highlighted above are congruent with those identified as key elements of integration, for example:

- An organizational culture with strong leadership and shared vision;
- Supportive social and physical environments, including governance models and appropriate use of tools such as practice guidelines, information technology and communication mechanisms;
- Active participation of key stakeholders in sharing what they know to inform decision making, implementation and evaluation; and
- Coordination of efforts within and across different contexts (Suter et al. 2007).

Our discussion of knowledge utilization in healthcare adds to the list of key elements critical for evidence-informed decision making:

- Developing capacity for generating and making better use of contextually relevant evidence;
- Investing in time and relationships that support reflection on practice;
- Developing embedded research and evaluation infrastructure;
- Tailoring the strategies used to the contexts in which decisions are being made;
- Celebrating learning and success;
- Explicitly reviewing relevant evidence to determine when and when not to sustain current practice;
- Dedicating resources (e.g., time, staff) to knowledge-utilization activities;
- Focusing on developing evidence-informed change processes; and
- Collaborative implementation and evaluation processes.

Change of this extent requires a level of readiness for fundamental systems transformation. Change is no longer an option;

it is a necessity. Moving forward with new ways of working and relating to others involves risks. There is no clear research evidence to support all that we do, but there is an enormous body of experiential evidence that we can draw upon locally and around the world. We must build an evidence base through embedded research and evaluation processes and use this to inform our next steps. Finally, we must also ensure that people who work in the system have the capacity to access the evidence they need to make decisions – the right information, in the right place, at the right time.

Such change will not be straightforward and will not always go as we had planned, but it is essential to begin to take steps in this direction if we are to achieve the goals of designing a patient- and family-centred health system that is accessible and sustainable for all Albertans, while ensuring quality supports and services through the application of best practices (Alberta Health Services 2008; Seidel et al. 2009). **HQ**

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Process Improvement and Supply and Demand: The Elements That Underlie Integration

Mark Murray

Abstract

Integration relies on a series of key change strategies connected by a fundamental dynamic: system capacity has to match demand or it will ultimately result in expanding delay and system failure. A balance of supply and demand is necessary for successful system performance. If demand and capacity are balanced, then delays are not required.

Integration

Integration as a system strategy has been evolving within health systems across Canada. In Alberta, it was first a way of bringing together services within and between the former system of regional health entities, and now within the province-wide Alberta Health Services amalgamation of the former health regions, the Alberta Mental Health Board and the Alberta Cancer Board. The intent of these integration efforts was described in the former Capital Health region as a focus on “building stronger connections between health services, people and providers to better support people in their care journey and realize the benefits of a regional health system” (Abbott 1999: 13).

These integration efforts identified four “key change strategies” as central to the process of better integrating services and achieving best practice:

1. Providing people-centred care
2. Reducing clinical variance
3. Organizing the care continuum
4. Process improvement

While these four key strategies seem to act as independent perspectives on integration, they are, however, implicitly connected. In order to realize the full potential of integration, it is critical to convert the implicit connection to an explicit one. The fundamental underlying dynamic in healthcare is relatively simple: every day, all day long, and one person or service at a time, we use our system capacity to meet customer demand. We either perform this function well or poorly. While system performance is a choice, matching capacity to demand is not.

Operationally, healthcare is no different than any other flow system where customer demand flows through a series of interrelated, interconnected people or process steps as that demand traverses the system. Each step has a demand, a supply/capacity, an activity and a delay. System performance is assessed or gauged by measuring the delay either at each step or for the

series of interconnected steps. The measure of delay demonstrates how well our systems function in matching demand to capacity. Permanent mismatch of demand to supply will result in expanding delay and system failure. A balance of demand and supply is therefore required for successful system performance. If demand and capacity are balanced, then we simply do not need a delay. The four key strategies are merely external manifestations of this basic underlying dynamic.

...a key component of people-centred care must focus on meeting customer demand without delay. All efforts to foster people-centred care are meaningless and unachievable if a demand/supply mismatch exists.

Providing People-Centred Care

While this strategy focuses on efforts to optimize patient understanding of and participation in the care journey, a key component of people-centred care must focus on meeting customer demand without delay. All efforts to foster people-centred care are meaningless and unachievable if a demand/supply mismatch exists. There are two critical issues here: First, can the organization actually deliver on the promises to deliver care? Is there enough capacity to accomplish this? And second, if there is enough measurable capacity, can the organization accomplish these tasks without a delay? If measured demand can be balanced and met by a corresponding measured supply, then there is no need for delay. If demand exceeds capacity, there is no solution. Attempts at triage, priority or sorting are misguided efforts to deal with either a real or perceived mismatch, and serve only to degrade system performance. Arbitrary delays just increase cost, increase the risk of “no-show” for the requested service and use up precious supply resources simply to sort the work. Either demand is balanced by supply, or it is not.

At the same time, people-centred care does not mean that the individual customer is always right or that every customer always gets what he or she wants. There are measurable capacity limits for both individual and practice. If those practice or individual limits are exceeded – that is, if the measured demand exceeds the capacity – then the individual or practice simply cannot perform the expected work tasks. Intentionally delaying the work through priority mechanisms does not change this dynamic. “People-centred” means that organizations need to measure and understand those limits and work to improve capacity and capability but, most importantly, make those limits clear and explicit.

People do not want to be presented with false dilemmas such

as “you can have quality but you have to wait,” or “you can have choice but you have to wait.” Organizations will often pose the false choice of choosing your own provider versus a delay. Providers of care, departments or services all have measurable capacity limits, and if the capacity can meet the demand then there is no need, with the exception of predictable supply absence, to tolerate a delay. Promising service to a patient when demand exceeds supply, and using a delay to accomplish this, makes no sense. If demand exceeds supply and promises are made to patients to meet the demand, these are false promises, as some unknown random demand will be neglected. It is not patient-centred to offer a service that exceeds provider, enterprise or system capacity limit. Systems need to solve problems for the many, sometimes at the expense of individual preference.

Example: We worked with a primary care practice in the Southern United States. One of the physicians is a woman who was quite “popular.” New patients were accepted into the practice based on “choice” and popularity. There was no measurement of physician capacity limit. The refrain from the practice was that this physician was “busy” and “was popular with all of women patients and we are all about being patient-centred.” There were no measurements of system performance. Delays were reported as “a long time” and “not very long.” There was no formal concept of a panel but, instead, there was a loose and ambiguous “promise” of a relationship. When we finally measured system performance, we found that the physician had a panel size that far exceeded her capacity to complete the work, that delays for her were extended (anywhere from 30 to 360 days), that the practice had initiated an elaborate priority system that they used to bargain with patients and that close to 25% of this physician’s patients cut the queue and saw her colleagues. As a consequence, the lowest priority was for women with prevention and surveillance needs. These women were pushed, by priority and false “choice,” beyond the recommended threshold for these preventive services. Within this cohort of patients with delayed care, we “discovered” five patients with breast cancer and two with cervical cancer. The physician, of course, stated that “this is not my fault”, and “these patients choose to wait.” Systems with an inherent mismatch of demand to supply will always fail.

Too often, *patient-centred* is a vague and loose term that describes what the supply or system determines patient needs to be. Supply dictates to demand. This is quite simple: Investigations, surveys and studies all reveal the same concerns. Patients want the opportunity to choose their provider or venue of care; they want to have access to that provider or venue when they choose, not when the system says it is “possible”; and they want a quality healthcare experience. In common colloquium: “let me choose, don’t make me wait to enter the system at any point, and don’t make me wait at the point of care” (Murray and Berwick 2003; Murray et al. 2003). There are, of course, other considerations in any discussion of people-centred care: the

quality of the care itself, participation opportunities, promises and reliable systems, information and support. But these considerations are not possible without the fundamental underlying balance of patient demand and system capacity.

Reducing Clinical Variance

Variation is a problem in all flow systems. Variation arises from the demand or supply side, whether operational or clinical, and creates flow turbulence. Variation can represent a temporary mismatch of demand and supply, resulting in either unused capacity when supply exceeds demand or a delay when demand exceeds supply. Multiple non-standardized processes are a manifestation of variation. Variation results in multiple smaller channels of work, which in turn increase the risk of mismatch with the consequent unused capacity or delay, and increase the risk of error and the need to repeat demand.

Clinical care variation,
manifested by multiple care
processes, leads to errors that in and of
themselves can be harmful, but from a
flow perspective an error represents a
demand that has to be repeated

Variation in clinical care functions in a similar manner. Clinical care variation, manifested by multiple care processes, leads to errors that in and of themselves can be harmful, but from a flow perspective an error represents a demand that has to be repeated (Walley et al. 2006).

The antidote then is clear: reduce the variation. Standardized, non-variable clinical care is characterized by a series of interrelated steps or interventions – tests, procedures or treatments – organized in a prescribed sequence in order to achieve an aim of measurable optimized outcome. Both the process as a set of sequential steps, and each individual step itself, require harmonic convergence of a number of critical supply components. The ultimate governor of flow is the patient's physiology. The work cannot move any faster than that physiology. At the same time, the process and the steps can only proceed as fast as the slowest, most delayed of those components. Clinical interventions are all crafted to accelerate, supplement or support the patient's physiology. Hence, underneath the interventions, decisions and treatments, clinical care is subject to the same operational dynamic of demand and supply matching. Clinical care can never be fully optimized unless the demand can be moved to the right supply, right on time. Once the flow dynamic, the matching of the supply and demand, is accomplished, in order to begin to improve clinical care processes, process variation must also be eliminated.

Example: We worked with a specialty care practice in which demand entered the practice as referrals primarily from primary care. While the referral demand exhibited some variation in the volume range of referrals, this variation was analyzed and found through statistical process control methods to be “natural variation” – a variation that is inherent to the system. The only way to deal with natural variation is to flex capacity to meet up- or downswings of demand. On the other hand, an analysis of the office supply demonstrated a wide range of office appointment availability. This variation was found to be artificial, that is, created by intentional actions within the system. The best method to deal with this is to plan. These findings surprised the practice since they thought that the sole source of variation and the cause of the oscillating delays was the variation in demand. Reducing the artificial variation caused by the supply helped the practice keep up with the demand and work with a minimal wait. In this practice, variation in flow created variation in clinical care process. Once the flow variations were eliminated, the practice developed service agreements, which minimized the clinical care process variation and allowed for improvement.

Organizing the Care Continuum

The flow dynamic discussed extensively above clearly applies to the key strategy of organizing the care continuum. The explosion of healthcare knowledge and customer expectation has made it impossible for the current cadre of clinicians to keep up with workload demands. This mismatch is particularly acute in the primary care setting. Standardization of process, the development of techniques and technologies to share information, and the introduction of multi-disciplinary team approaches to care will be essential to meet these needs (Bodenheimer et al. 2004). These enhancements to care delivery will not be successful unless optimal system performance is guaranteed by a demand/supply balance. With more potential hand-offs, there is an increased risk of error and delay. People view system performance as a sum of the waits. With increased numbers of clinicians and processes involved in the care continuum, paying attention and measuring system performance at every step is critical. Successful care can only proceed at the rate of the slowest step.

The same conditions exist in the acute care hospital setting. Here, however, there are far more hand-offs, far more customized journeys. Much of this work can be standardized and “leveraged” through a multi-disciplinary focus, and all of it can be measured. People moving through these complex systems need to be guided by predetermined “trip plans” that outline the journey, the expectations and the prescribed sequence of events. Measurement in these complex venues is just too great for the isolated human brain and requires more sophisticated tools to gauge, assess, measure and monitor basic system performance. These tools need to measure and display flow of work in real

time as well as using past behaviours and actions to model and predict future events. The entire continuum needs to be investigated. Individual, isolated solutions will often just move the delay to the next silo or next step and not solve the flow for the customer. For “continuum” improvement, all steps need to work together, which requires a common measurement system: was the customer demand met by system capacity at each step and at the sum of all steps (Bergeson and Dean 2006; Walley et al. 2006)?

Example: Many acute care improvement efforts focus on “fixing” a single isolated part of a flow system. Poor acute care system flow is commonly manifested at the first step – the emergency department (ED). Constraints deeper within the system create a bottleneck, and the work backs up into the ED. One common strategy for reducing the impaction and crowding in the ED is to implement an “express admission unit” (EAU). This is a physical place where patients who have completed their ED evaluation and need to be admitted are sent. EAUs are commonly staffed with personnel from the bed units, and patients are held there until a bed opens. This all sounds fine. The work is moved out of the ED, and the overcrowding in that venue is relieved. But what is the system effect? The EAU acts as a holding tank, drawing resources away from patient care in the next step – the bed and floor. There is another risky hand-off from the EAU to the floor, and the patient’s total length of stay (LOS) actually increases. The extension of LOS fills more beds for more days, resulting in an even higher likelihood of more bed constraint.

In the past two decades, a number of improvement strategies that have evolved outside healthcare (primarily in “Industry”) have been applied in healthcare settings. These improvement strategies have had the advantage of internal consistency and for the most part have a structure that links aim to change and to measure.

Improving Process Management

Healthcare has struggled for years with improvement. In the past, most improvement efforts were based on anecdote, opinion and “feelings.” There was no common unifying philosophy or any consistent method to determine whether the changes proposed or implemented actually resulted in improvement. “Improvement” meant change, but that change was most often an isolated event unconnected to any previous event. The aim or goal was commonly vague and nebulous, and there was

only infrequent measurement to assure that the change actually resulted in improvement toward a clear, quantifiable aim.

In the past two decades, a number of improvement strategies that have evolved outside healthcare (primarily in “Industry”) have been applied in healthcare settings. These improvement strategies have had the advantage of internal consistency and for the most part have a structure that links aim to change and to measure. These methodologies have been used to address multiple operational processes, including centralization of services such as “central booking”; development of standard processes for admissions, transfers, referrals and discharges; and bed and length-of-stay management, case management and discharge coordination (Nolan et al. 1996).

These improvement methodologies have included:

- **Total Quality Management:** In simple terms, TQM refers to “getting products and services right the first time, rather than waiting for them to be finished before checking for errors.”
- **Re-engineering:** Re-engineering is an attempt to break an organization down into component parts and then put it back together in a new and more “efficient” way. All processes are flow-mapped, redundancies are identified and removed, and disparate silo processes are identified and combined. Processes are more important than product: indeed, good products and outcomes should naturally follow good processes.
- **Queuing Methods:** Queuing looks at lines: how demand meets supply. Queuing focuses primarily on static systems where supply is fixed and demand varies, and offers insight on the trade-off between demand and/or supply variation and service levels (delays). While queuing methods tend to focus on retrospective events, more sophisticated queuing methods offer views of how current systems function and offer analysis that can be applied to strategies for improvement.
- **Theory of Constraints:** TOC, using the premise that a system can flow only as fast as the slowest component, offers insights into flow both across systems and through smaller processes within a system.
- **Model for Improvement:** This model, used extensively by the Institute for Healthcare Improvement, is characterized by “Plan, Do, Study, Act” (PDSA) cycles. The model focuses on the connections between aim, change and measure.
- **System of Profound Knowledge:** SoPK, originated by Deming in the 1980s, contends that “quality” equals value for all stakeholders, including society, and that value is defined by these stakeholders. SoPK has four interlocking components: understanding or appreciation of the system (how the parts fit together), understanding of variation (ability to distinguish common from special-cause variation and to act accordingly), theory of knowledge (understanding that knowledge is built on theory and predictions; informa-

tion is not knowledge) and psychology (understanding of people, interactions between people and circumstances).

- **Six Sigma:** Popularized by Motorola, Six Sigma looks at process, “system” or event; the mean performance of that process, system or event; and the variance in performance and then identifies the standard deviation from the mean, and whether that process is in control and exhibits natural, common-cause variation, or is out of control, exhibiting unnatural, artificial variance.
- **Lean Thinking:** The Lean method identifies the “value stream” from the customer perspective and seeks to eliminate all waste from the system. “Waste” includes waste of time, caused by demand/supply mismatch. Lean has a clear focus on value and on “pull” systems, wherein work is pulled from Step 1 by Step 2 rather than pushed forward from Step 1 into Step 2. Lean seeks perfection in flow across the value stream.
- **Lean/Six Sigma:** Combining the Lean-equals-zero-waste approach and the Six Sigma-equals-zero-variation approach, Lean/Six Sigma creates synergies and a more robust set of change strategies.

At their core, all these improvement strategies indirectly address the same operational reality: how does a system, an organization or a business enterprise successfully match customer demand to system capacity, and, secondly, how is that accomplished with minimal delay? While matching demand to supply is universally implied in all of these strategies, it is not made explicit. This is due to an instinctual knowledge of how things work. Matching customer demand to system capacity and doing so without a delay is considered obvious, and that knowledge is assumed.

Total Quality Management looks at “getting the product right, the first time,” which is essentially a demand reduction strategy. The process flow-map component of **Re-engineering** seeks to reduce redundancy and to standardize for reliability. Both these strategies serve to reduce demand and result in improved demand-to-supply match. **Queuing methods** clearly address matching issues and focus primarily on “service level”: how service levels deteriorate or delays accumulate due to poor matching. These methods, in addition, explore multiple levels and types of variation – in volume of demand or supply, in arrival rates and in server time – and illustrate the consequences of that variation. **Theory of Constraints** investigates how demand meets supply either as a series of interrelated steps or at a single point where more than one supply component is needed to successfully complete the process step. TOC addresses customer delays as a result of either a single process delay in a chain of multiple processes, or a supply component delay at a single step. The **Model for Improvement** only obliquely addresses demand and supply, but does utilize many of the other methods with the change and measure components. The **System of Profound Knowledge** not only addresses variation but emphasizes worker

knowledge of the process and context. This knowledge starts to make matching demand and supply much more explicit. **Six Sigma** focuses on variation. Variation is a temporary mismatch of demand and supply. A reduction in variation results in a better match and smoother flow. **Lean Thinking** actually maps the flow of demand as that demand moves through supply gates and seeks explicitly to eliminate waste, including the waste of time. Lean emphasizes continuous flow through demand/supply matches at each step, identification of constraint to that flow, error-proofing to reduce demand, and layout optimization and planning. **Lean/Six Sigma** combines these last two methodologies for a more focused view of variation at each step in the “value stream.”

While the work in healthcare shares the same basic fundamental dynamic as many other businesses and industries, there is a common misconception that “we are different.” This false belief allows healthcare demand/supply matching to escape scrutiny. These improvement methodologies are often applied in healthcare but not at full potential value. The fact that these methods are clearly crafted to investigate efficiencies in matching demand to supply is lost.

While the work in healthcare shares the same basic fundamental dynamic as many other businesses and industries, there is a common misconception that “we are different.” This false belief allows healthcare demand/supply matching to escape scrutiny.

The methods are only tools – lenses through which to see how systems perform. The greatest value for these tools comes when the tools are applied in an integrated combination and not in isolation in order to explicitly view demand and supply dynamics.

Healthcare system performance is often measured by revenue, cost, satisfaction or clinical outcome. These are superficial indirect measures of performance. None of these measures can be optimized unless the fundamental issue was met: did the system successfully match customer demand to customer supply? Successful performance in that arena sets the stage for optimization in all the other areas. An organization may perform well in a single isolated area, such as patient satisfaction or revenue generation, but in so doing may sub-optimize overall system performance. One area is “elevated” to the detriment of all other areas. Successful demand/supply balance is the glue that holds all system performance together, and balance is foundational.

The most successful system performance improvements will

be achieved when an organization can integrate components of all these improvement methods. But to accomplish this integration, all these approaches need to be combined into a unified whole, where matching demand to supply is explicit rather than implicit.

If demand into any system exceeds the capacity of that system, the system will fail. That mismatch will inevitably lead to expanding delays and ineffective and short-sighted attempts, like priority and triage, to solve the mismatch. Failure to understand this basic dynamic, a focus on change without a context, coupled with efforts to improve isolated components of a larger system, leads to sub-optimization. Some examples:

- **Emergency room:** The ER is the first demand/supply step into a much larger interconnected system. Mismatch of excessive demand compared to supply deeper in the system can result in gridlock in the ER. Emergency room improvement efforts, utilizing many of the improvement methods discussed above, often focus on making changes in the ER alone: the initiation of bedside registration to reduce steps, the development of “fast track” for the not-so-sick, and the implementation of an express admission unit – a place to park patients who have completed the ER journey but have no bed. While these changes improve the flow and efficiencies of the ER, the demand and the delay are just sent further downstream. Bedside registration reduces the time of the initial process step, but patients just wait longer for the physician. The EAU moves the work to a parking lot, requires new staff and actually serves to extend the length of stay, which worsened the gridlock.
- **Central triage:** The workload referral hand-off between primary care and specialty care has been arbitrary and fraught with customization, informality and variation, resulting in inevitable dissatisfaction, errors and delays. The development of a central triage unit to manage the workflow by creating a single standardized entry point and process is an attempt to reduce the variation, dissatisfaction and error. At the same time, the incorporation of formal “priority” as an inherent part of the new process actually maintains a high number of distinct channels of work, resulting in a higher likelihood that the “second sickest” queue will be delayed past the recommended threshold. Even though some significant improvements are achieved, neglecting to “see” that the creation of more priority queues will result in more error and delay actually serves to continue to sub-optimize overall system performance.

All the improvement methodologies listed and discussed above contain strategies crafted toward three potential objectives: reduce demand, increase or enhance supply, or create a more effective match of demand to supply, primarily through the reduction of variation. Successful organizational improvement

utilizes all or any of the strategies, linking them through the integrated lens of explicit demand/supply matching.

Successful integration then requires a linkage of all the various methods used as a framework to guide improvement work. In addition, successful integration requires linking the four pillars that frame the integrating services initiative: people-centred care, reduction of variation, a focus on the care continuum and improvement in process management. In order to integrate these approaches into a unified whole, the fundamental dynamic of matching demand to supply must be made explicit. **HQ**

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Making Integration Work Requires More than Goodwill

Linda Smyth

Abstract

Over the past three years I have had the opportunity to be involved in two integration projects regarding cancer services. Both projects crossed jurisdictional, geographical and healthcare-provider boundaries and used cooperation and collaboration to work toward the goal of an integrated, quality, multi-disciplinary, seamless, patient-centred approach to cancer care. The projects have provided a perspective of what worked well and what could be improved when integrating healthcare services across organizational and provider boundaries. Governance emerged as a key determinant of project progress and successful change.

Background

Each project started at a different place along the project management continuum, with variations in the involvement of key stakeholders, relationship histories, existing infrastructures

and organizational partners. This presented a learning experience and identified challenges and benefits of these different situations regarding governance. The literature offers several perspectives, including suggestions and recommendations on why, and under what conditions, some approaches may have been more effective than others when working and governing across boundaries. The following discussion shares the experiences with these projects and how some of these concepts apply.

What Is Governance?

There are many descriptions of governance and what is required for effective governance. Goodwin et al. (2004) explain that the type of governance is influenced by the form the network takes and that it includes the activities that influence the work, structure, culture and resourcing of the organizational network. In addition, even if mandated, voluntary collaboration requires a full range of tools such as authority, inducement, persuasion and standard-setting to be successful. In one project, several existing structures tended toward authority and formal lines of communication dictated by the structure, and used inducement as an incentive. The other project's structure was much flatter,

with resourcing being a priority. In both cases existing cultures were a significant influence.

Denis et al. (2006) discuss three models of governance in healthcare organizations – agency, stakeholder and stewardship. These models share five core functions of governance:

- Generating intelligence;
- Formulating mission and vision;
- Resourcing and instrumentation;
- Managing relationships; and
- Control and monitoring.

We quickly found that although common goals and objectives were a great start, there were many ways to reach a destination. It was during the journey that issues arose and differences in culture surfaced. Governance needed to provide the framework and leadership for momentum and support to accomplish the integration of services.

Our projects experienced all of these functions to a greater or lesser extent.

Stoker's (2004) description of governance is that of guiding collective decision making and groups of individuals or organizations making decisions that may be private or public. This definition is representative of a key requirement we encountered with the projects – that of needing a guide for collective decision making. As the integration projects crossed organizational and jurisdictional boundaries, multiple stakeholders were engaged. Although goodwill and focus on patient-centric care got stakeholders to the table, once there they had to make decisions about how integration of services would be achieved. In some cases there were established processes between stakeholders. However, integration could require implementation of a new dimension, requirement or standard; addition, replacement or elimination of a process; the work to be done differently; or a hand-off to a different stakeholder. We quickly found that although common goals and objectives were a great start, there were many ways to reach a destination. It was during the journey that issues arose and differences in culture surfaced. Governance needed to provide the framework and leadership for momentum and support to accomplish the integration of services.

Several aspects of governance were key to the success of our projects. The first was decision making. Since the projects were provincial, experience confirmed that integrated decision

making was required when organizational and jurisdictional boundaries were crossed. Pope and Lewis (2008) indicate that decision-making processes in partnerships are more difficult due to the range of voices that need to be considered and the negotiation around the provision of resources. With multiple partners; organizational, jurisdictional, and public and private provider boundaries; unique cultures; finite resources; and multiple bodies of professional knowledge and practices as well as business processes, the decision-making process was complicated. What became evident was that without a clearly defined infrastructure and decision-making process, decisions progressed through each partnering organization's process, adding to the complexity and time required. Questions and problems would recycle through unclear processes, slowing decision making and delaying project progress and deliverables. In addition, each partner's process was influenced by the need to protect the organization's mandate, viability or turf, and this could challenge the ability to accommodate the broader perspective and mandate of the continuum-of-care project. Early in the integrated planning and implementation process, clarity was required on the types of decisions to be made, by whom and within what parameters. This decision-making process then needed to be understood and used by the partners. Ansell and Gash (2007) indicate that clear and consistently applied ground rules reassure stakeholders that the process is fair, equitable and transparent, with negotiation that is real and excludes backroom deals. Strong leadership, with integrated governance and appropriate processes, enables the partners to participate in decision making and focus on the comprehensive vision of the care continuum from the patient's perspective.

In addition to decision making, Philpott (2008) mentions two other qualities required of a governing board that were key in our project experience. First, the board is a positive, supportive venue for sounding, advising and questioning. This was key in our projects, particularly when we received new information or when unforeseen situations arose. The result was the ability to revisit the vision, confirm the mandate and direction, or adjust the work plan, establishing where we were, where we needed to go, and if we were on the right track.

The second quality of good governance is the ability of board members to recognize that once appointed, their duty is to the board and the "bigger picture," and not only to represent their constituency (Philpott, 2008). This was a challenge with our projects, as board members represented organizations (each with a mandate) or represented professionals for whom collaboration could pose a threat to their autonomy or established practice, or could potentially affect their income. This created challenges even if the impact was perceived versus real. To get beyond this required a willingness to hear another point of view, a strong commitment to patient-focused care and a lot of communication, negotiation and hard work at multiple levels.

The next governance attribute identified by several authors

was leadership. Philpott (2008) indicated that boards need to make decisions that will force the organization to stretch beyond its perceived capacity. This is very relevant to integration. Our projects required stakeholders to move beyond past history and experience, and step outside the silos and away from the protection of familiar turf, organizations, professions or jurisdictions. Yet this is easier said than done! Strong and committed executive and medical leadership was needed, combined with solid planning, communications and change management. Together these enabled stakeholders' engagement, support and increased commitment to the new integrated vision.

Strong leadership, with integrated governance and appropriate processes, enables the partners to participate in decision making and focus on the comprehensive vision of the care continuum from the patient's perspective.

Goodwin et al. (2004) also point out that leadership is to be found at every level in organizations and that leaders should be looked at as "boundary spanners." The authors indicate that other skills required for integrated governance include process initiation, negotiation, diplomacy, problem solving and strategic development, tact, and the ability to move between accountabilities and motivate others. The strong commitment of the project and front-line staff and physicians from across the province to patient-focused care made them "boundary spanners." It enabled them to work together, share ideas, problem-solve and make suggestions that moved the provincial agenda forward.

In the bigger picture of governance, Forest et al. (1999) describe two issues that policy makers must resolve as they move toward integrated health systems governance. These are the degree of autonomy each integrated system will have in decisions and the balance between the values and interests of internal and external stakeholders. The authors describe the need for a governance model that would serve the interests of the community while preserving the autonomy of the individual health institutions/systems. In the projects were a number of independent providers who placed a high value on autonomy. This needed to be considered in the partnering relationships, governance structure and leadership roles. The other challenge was balancing the interests and values of internal and external stakeholders involved in the continuum of care. We managed this in a variety of ways: ensuring committees were inclusive of stakeholders, incorporating an advisory group into the infrastructure, adding physician specialists who consulted

and championed ideas and processes with their professional colleagues, and ensuring both executive and medical leadership within the project. In one project, the medical leadership incorporated a quality assurance program involving a multi-disciplinary physician group that improved the quality of patient care by resolving issues from across the continuum and not simply moving them downstream.

Why Is Governance Needed When Integrating Care?

System-wide changes and restructuring of healthcare, the increasing need for public accountability and barriers impeding effective governance are a few of the influences for the Canadian Council on Health Services Accreditation (CCHSA) new governance strategy (Taber and Pomey 2008). Care paths and integration of health services that cross organizations, jurisdictions, geographical boundaries, and public and private providers require collaborative relationships. Healthcare is part of an increasingly complex and interconnected world, and organizations can no longer operate in isolation (Bullivant et al. 2008b). On the other hand, Ansell and Gash (2007) believe that increased specialization and distribution of knowledge, combined with complex and interdependent infrastructures, also increase the need for collaboration and that these collaborative processes require collaborative governance. These all demonstrate the increased need for integrated governance.

The health system needs to deal with complex health issues, and organizations are searching for how best to deliver care as the existing silos struggle in this new environment (Jackson et al. 2008). Bullivant and Deighan (2006) suggest that for a board to achieve focused decision making and deliver on strategic objectives, it needs to consider all aspects of accountability and not govern in silos. Bullivant et al (2008a) identified that problems often occur at the borders between organizations or teams when care is handed off. In our projects, patients indicated that a missed step or lack of service along the care path affected how they perceived the healthcare system and their satisfaction with the services provided. Duckett and Ward (2008) indicate that the critical elements of value as assessed by patients might include continuity of care, timeliness of access (typically wait times), their expectations of improvement, their experience (the way they are treated during the care episode) and the cost to the patient to access treatment, such as, travel and accommodation. Along the care path are many opportunities for the patient to fall between the cracks. Integrated governance ensures accountability between partners, as the number of transfers between organizations increases, and as the measurement of targets (e.g wait times) continue beyond organizational boundaries when the patient is handed off to other care providers (Bullivant et al. 2008b). The projects' goal to improve care along the continuum required integration of services across multiple providers

involving a number of hand-offs of the patient and/or their information. Issues were identified with hand-offs, including requirements and criteria, sharing of information, and the need to identify responsibility and accountability at each step.

In addition, patients' need for timely access and quality care requires a high level of organizational performance (Nininger 2008). Boards and their management staff make vital decisions, choices and judgments regarding resource allocation, programs and services that affect and safeguard patient safety (Fralick 2008). Typically our projects involved multiple hand-offs, all with the potential to influence access, wait times and patient safety. Governance needed to go beyond organizational and provider boundaries, integrating services to ensure effective, efficient and safe transitions in care. Governance provides the vision, leadership and commitment to extend health service integration (Jackson et al. 2008).

The integrated governance model needs to engage key stakeholders effectively and in a timely manner. This requires clarity up front about the expectations of stakeholders and a commitment from them if they are to be involved in the governance of a project. Incentives may be required to encourage participation

Challenges to Establishing an Integrated Governance Structure

There are many challenges with the governance of integrated initiatives. Nininger (2008) suggested that governance may not have been a priority, due to the complexity of the delivery system in healthcare that includes lines of accountability and responsibility, which are difficult to understand, combined with a lack of investment in building governance and leadership competencies. Ansell and Gash (2007) indicate that imbalances in power produce distrust or weak commitment and that it becomes problematic when important stakeholders do not have the organizational infrastructure to be represented in the collaborative governance processes. With our projects, some patient populations and physician groups did not have the support to facilitate their participation in the governance process. This limited the participation of some stakeholders.

Another potential barrier is that some stakeholders, due to their size or resources, may not have the time, energy or liberty to engage in time-intensive collaborative processes (Yaffee and Wondolleck 2003). During our projects, we often heard from busy stakeholders that they were challenged to participate

because of the time demands on physicians in private practice and senior executives with multiple priorities. This affected governance and put pressure on the project, resulting in delays in progress and decision making and the resolution of project issues. The integrated governance model needs to engage key stakeholders effectively and in a timely manner. This requires clarity up front about the expectations of stakeholders and a commitment from them if they are to be involved in the governance of a project. Incentives may be required to encourage participation (Ansell and Gash 2007). In our projects, we provided some financial remuneration for fee-for-service providers if participation resulted in lost income.

So What Is Good Integrated Governance?

Bullivant and Deighan, authors of the Integrated Governance Handbook for the National Health System in the United Kingdom (2006), describe integrated governance as systems, processes and behaviours used to lead, direct and control functions to achieve organizational objectives, safety and quality of service. They believe that integrated governance requires strategic thinking and dynamic risk assessment and suggest there are eight elements that constitute a high-level governance framework. These eight elements of governance include:

1. The concepts of sustainability and resourcing;
2. Efficient, economic, efficacious and effective services;
3. Compliance with all authorizations (e.g. health, safety, drugs, etc)
4. Meeting standards (e.g. national targets) and guidelines;
5. Commitment to quality reflected in clinical governance;
6. Partnership with local healthcare economies;
7. Communication with stakeholders, including involving the patients and the public in planning; and
8. Ongoing board development.

Barker (2004) indicates that effective boards are critical to the success of organizations and set the strategic tone for the organization; they provide leadership and focus on priorities while creating forums for challenging debate and are unified by a sense of collective responsibility.

At the 25th International Conference of The International Society for Quality in Health Care (2008b), Bullivant et al. identified some key how-tos when governing between organizations. The following items were most relevant to our projects:

- Governance reflects the type of relationship;
- Agreement on, of, or between:
 - Common values, outcomes and measures;
 - Changes in the relationship or expectations;
 - Appointment of an arbitrator to handle partnership disputes;

- Decisions to be shared and tracked to ensure delivery of actions;
- Sharing information that will provide early warning of variances; and
- Completion of actions and commitments.
- Timely sharing of potential risks; and
- Sharing of common risks and escalation plans, and risks or failure of partners or suppliers to deliver.

In addition to these items, at the project level governance was needed to:

- Provide a clear vision of the objective;
- Position the project strategically, identifying and mobilizing stakeholders;
- Ensure accountability across and within organizations, with clear roles and responsibilities;
- Deal with the politics and potential pitfalls with key stakeholders, encouraging transparency;
- Secure the resources to ensure project success;
- Remove barriers to facilitate progress;
- Provide a forum for open discussion of issues, risks, successes and problem resolution; and
- Negotiate and clarify a decision-making process that is clear, timely and workable.

What Is the Future for Integrated Governance?

In *Crossing the Quality Chasm: A New Health System for the 21st Century* (Committee on Health Care in America 2001) the board was identified as a key player in shaping the system of the future. Brian Schmidt (2008) describes the Qmentum approach and how it has brought the spirit of knowledge, innovation and purpose to healthcare governance, ensuring that the patient is, and always will be, first and the focus of healthcare. Moore (2007) believes that the real work of the board is creating wisdom from knowledge gained through information and data and that the governance model will help this wisdom lead an organization into a positive future. This requires that the board value the perspective of ownership, long-term thinking and foresight; incorporate time for reflection and critical thinking to create clear criteria; empower management; practise precision thinking (identification of what is prudent and ethical); act as an information filter, recognizing what is needed for monitoring and decision making; and fight inertia and “sacred cows.” Policy governance is a tool to help boards govern more effectively. This description of governance reflects the strong need for visionary leadership and longer-term thinking as a part of the governance model.

With the integration of health services, effective governance between organizations is required. Alberta is well positioned with its provincial health organization to make a difference by integrating services based on patient-focused care. Provincial

projects with multiple stakeholders, providers and care sectors add to the complexity of providing services and require effective integrated governance. Qmentum, the new accreditation program from Accreditation Canada launched in February 2009, places a greater emphasis on health system performance and accountability. It has recognized the importance of good governance as an underpinning of organizational performance (Schmidt 2008) and has created a governance structure based on five core functions summarized below:

- The use of knowledge in the design and implementation of goals and to guide organizational adaptation;
- The creation of long-term goals, a vision and values to guide governance and the actions of the organization;
- The need to ensure the board’s and the organization’s internal development to support the achievement of the vision;
- The identification of and support for relationships with external and internal stakeholders to achieve organizational goals; and
- The need for processes to control and monitor performance, organizational adaptation and organizational culture.

The literature and experience in working across boundaries have established the need for integration of governance when integrating health services. This will require, as with integration of health services, a new way of thinking, new approaches and a new framework. Bryson et al. (2006) indicate that collaboration may be necessary and desirable, but evidence suggests it is not easy. Similarly, the journey to integrated governance will have its challenges. It is, however, key to successful integration of health services. Boards need to stay focused on the core functions and remember to question what difference will it make to the patient. **HQ**

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Engaging the Head and Heart: Leading Change

Jack Silversin

[IN = Interviewer JK = Jack Silversin]

IN: In the wake of today's global economic downturn, more and more companies are making organizational changes, from restructuring to right-sizing, to stay competitive. For more than two decades, the healthcare industry in Canada has been transforming its system and streamlining its operations through care integration and centralized governance. Change management has become the *de rigueur* catch phrase used by executives to describe everything from new taskforces and strategies to new tools and processes. Yet studies show few organizations are succeeding at it. As a healthcare consultant who coaches leaders through change, what do you think that most of these firms fail to do?

JK: You're right that most change efforts don't succeed or, when implemented, are short-lived. The organizations I work with are beginning to understand that the key to successful change is *engaging people at all levels* of the organization. The days of top-down, command and control change management are gone. Imposing change on people leads to resistance, lack of commitment, even sabotage. You lead change; people manage themselves.

Restructuring fails in 60% to 75% of cases, not because of poor strategy, but because executives didn't understand the importance of people. It's people who change organizations. Getting the buy-in of those who need to implement change, whether we're talking about physicians, clinicians or managers, is the critical success factor. People get on board with change when their heads and hearts are engaged.

Getting the buy-in of those who need to implement change, whether we're talking about physicians, clinicians or managers, is the critical success factor. People get on board with change when their heads and hearts are engaged.

IN: So what you're saying is that change happens through people, not to people, and that leaders need to engage everyone in the organization. You have worked with health regions, providers, hospitals and physician groups in Canada, the United States and the United Kingdom. How do the best change leaders engage people?

JK: Leaders need to develop a shared picture of the future and help others to buy into the vision and the reason for change. A good vision taps into shared aspirations, creates a pull toward the future and clarifies what makes the risk, pain and loss worth the change. That's a key step that too often gets rushed over. There has to be some context, some sense that as an organization, or as a network of providers, we are going someplace together. That destination has to be meaningful – it has to have some emotional resonance to it.

I should also add that leaders need time to get their heads and hearts engaged, too. You can't expect staff to cross the bridge if you haven't crossed it first yourself. When organizational changes are deep and broad, leaders must have the opportunity to reflect and move away from old structures and time frames.

The other best practice that I see among good change leaders is the appreciation for, and application of, two types of change. We'll refer to one type as technical – not because it necessarily involves technology – but because it is relatively straightforward. It is a simple change in execution and does not cause a person any internal tension or frustration. If a surgeon, for example, learns a new and improved technique, there will likely be a learning curve, but not a significant emotional component associated with the change from current practice.

In contrast, many changes in healthcare are of the second type – adaptive. Changes that cause stress, disequilibrium or tension between competing values are called adaptive because they challenge deeply held assumptions or values and require a deeper transformation of beliefs or relationships. For example, asking physicians to practice according to protocols challenges many physicians' beliefs that their own experience and judgment is best.

If a health ministry sets up new networks that cause old referral patterns to be set aside and new ones to emerge, it needs to understand that there are adaptive changes people will need to move through.

The distinction between the two types of change – technical and adaptive – was coined by a physician who teaches leadership at Harvard's John F. Kennedy School of Government. Dr. Ronald Heifetz says that a common cause of failed change is that leaders promote technical solutions to what are largely adaptive problems.

Disruptions in the traditional referral patterns physicians have established among themselves is another adaptive change. If a health ministry sets up new networks that cause old referral patterns to be set aside and new ones to emerge, it needs to understand that there are adaptive changes people will need to move through. If it doesn't, the change process might cause alienation and frustration that threaten the outcomes of more efficient, better care.

IN: Can you give an example of an adaptive change for front-line staff?

JK: Any change or process of decentralization that breaks up old teams and creates new teams would be an adaptive change. People change what they identify with when their team changes. They need to embrace the new team and discover the value that others bring to the team.

IN: Do some leaders have difficulty engaging others or want to skip over the shared vision step?

JK: Yes, quite a few leaders feel that setting the agenda for change, making tough calls and motivating change is what is expected of them...and in part it is. But increasingly, people need to be engaged, and it can be hard for leaders or executives to switch gears from the traditional leader role to be more inclusive. Time constraints are often the rationale for top-down decisions, but underneath there is a fear of, or ambiguity about, engaging people. They need to be allowed to say, "I don't have all the answers," and to collectively work with people to determine what needs to be done.

For many executives and leaders, the whole idea of a vision or shared destination feels fuzzy and too amorphous to be helpful. But this misses the human need to connect to something larger. Recently, Barak Obama took the oath of office and gave what I thought was an inspirational address. He concluded by drawing attention to an episode in American history when the outcome of the revolution was far from certain. He compared those hard times to our own today, and urged Americans to keep our eyes "fixed on the horizon." He wants us to hold on to a vision that is cherished. His power in these early days of his administration derives from his ability to both engender hope and make the vision of a better future real. There's an essential leadership lesson in that.

IN: What about leaders who resist pulling in the ideas of others for fear of losing control of the change process? What can you suggest?

JK: That's very common and for good reason. There is some loss of control in asking for ideas. But if we appreciate that head and heart engagement is central to successful change, and that ownership is developed by trying on ideas and "kicking the tires," then finding ways to get input before a change is finalized makes sense.

IN: What ways would you recommend?

JK: Wherever I am invited to talk, I find people connect strongly with the idea of *fair process*. This notion comes out of the literature on procedural justice. As human beings, we care about decisions and how they affect us. In fact, most people will interpret the need for change as a criticism of what they are

Successful Change Leadership Practices

- Address both the technical and adaptive aspects of the change.
- Help others feel the urgency for change.
- Build or regain trust across professional boundaries.
- Work to build a shared picture of the future.
- Engage stakeholders in a transparent decision making process.
- Clarify reciprocal expectations – make explicit what others can expect of you and what you will expect of them.

currently doing.

But when we have taken part in a transparent, merit-based process, we more readily accept a decision not in our best interest. When a process is fair, we can more easily accept the outcome and move on.

For a leader, this does not mean letting go of the reins entirely. It means that you communicate right at the start of the input process what criteria you will use to evaluate all ideas and suggestions. The criteria are transparent. Once all ideas are offered and the best ones incorporated, you close the loop by explaining to everyone who offered input what was useful and why, and what was not and the reasons it didn't shape the final product or decision. Any steps that a leader can take to ensure a process is fair will help others own the decisions for change.

Change is an evolution, not an event. Employees should believe they are contributing to an evolving solution on how to reach that shared destination. Leaders should be asking the questions that help people discover their contributions to the question "how do we get there?" Remember, there is usually no one answer, or right answer, but the most fit answer within a given context.

Change is an evolution, not an event.

IN: This discussion about fair process implies trust, something we haven't talked about yet. You believe that trust plays a significant role in whether changes are adopted. Can you say more about that?

JK: Trust is a huge topic and one that is getting increased attention these days. If people are suspicious of the motives behind

those promoting a change, suffice it to say that change isn't going to succeed. If there's baggage, such as promises broken or commitments not fulfilled, it's hard to get the needed head and heart engagement.

In healthcare, the world of clinicians is very different from the world of administrators and policy makers, and that difference in world view can lead to mistrust that can slow change. In almost every large-scale change effort that cuts across professional boundaries, there's likely to be some accumulated baggage getting in the way of honest dialogue and forward movement.

I encourage clients who need to build trust to invest in the skills of a facilitator to clear the air. One very useful framework is to ask the two parties to answer the same set of questions: how do we see ourselves (our strengths, weaknesses, contributions), how do we see the other party and how do we think they see us? Getting these perceptions into the open is a healthy start to recalibrating a relationship. From there it takes individuals to acknowledge that some of their behaviour is contributing to less than helpful perceptions and then commit to different actions.

IN: You've said the leader is the one who has to create energy by helping others to see the need for change. Most involvement processes proceed so slowly they are in danger of losing what little momentum they have. Is it necessary for people to feel the urgency before they will change? Does the platform really have to be burning?

JK: Great question and one I've thought a lot about. It seems to me that, for a few people, when the pull toward a desired future is great, they readily and quickly move on to embrace new ideas. For most of us, there has to be some discomfort or unease with the present situation before we're willing to change. When we are content with what is – or at least have found a way to make existing routines or practices work – we need some energy to move us to try something new. I don't think the platform can always be burning. People need recovery time too. But there should be tension between where we are and where we are going. It's an internal urgency, and that urgency is key for almost all changes. John Kotter's newest book – *A Sense of Urgency* – is devoted to this topic (Kotter 2008).

IN: Are there key lessons on urgency from Kotter's book that you can share with us?

JK: His view is that most of us who desire change are still too complacent. He also says that there is a lot of false urgency, based in fear and anxiety, which is the result of some failure or external pressure being put on a group. People have a true sense of urgency when they feel that action is needed now to reach a shared destination. The leadership challenge is to keep that urgency high, but not overwhelm people with panic or anxiety.

Don't initiate a feeling of crisis if it isn't a crisis, or you will turn people off and they will distrust you. Leaders must sustain the sense that action is needed over a long period by tapping into that internal sense of urgency. In Kotter's view, all change has to start with a sense of urgency and if it fails at that step, he dooms most changes to be short-lived or not even implemented.

IN: The majority of staff in healthcare work on the front lines, and their priority has always been the care of patients. What role, if any, would patients play in healthcare reform?

JK: You need to engage the public in an extended conversation. You need to bring them to the table, and talk to them about choices that need to be made. They need to understand what you understand and be given the opportunity to share their perspectives. Through discussion, let them discover what you have learned and come to a shared place of understanding of where you are.

IN: Many people have heard you talk about compacts – what are they and why do you feel they are important to successful change processes?

JK: *Compact* is shorthand for a set of reciprocal expectations. For decades, the implied compact in most businesses was job security in exchange for good work and loyalty. Some have called it a psychological contract. In every health organization, doctors and staff have an explicit understanding of what they need to do as members of that organization and what they are entitled to expect in return.

I have been saying that the old compact for physicians was built on expectations they would have autonomy, some measure of protection from market forces and special privileges due to their status. These were not unreasonable expectations and were reinforced by society at large as well as hospitals and other organizations. Since a compact is a two-way deal, there are expectations of physicians. But I'd say that until recently, all that was expected of physicians was to be compassionate, ethical and provide good care – but that expectation was very personally defined. Now we've moved into an era of benchmarking, performance measurement and best practice protocols.

...until recently, all that was expected of physicians was to be compassionate, ethical and provide good care – but that expectation was very personally defined. Now we've moved into an era of benchmarking, performance measurement and best practice protocols.

IN: So you're saying that many changes are being directed at physicians – and others in the health profession – without renegotiating the compact or implied deal?

JK: Yes, and this clash of legacy expectations and evolving societal needs causes tension and frustration. I think this mismatch between the old compact and society's new needs is at the root of what many call resistance to change. I prefer not to say health providers are resistant to change – any more than we all are – but I see attempts to hang on to the status quo as indicative of a gap between old expectations and new imperatives.

In my work in Canada and elsewhere, I have championed a dialogue process to align expectations between physicians and organizations. Typically this is between a hospital and the medical staff where the hospital needs engaged physicians to partner with them to improve safety and care. This often means physicians accepting protocols or standard work and new relationships with other health professionals. That would be a new “give” for physicians. In return for limits on autonomy, most physicians are interested in having a seat at the table when decisions are made. When a new, explicit compact gets crafted it is clear that everyone changes. Administrators need to bring healthcare providers into decision making in ways they might not have in the past.

IN: In Alberta we recently established a single provincial health authority to oversee the delivery of health services. It's a large scale, complex transformation – from 12 entities to one – with very different patient/client, professional and stakeholder groups, and staff numbering more than 80,000. You emphasized the role of shared vision in your advice to leaders. What does that mean in practical terms to us as we move through this transition?

JK: Change of the magnitude you have described is never easy. In part because – going back to my earlier remarks – this is an adaptive change. So those leading it need to appreciate what it is they're asking doctors, managers and staff to do. Those leading the change need to communicate widely the vision of what they are trying to achieve in a way that is compelling. I would suggest wide-ranging dialogues with various stakeholders to share the vision and see what part of it will be the greatest challenge for those on the front line and what most excites them about being part of this.

IN: You said there is another aspect to this need to address emotions that is most often overlooked by change leaders. What is that?

JK: Too little attention has been paid to the role of self-discovery as a part of the change process. Leaders tend to get excited by a good idea or innovation that worked in one location or department and decide to “roll it out” to the rest of the organization.

That strategy leaves more people than not feeling “rolled over.”

Real engagement is the result of individuals coming to some conclusion on their own – either by seeing data that is compelling and drawing their own conclusion that “we could do better,” or collecting data about their own practice, or having any kind of penny-dropping experience that leads them to say “Aha, now I get it.”

The leader’s role is to create the conditions for others to discover the need for change. As we said earlier, self-discovery comes from asking others the right questions and allowing them to contribute to finding the answers. This is empowering.

We tend to rely on logic, rationale, evidence and expectations to drive change. Real life is rarely like that. The evidence, data or rational arguments need to strike an emotional cord. When an internal lever gets flipped and individuals shift from “Why do I need to do this?” to “Now I get it,” you’ve sown the seed for successful change. Change is an open system, a dynamic thing; it involves asking questions and getting feedback.

“The mouth, feet and wallet all need to be going in the same direction.”

IN: What is the one critical piece of advice that you would leave with us?

JK: Actually I have two pieces of advice. The first has to do with the consistency of message for change to succeed. As someone recently put it, “The mouth, feet and wallet all need to be going in the same direction.” This alignment sends clear signals about what the priorities really are. Too often change processes are slowed because those on the front line get mixed messages about what is most important; they hear lofty language about aims and transformation, yet budgets don’t reflect what is being said, or the lack of attention from top leaders undercuts any communication about urgency.

Second, leading change takes courage, for all the reasons we’ve been discussing. People generally find ways to opt out of change processes that they think are burdensome, inefficient and not necessary. Leaders must have the courage to set the course, create opportunities for engagement, develop and sustain urgency, and keep going in the face of opposition.

And third, if I can add one final comment, employees need to take personal responsibility, too. All need to ask themselves how they can influence change and help reach that shared destination. **HQ**


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About the Author

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Introduction to

Case Studies on Integration

Judith Dyke

The work of integration is happening throughout the national and international health system. Some is system-wide, while other integration work is tackling issues at a local or community level. Regardless of scale or scope, the work is breaking new ground and, sometimes subtly, sometimes radically, changing the way health services are organized.

The following section contains a series of case studies that describe work being done in Alberta to integrate health service delivery, improve access and quality and maximize the use of scarce resources. The case studies represent a range of initiatives, from those with a local focus – medication reconciliation within one community that ties together community, hospital and primary care; anticoagulation therapy delivered in new ways in northern Alberta; a primary care network in southern Alberta – to others that are addressing integration at more of a system level. These include case studies on different approaches to chronic disease management and their relative strengths; new approaches to improving access and service in cardiac care; the integration of Health Link Alberta across the province and work done to establish the governance structures and relationships that were key to its success; and the work it takes to develop a standardized process to ensure equal access for all, regardless of where people live.

Some of these projects were launched at the beginning of the decade; others are more recent. They are by no means an exhaustive view of integration within the province: there are other projects and new initiatives emerging. But these case studies provide insight into what it takes to make integration occur and some of the challenges along the way. Much of integration had its beginnings in the process of regionalization undertaken in Alberta in the mid-1990s, when the province organized its services under geographic regions as well as two provincial authorities – the Alberta Cancer Board and the Alberta Mental Health Board. Regions were challenged to bring together services in new ways under one management structure. The regions were reorganized from the original 17 regions to nine. Along the way, delivery of mental health services was integrated into regional operations and then, in May 2008, the province decided to merge the regions and the two provincial boards into a single entity, Alberta Health Services.

The process of merging organizations and accountabilities is further encouraging integration within the province. This is a process under way in other provinces – whether through local integrated health networks (LIHNs) in Ontario, regions in the rest of the Western provinces and in Atlantic Canada, or the system of agencies in Quebec (Agence de la santé et des services sociaux). We have much to learn from each other. **HQ**

Health Link Alberta: A Model for Successful Health Service Integration

Shaunne Letourneau

Abstract

Health Link Alberta is a model of successful regional integration. Launched as a single-region service in 2000, Health Link Alberta was rolled out as a province-wide service in 2003, operating as one service from two sites (Calgary and Edmonton). Provincial integration of Health Link Alberta was successful because it took the time to establish collaborative governance structures, build relationships with regional and provincial stakeholders, recognize and accommodate regional and local needs, and develop the processes and tools that it needed to deliver a quality, consistent and accessible service for all Albertans. Within three years, Health Link Alberta achieved 63% awareness and 46% utilization among all Alberta households.

Background

There has always been a public need for health advice that is reliable, trustworthy and easy to access. For many people – and for many years – this meant a visit to the family doctor or a call to the emergency department at the nearest hospital. As the health system became more complex, people also needed help navigating it and finding their way to the most appropriate service. Over

time, a variety of telephone advice lines and recorded information services were developed across Alberta to meet the growing demand for health advice, information and system navigation – but these services were fragmented and it was difficult for the public to know whom to call for what information. With the advent of sophisticated telephony systems and computer software in the 1990s, the vision of a “one-stop” multi-channel health information contact centre could finally be realized.

Health Link Alberta (HLA) is a health advice and information service available to all Albertans, 24 hours a day, seven days a week, through telephone and Internet. The province-wide service is delivered from contact centres in Edmonton and Calgary and serves a provincial population of 3.5 million residents. Calls are answered by Registered Nurses and non-clinical information and referral agents, using a range of software and Internet supports. Health Link Alberta was launched as a province-wide service in June 2003 as a cornerstone of the Government of Alberta's Primary Care Transition Strategy. The province-wide service leveraged expertise in Capital and Calgary health regions in the delivery of teletriage services.

In addition to meeting the public need for consistent and reliable health advice and information from a legitimate source, HLA supports primary healthcare reform by:

- Ensuring healthcare services are accessed appropriately;
- Reducing pressure on doctors' offices and emergency depart-

ments; and

- Increasing emphasis on self-care, health promotion and prevention, and chronic disease management.

Today, HLA is a successful example of health system integration, but it took creativity, patience, commitment and time to create a single provincial service that is the same whether you access it from a farm in northern Alberta or an inner-city hostel in downtown Calgary. The purpose of this case study is to describe the principles, process and change strategies that were used to create this widely utilized provincial service.

Project/Intervention

Alberta Health and Wellness identified that implementation of a province-wide health information and triage line would meet a number of the primary healthcare reform objectives, including increasing access, increasing emphasis on health promotion and prevention, and facilitating improved coordination and integration with other health services (Shelley Ewart-Johnson, personal communication to Sheila Weatherill, May 6, 2001). In addition, the need for a province-wide health advice and information service was strongly supported by Alberta's 17 health regions in a letter to the minister of health in June 2001 (Calgary Health Region and Capital Health 2002). The project had executive support, but the challenge was to ensure the service was understood and supported by the front-line providers in these regions, who would contribute significantly to the success (or failure) of the service. An effective working relationship between the Capital Health site and the Calgary Health Region site was critical to ensure one service from two sites. Although both were metropolitan health regions, Calgary Health Region and Capital Health had very different corporate cultures, organizational structures, operational processes and support services. A memorandum of understanding (MOU) was reached between the two health regions to establish the context for the relationship and to ensure each region was a contributor to the development of HLA. The one-page MOU outlined the parameters of the service and set the expectation that the two regions would work together toward a common goal.

The two regions developed an implementation plan to guide the planning and rollout of HLA. A key element of the plan was the creation of a governance structure that would facilitate a partnership between HLA, the non-metropolitan health regions and other provincial stakeholders. The framework established a planning committee with representatives from key stakeholder groups, including the former health regions, the Alberta Cancer Board, and the Alberta Mental Health Board. (As of April 1, 2009, all public healthcare entities in the province of Alberta have been amalgamated into one organization – Alberta Health Services.) This committee, called the Provincial Collaborative Council (PCC), provided a forum for initial implementation

planning, ongoing strategic planning, web development and oversight for evaluation of the HLA service. A provincial operations committee, comprising managers from both the Calgary and Edmonton sites, was created to oversee day-to-day planning and operations of the service. According to a comprehensive, three-year evaluation of HLA conducted by an independent evaluator, the governance framework “provided an effective means of facilitating the initial coordination and integration of HLA with regional health services” and “was instrumental in the expansion of HLA to all Albertans” (Alberta Health and Wellness 2006: 36).

With these formal structures in place, the task of ensuring local regional program providers understood the relationship of their service delivery to that of HLA began in earnest. The provincial director of Health Link Alberta and the Calgary manager hit the road and, over a five-month period, met with senior executives, managers, front-line staff and physicians across Alberta. The “road show” was part of a community development approach to engage regional providers in articulating their issues and identifying opportunities to integrate HLA with regional programs and services. Some of the key opportunities they identified included:

- Collapsing existing hotline and recorded-information services;
- Identifying and customizing “hand-offs” to local health providers to ensure continuity of care for the caller;
- Enhancing and standardizing evidence-based practice;
- Creating an inventory of all regional health services;
- Reducing the on-call function, particularly in rural regions;
- Managing the risk of telephone advice provided by busy emergency department staff; and
- Responding quickly to health emergencies.

Most of these opportunities dovetailed with the HLA mandate and were integrated into the rollout process. The time and effort expended on the road show was well spent. Rather than seeing HLA as something imposed on them by the province and external to their service delivery, regional stakeholders saw themselves as HLA partners with an equal share in its success. As such, they had confidence in the service and played a pivotal role in marketing it in their regions.

Once region front-line staff were oriented, the work of integrating HLA with regional programs and services began on a number of fronts. Clinical content used by HLA was reviewed by experts in each region to confirm congruence with local practices. Detailed service information – including description, location, hours of operation, referral process and more – was collected for all regional health services and entered into InformAlberta, an online, searchable directory of health and human services in the province. Process flowcharts were devel-

oped for each region to manage seamless hand-offs from HLA to regional services, such as emergency departments, community/public health, home care and environmental health. Before the launch, all regional staff were oriented to the HLA service to enable them to accurately describe it to their patients and clients. Health Link Alberta provided common marketing materials, including refrigerator magnets and brochures that were distributed in each region through established distribution systems. Posters were placed in all healthcare facilities and clinics and other common meeting places identified by each region. At launch, a “no health advice in the emergency department” policy was implemented by each region to mitigate the known risk to busy emergency staff. Public health centre reception staff were provided with scripts and instructions to refer calls for health advice to HLA. Health Link Alberta was rolled out one region at a time. By June 2003, all regions were “live” – just seven months after the implementation process began.

Regional integration was a significant undertaking but was not the only way in which HLA was becoming a fully integrated provincial health advice and information service. In April 2003, the Alberta Mental Health Helpline was integrated into the HLA delivery model. People could still call the mental health line, but it was now answered by HLA nurses. The HLA infrastructure was also used to provide three additional health-related telephone-based services on a contract basis from the Edmonton site. These services include an addiction information and referral service, for people impacted by alcohol, drugs and gambling addictions; a smokers’ helpline that provides tobacco cessation counselling; and a child disability resource link that assists families of children with disabilities.

Change Process/Methodology/Results

Alberta Health Services identified four change strategies that are central to the process of integrating services and achieving best practices. Each of these strategies, and how they contributed to the integration of HLA services across Alberta, is described below.

1. Providing People-Centred Care

Health Link Alberta is successful because it never loses sight of the people it serves. Providing people-centred care is about making it easier for patients, families and providers to participate in and better understand the care journey. Health Link Alberta makes the care journey easier by being the first – and, in some cases, the only – point of access that people require for the health system; over half (54%) of callers with symptoms are given self-care advice. Customer focus is an integral part of all staff orientation; service is focused on the need the caller identifies, and choices are given for follow-up care where required. Caller satisfaction surveys are conducted daily.

Success in focusing on the caller is evident in the results of the

Alberta Health and Wellness evaluation report (Alberta Health and Wellness 2006), as well as in annual satisfaction surveys conducted by HLA (Calgary Health Region and Capital Health 2008, 2009). Caller survey results consistently show callers are able to get the information needed (95% agree/strongly agree); could handle a similar concern in the future (80%); and are highly satisfied with the service overall (>90% rate as very good/excellent). In comparison, 80% of Canadians rank the quality of telephone advice lines as good or excellent (College and Association of Registered Nurses of Alberta 2008).

Customer focus is evident in other ways as well. Regional healthcare providers noted the ability of HLA to service hard-to-reach populations – those with limited mobility, those requiring translation and those wishing to remain anonymous (Alberta Health and Wellness 2006). Alberta Health and Wellness (2006) physician survey results found 67% thought their patients with symptoms benefited by using HLA. In fact, many of the challenges presented by regional integration were overcome by focusing on “people-centred care” as a key touchstone. Many barriers were broken down by focusing on the needs of patients and clients, rather than on protecting any regional or provider “turf.”

2. Reducing Clinical Variance

Health Link Alberta is a single service delivered from two sites to people throughout the province. While this model offers many benefits, including a larger pool for recruitment and back-up capacity when needed, multiple sites present significant challenges to providing a standardized service. One of the key ways in which HLA reduces clinical variance is through electronic evidence-based protocols that are used as decision-support tools by all nurses, whether in Edmonton, Calgary or working from home. The protocols include guided assessment questions that provide a standard approach to assessing patient symptoms and making appropriate dispositions. Clinical content in the protocols is reviewed regularly by content experts and updated simultaneously by one site to reflect new standards and/or best practices. Healthcare providers around the province routinely consult the clinical practice team to ensure front-line advice is congruent with that provided by HLA or to find the most current best practice for a particular intervention.

Regional integration presented a different challenge to reducing variance. Although regions offered similar services, the way in which those services were delivered varied from one region to the next and, in some cases, from one site to the next within a region. Business and clinical processes used to refer people to regional services had to be identified, documented and, where possible, standardized to ensure HLA agents were providing reliable and practical information.

Other tools and processes used to standardize practice include common orientation to practice, common staff appraisal tools and standards, common discussion of practice innovation

and operational issues, and standardized monthly and annual reporting to all stakeholders.

3. Organizing the Care Continuum

Health Link Alberta is experienced as part of a seamless continuum of care in which the teletriage nurse hands off the patient to the next care provider, along with relevant clinical episode information. Integration across this care continuum is supported by improved information-sharing processes and single-point-of-access solutions. Tools like electronic client records make it easy for HLA to share information with other care providers. Nurses securely fax caller clinical information from their desktop to other providers anywhere in the province when follow-up is required by another healthcare provider. Front-line staff indicate that the information faxed

provides an understanding of the nature of the problem and helps them prepare to call back the client; provides a baseline to determine...if symptoms have changed significantly; reduces the need for the client to repeat their story and provides for continuity of care (Alberta Health and Wellness 2006: 57).

A shared plan of care between the primary healthcare provider and HLA for individuals with chronic mental health concerns is another example of continuity of care. The shared plan, part of the client electronic record at HLA, promotes a consistent approach to the patient.

In 2005, results of the physician survey indicated 40% of physicians felt HLA reduced the number of patients seen after regular daytime hours (Alberta Health and Wellness 2006). Developing relationships with the primary care networks have HLA staff booking next-day appointments in physician offices, faxing referrals and scheduling appointments in after-hours clinics.

Other examples of organizing the continuum of care include hand-offs from the generalist nurse at HLA to more specialized providers – those with particular areas of expertise in chronic disease management and providers with other scope of practice, such as pharmacists and dietitians. Health Link Alberta callers can immediately access both pharmacist and dietitian services through call transfer by the HLA nurse. A pilot with virtual-team community-based pharmacists at the Edmonton site has these health professionals documenting on the same electronic caller record as the HLA nurse. Findings include increased access to pharmacist services after hours and increased volume and richness of adverse reaction reporting.

Health Link Alberta also assists with management of public health emergencies or outbreaks across the continuum of care by providing the public with access to timely, accurate information on what has occurred and on how to access any services they

require. Examples include boil-water advisories, hepatitis and salmonella outbreaks, and the Wabamun oil spill, where bunker oil from a train derailment contaminated a popular recreational lake, with subsequent health- and water-quality issues affecting hundreds of people. Health Link Alberta's response can be tailored from a provincial scope to a local hamlet. Intranet tools allow management of the information the HLA staff need to respond to caller concerns.

In addition, HLA, through the Edmonton site, has developed central access for specialist appointment scheduling and wellness and chronic disease management class registration. Central access is used by the public, primary care physicians and other health providers across the province as a single point-of-contact to a growing number of programs and services provided in Edmonton (16 at time of writing). Central access not only improves continuity of care as the HLA nurse can, for example, directly connect pregnant women with prenatal class registration, but also helps to maximize the use of program resources by managing a single wait list for multiple program sites. In 2007/2008, central access received 29,623 calls and booked appointments for 16,070 registrants.

InformAlberta is another important strategy for organizing and integrating the care continuum. InformAlberta was developed by HLA in collaboration with the City of Calgary as a comprehensive online database of all health and human services offered in Alberta. HLA staff use the database to assist callers in navigating the health system. Public users can also access it online to conduct their own searches. During the planning and implementation of HLA, the implementation team worked with "data stewards" in each region to collect, review and enter program and service data. Ownership of service content is decentralized to the program level, with regionally based stewards having responsibility for the regular review and update of service information in their regions.

4. Improving Process Management

Process management and improvement have been central to HLA's operations since its inception. Two supports are key to efficient and effective process management – electronic tools such as the Internet and clear and concise process maps or flowcharts. Flowcharts are used in all areas of the contact centre to clearly and concisely document business processes so that staff can use them to standardize the work of the centre. Expectations and standards of practice for such things as call management, call length and number of calls managed per shift are presented at orientation and regularly reinforced. All calls are recorded and randomly selected by managers for review with each agent every month – another tool to assist with standardized service quality and process management. Health Link Alberta agents receive extensive orientation, including three weeks in the classroom and "buddy shifts" until they transition to independence. In

addition to daily reminders, “tips” and coaching from managers, staff receive periodic updates and inservices to ensure their knowledge and skills remain sharp.

A standardized, system-wide issues management process enables all HLA staff, callers, regional stakeholders and other health providers to flag potential problems or issues for resolution as they arise. This process was particularly important during implementation, as it allowed regional stakeholders to provide immediate feedback if things were not working as planned, and to see those issues addressed in a timely manner. Feedback on the outcome of the issue investigation is provided to both the regional contact for HLA and the initiator of the issue. This two-way flow of information through the regional HLA contact was key to ensuring that a regional representative was aware of any issues with HLA service delivery and was key to issues resolution as the regional representatives were informants on local culture, standards and service delivery. During implementation in 2003, health region senior managers and medical directors as well as community and emergency department physicians identified several protocols where they felt advice provided was too cautious, with too many callers being referred for immediate medical attention. Based on this feedback, a revision was made to a number of protocols, with positive feedback from stakeholders (Alberta Health and Wellness 2006).

Conclusion

Within just three years of being launched as a province-wide service, HLA had achieved 63% awareness among all Alberta households. That number was even higher among females (70%), families (74%) and adults aged 25–44 years (76%). These high awareness levels are directly attributable to marketing of the service by front-line providers, and awareness has continued to increase. By 2005, 46% of Alberta households had used the service at least once, and almost 100% said they would use it again. In 2005/2006, HLA broke the one million plateau, receiving 1,037,415 calls – a 16% increase since its launch in 2003. Call volume has remained over one million calls per annum. The majority of calls to HLA are for health advice and information. Over half (54%) of health advice callers are advised to provide self-care, 31% are advised to see physician or other healthcare provider and between 10% and 19% are sent to an emergency department (varies by region, depending on the availability of other services). Compliance is very high, with 74% of those advised to go to an emergency department doing so in less than 24 hours and 72% of those given self-care advice acting on that advice (Alberta Health and Wellness 2006).

A key indicator of the success of integration strategies has been the positive response from region health providers and physicians. In addition, HLA has monthly requests for consultation with other national and international jurisdictions inquiring about HLA success factors in integration and marketing.

Integration is about building stronger connections between health services, people and providers to better support people in the care journey. Health Link Alberta is a successful example of health system integration because it took the time to establish collaborative governance structures, build relationships with regional and provincial stakeholders, recognize and accommodate regional and local needs, and develop the processes and tools that it needed to deliver a quality, consistent and accessible service for all Albertans. It has established an effective service delivery infrastructure by which it meets the following key objectives of health system integration:

- Increasing coordination and integration among regional healthcare services and providers;
- Providing staff, physicians and partners with the tools they need to deliver care more effectively;
- Increasing emphasis on health promotion and disease/illness prevention; and
- Encouraging more appropriate use of Alberta’s healthcare resources.

As Alberta moves toward a fully integrated provincial health system, HLA is recognized as a model of successful integration.

HQ

About the Author

Shaunne Letourneau, BNS, MN, is the Director of Health Link Alberta, a multichannel, multidiscipline contact centre that includes nurse triage, tobacco cessation counseling, pharmacist & dietitian access, and information and referral to Alberta Health Services programs. This service is available toll-free, 24/7 to all Albertans.

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Improving Patient Access to Medical Services: Preventing the Patient from Being Lost in Translation

Allison Bichel, Shannon Erfle, Valerie Wiebe, Dick Axelrod and John Conly

Abstract

The Medical Access to Service project was initiated to broadly engage participants in the health system to collectively improve service integration and patient access to primary care and specialist medical services. The Conference Model® (the Axelrod Group, Willmette, IL) was used as a change vehicle. The ideal design was translated into the creation of central access and triage (CAT) processes across medical specialties, development of prioritization tools and implementation of access and efficiency through Alberta AIM (access improvement measures) collaboratives for process re-engineering. The ultimate goal for all Albertans who need care is one point-of-access – one standardized process to ensure equal access for all regardless of where they live.

Introduction/Background

Improving access to health services is a priority across Canada. The data on Canada's performance with regard to access to primary and specialty care suggests a significant opportunity for improvement. For example, in 2004 Canada was identified as the

country with the lowest percentage of citizens who could access a physician with a same-day appointment (27%), compared to the United States (33%), the United Kingdom (41%), Australia (54%) or New Zealand (60%) (College of Family Physicians of Canada 2006). With regard to access to specialty care, Canada ranked second lowest, with 57% of its citizens waiting at least 4 weeks to access specialty care, compared to the United States (60%), Australia 46%), the United Kingdom (40%), Germany (23%) and New Zealand (22%) (College of Family Physicians of Canada 2006). Nationally and internationally there has been significant research on wait times. Postl reports, however, that "wait times are a symptom of a larger problem...Canadians need to support a transformation that puts patients at the centre of the system" (Postl 2006: 9). In the final report of the Federal Advisor on Wait Times, recommended actions to improve access included research to support benchmarking and operational improvements, adoption of modern management practices and innovation, accelerated implementation of information technology solutions and cultural change among health professions (Postl 2006). The challenge is navigating change across multiple healthcare service providers in diverse settings across the continuum of care. Change strategies that support access and integration include providing people-centered care, reducing clinical variance, organizing the care continuum and improving process management. These strategies became the major focus of the improvements implemented in Calgary.

The reality and practice of improving system-wide access is complex, as different programs and sectors use varying approaches toward the same objectives of improving access, quality and efficiency. For example, in the Calgary Health Region (Alberta Health Services – Calgary Zone), the departments of medicine, family medicine and the primary care networks were trying to tackle access to services differently. The scope of services provided by these groups is significant and affects 1.3 million people. Approximately 30% of people needing outpatient services are seeking access to medical specialists. System complexities and the propensity for 250 medical specialists and approximately 700 primary care physicians to work in silos increases the risk of duplication and discontinuity, leaving the patient “Lost in translation.” Organizing the care continuum through a patient-focused lens was a critical starting point to improving access.

The reality and practice of improving system-wide access is complex, as different programs and sectors use varying approaches toward the same objectives of improving access, quality and efficiency.

The need to establish standardized processes based on best practice was evident. The referral process represents the critical interface across care providers and settings. Historically, primary care physicians worked alongside specialists in the hospital. Informal consultation was common, resulting in the development of individual collaborative relationships for patients to access specialist care. Despite unprecedented growth and further specialization, the referral process remained unchanged. Concerns with the referral process affect all services, providers and patients across the continuum of care, including: inconsistent referral criteria and clinical variance, diverse requirements for patient information, lack of communication regarding acceptance of the referral, and proliferation of intake points and subspecialty clinics with no corresponding service road map. System capacity was further reduced by the “shotgun” referral approach, no shows, and incomplete referrals resulting in multiple specialist appointments. The Medical Access to Service project was initiated with an overarching goal to work in a collaborative, integrated manner to improve medical access. Objectives included broadly engaging participants in the health system to collectively improve patient access to primary care and specialist medical services, and to improve service integration and communication between medical specialists, primary care physicians and their respective healthcare teams.

Methods and Change Process

Recognition of the Problem

The referral process is owned by everyone and no one in particular. In large complex systems, seemingly small limitations in the referral process can be a major impediment to care, resulting in frustration, increased wait times, double booking, missed appointments and inefficiencies. Qualitative research and interviews with key stakeholders, through group discussions with rural and urban primary care physicians, illuminated the issue (Gramlich and Silvius 2006). As clarity emerged regarding the problems with the referral system, key leaders from the departments of medicine, family medicine, rural medicine, cardiac sciences and the primary care networks collaboratively sponsored a planning process to address improvements to the referral process.

Setting the Scope

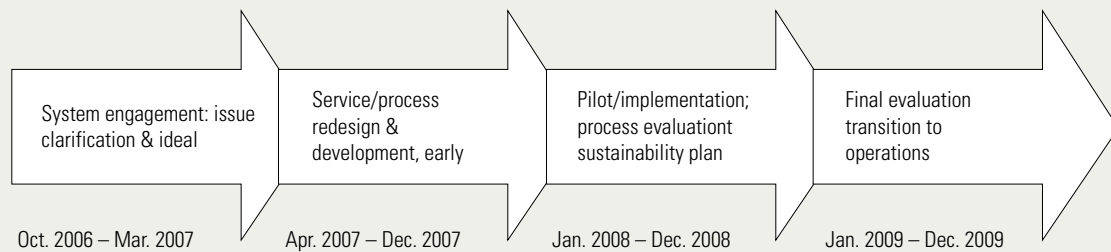
The next step was to set the scope and identify where realistic change could be achieved. From a family physician's perspective, referral to internal medicine specialists represents only a subset of their patients' consultation needs. However, early in the project we included all internal medical specialties in the scope, including Cardiology, , Endocrinology, General Internal Medicine, Gastroenterology, Geriatrics, Hematology and Hematologic Malignancies, Nephrology, Respiriology and Rheumatology. Key leadership provided support to explore issues, identify an ideal design and implement recommendations.

The Conference Model® as a Change Vehicle

The Conference Model® (Axelrod 2002) was used as a change vehicle. This approach included the following parameters: clearly defining the purpose, utilizing workshop events to identify issues and solutions and creating an implementation plan. This whole system change approach is founded on four principles:

1. Widening the circle of involvement to create a critical mass of people who design and support necessary changes;
2. Connecting people to each other and to different perspectives, information and ideas creation and action;
3. Creating communities for action to implement the change; and
4. Embracing democracy so issues of self-interest versus the common good and minority versus majority opinion are balanced to ensure support (Axelrod 2002).

Two Referral and Access Conferences were hosted in October 2006 and January 2007. The first conference focused on issue identification, the second on ideal design. These non-traditional conferences involved two-day small- and large-group discussions with 200 attendees, including patients and family members,

Figure 1. Medical Access to Service project approach

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family physicians, specialists, secretaries, decision-makers and other healthcare professionals. Finally, for input and validation, the output from the conferences was discussed with people who had not been able to attend.

Engagement of several hundred stakeholders in redesigning referral and access at the outset raised some concerns with respect to time and financial commitment. Key leaders came together to achieve clarity on the purpose and to explore the risks and possibilities. Simulating the conferencing process was useful in strengthening the leadership team and guiding the overall engagement design. Inherent in this process was a perceived risk regarding whether or not a reasonable solution for successful implementation would be proposed. It was important to trust that people involved directly in the work were in the best position to provide creative solutions and support implementation. Finally, clarity from leadership around boundaries for eliciting change, and commitment to steward the work, were essential.

Interventions

The Referral and Access Conferences were key events, and most importantly they were viewed as a part of an overall change plan (Figure 1). These conferences were assessed using a questionnaire with a standard Likert scale. Once the system had developed an ideal design (Figure 2), an implementation business case, a project structure and timeline were developed. This involved operationalizing critical design elements, identifying responsibility and accountability for implementation of the change, and

identifying required resources, timelines, risks and communication plans. A steering committee and an operations committee were struck to provide oversight and guidance and to remove barriers to success. A project manager coordinated and provided leadership to working groups, facilitated delivery of the plan and acted as a liaison with stakeholders across the continuum. Working groups were established to deliver on parts of the plan. Three integrated projects were launched:

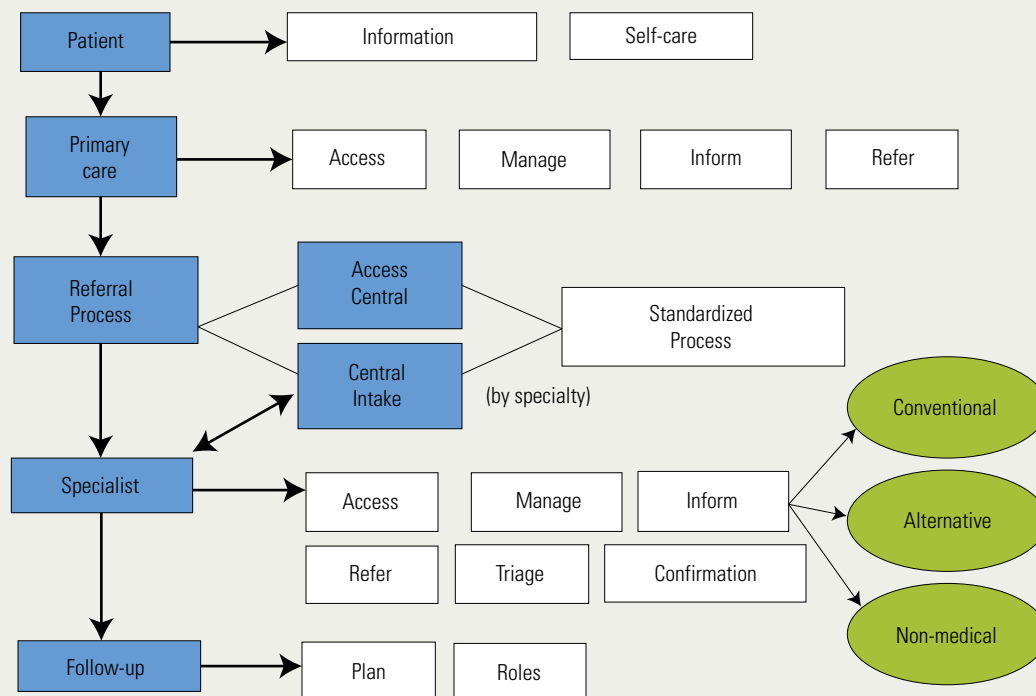
1. Creation of central access and triage (CAT) systems across specialized medical services (Gastroenterology, Rheumatology, General Internal Medicine, Endocrinology, Hematology and Hematologic Malignancies, Cardiology, Geriatrics, , Nephrology). Central access and triage involved pooling referrals by specialty; standardized information requirements (Figure 3) and policy for confirmation of receipt of referral, acceptance and appointment scheduling. Improvements to clinic access through implementation of CAT clinics were measured using wait time in weeks to appointment based on triage category and acceptance of referrals. Acceptance of referrals was measured to determine if using a standardized form improved referral quality, and as a proxy indicator for improved efficiency. Where appropriate, a *t* test was used to test for significance of continuous variables (wait times) and a *p*-value of < .05 was considered significant.
2. Development of reliable, valid, clinically coherent prioritization tools for four specialties.
3. Implementation of two Alberta AIM (access improvement measures) access and efficiency collaboratives in both specialty and primary care to redesign clinic process flow to reduce wait times before and during an appointment.

Results

Evaluation of the Referral and Access Conference

Evaluation of the second Referral and Access Conference (*n* = 89) indicated that 97% of participants either agreed or strongly agreed that the conference was a valuable way to begin

Figure 2. Medical access blueprint



the redesign of the referral process, and 92% either agreed or strongly agreed that the “ideal design” addressed their concerns with the current referral process. Quotes from participants regarding their conference experience are illustrated in Table 1.

Involving patients and families in issue identification and ideal design was invaluable. Giving voice to their story and needs infused meaning and made the need for change compelling. It also helped to silence ego and self-interest. Broad stakeholder engagement also helped speed implementation. In particular, there was typically a credible peer, who had participated in the conferences, to whom different groups could be referred when they expressed concerns or resisted ideas reflected in the ideal design.

Central Access and Triage Clinic by Specialty

Preliminary evaluation of central access and triage has resulted in decreased wait times and timely access for patients requiring urgent care. The pooling of referrals has eliminated duplicate referrals, and wait times for each physician have equalized. By standardizing CAT through the use of a single, standardized referral form and consistent triage language (Emergent, Urgent, Semi-urgent and Routine referral types), referring healthcare providers reported increased ease and efficiency in sending referrals.

Rheumatology CAT was the initial pilot in 2006, with a reduction in wait times between 15% and 37% depending on urgency.

Rheumatology CAT was the initial pilot in 2006, with a reduction in wait times between 15% and 37% depending on urgency. With the success of Rheumatology, Gastroenterology CAT opened shortly afterwards, with a resultant 8% decrease in wait times despite a 153% increase in referrals. (An average 1000 referrals were processed per month.) Patient wait is now based on patient urgency rather than physician name (previously, one patient could wait 38 times longer than another patient with the same urgency level).

From inception to December 2008 (Table 2), most clinics saw a significant increase in monthly referral volumes as follows: Endocrine 75%, Gastroenterology 50%, General Internal Medicine 26%. Rheumatology and Hematology saw no change in referral volume. Despite the increases in patient referrals, wait times (Table 3) improved for urgent assessments in Endocrinology from two weeks to one and in Gastroenterology from 52 to 12 weeks. Within Rheumatology, which piloted CAT

Figure 3. Standardized referral form

Alberta Health Services
FACULTY OF MEDICINE | UNIVERSITY OF CALGARY

**Medical Specialists & Medical Services
Central Access & Triage Form**

Please provide as much detail as possible to ensure your patient is triaged appropriately.

Patient Information
DOB: (yyyy/mm/dd)
Last Name: First and Additional Names:
PHN: Gender:
Address: Street, City, Province, Postal Code
Telephone Number:
Email Address: Alberta Cancer Board #: Alternate contact name: Phone:

Referring physician/source:
Address: Referring Prac ID:
Phone:
Fax:

Family physician:
Family Prac ID:

Specialist seen previously & when:
Prior hospital admissions: (past 2 years) - Site(s)
Currently hospitalized where:

Reason for referral:

Diagnosis:
Date of diagnosis: (if known)

Past medical history:
Current medications: (provide doses and frequency for all listed)
(Attach separate sheet if more space is required)
Medication allergies:

Urgency of referral:
☐ Urgent
☐ Semi urgent
☐ Routine
(see specific specialty guidelines for definitions)

Requested Actions: (if applicable)
☐ Confirm &/or advise as to diagnosis
☐ Suggest medication or management
☐ Assume management for this problem and return patient after care
☐ Assume future management of patient within area of expertise
☐ Provide telephone consultation (if considered appropriate by specialty)
☐ Education for patient

Type of referral: (if applicable)
☐ New referral
☐ Re-referral
☐ 2nd opinion

Requirements for Triage:
(include all relevant documentation available)
• Bloodwork
• Diagnostic imaging
• All consultant letters
• All discharge summaries
• Microbiology
• Pathology
For referral requirements of specific specialties, see relevant specialty guidelines.

Booking information:
Direct appointment by which of the following:
☐ Assign to next available appointment, or if no, by:
Specific physician: _____ (name)
Site: _____
Factors that may affect consultation/care:
☐ Language spoken
☐ Interpreter required
☐ Physical limitations
☐ Psychological
☐ Economic
☐ Other _____
Is this patient a WCB or insurance patient? ☐ Yes ☐ No

Signature: _____ **Designation:** _____ **Date:** (yyyy/mm/dd)

Fax the form (or the indicated information in other legible format) to the number listed for that specialty.
You will receive notification of receipt of this form within 2 working days of receipt.

November 2008

www.departmentofmedicine.com/MAS/index.html

2005 and 2008 (Barr et al. 2007). In addition, wait list shopping by referring physicians was documented to have ended. Although pre-implementation data were not available for all divisions, it may be expected that improvements in wait list times would have been comparable.

Acceptance of referrals is presented in Table 3. Referrals that were not accepted include referrals that were redirected, had incomplete information, and were cancelled. In most cases improvements were noted following implementation of central access clinics. Hematology went from 17% of referrals not accepted to 6% from April to November 2008, while Endocrinology improved from 19% of referrals not accepted to 9%, respectively, from July to November 2008.

Prioritization Tools

Western Canada Wait List (WCWL) prioritization tools have been developed for Rheumatology, Nephrology, Gastroenterology and Geriatric referrals. The tools are designed to provide a reliable and valid way of ranking the relative urgency for referrals and disposition of patients, with the intent of improving access to medical specialties. The tools will match the single-entry process via CAT for each of the specialties. Implementation and evaluation of the tools will occur through 2009. A testable version of the rheumatology tool is complete, and testing will commence in 2009. Beta versions of the other three tools are available.

prior to other divisions, data were available for wait times before implementation of CAT and following its implementation, and a significant reduction in wait times was observed for routine, moderate and urgent referrals compared to a 2005 practice audit (Barr et al. 2007). Wait times from 2005 for referrals classified as urgent, moderate and routine were compared with those from periods in 2006 and 2007. Wait times for consultation decreased from a mean (SD) of 29 (\pm 46) to 17 (\pm 14) days (p < .05) for urgent-level referrals, from 110 (\pm 57) to 63 (\pm 42) days (p < .00005) for moderate-level referrals, and from 155 (\pm 88) to 108 (\pm 37) days for routine-level referrals, respectively, between

Access Improvement Measures (AIM) Collaborative

Alberta AIM results are measured using cycle time and third-next-available appointment (Murray and Berwick 2003). Five of the 12 teams have been selected as a sample for evaluation and have participated in focus groups. The level of success achieved by these teams varies, although all of the teams reported they learned a useful perspective about the importance of measuring their daily activities. Nearly all found the regular involvement with a facilitator was useful but that the actual process was cumbersome. Clinics participating in both AIM and CAT saw

synergistic results through their participation. Reported successes seen by specialty clinics as a result of participation in AIM for the Diabetes Hypertension and Cholesterol Centre included a reduction in wait times for all patients from 96 to four days, a reduction in wait times for urgent patients in Gastroenterology at Foothills Medical Centre from 60 to five weeks, and a reduction in the time to third-next-available appointment from 80 to 30 days in the division of General Internal Medicine at the Peter Lougheed Centre. The cycle time, the time a patient spends at the clinic, has been reduced by 30 minutes.

Discussion

An integrated approach using broad engagement at the start of this project was a prerequisite to achieving systemic change. This resulted in the development of an infrastructure that linked patients and families, primary care physicians, specialists and multi-disciplinary teams. Key strategies included workforce optimization, process re-engineering including the development and uptake of a single, standardized referral form, and improved communication between providers. The end result was improvement in access, integration and coordination of care.

Changes in referral volume reflected both an increase in the number of referrals to the specialty area and an adoption rate of CAT by referring physicians. In all areas, the adoption rate represents the number of referrals sent by referring healthcare providers to CAT. The maintenance of wait times for routine referrals and the decrease in wait times for urgent referrals suggests that despite an increase in referral volume, patients are

being managed more efficiently. CAT positively impacts wait times for several reasons. Consistently applied triage criteria allow more patients to be appropriately redirected to alternative care providers or subspecialty clinics, including referrals to other sites such as the Colon Cancer Screening Centre, the Sleep Centre and the Cough Clinic.

Movement toward a single standardized referral form, consistent triage language and consistent communication strategies allowed referring healthcare providers to follow explicit referral requirements. This improved communication between primary care and specialty care and increased the quality of the

Table 1. Quotes from participants regarding their Referral and Access Conference experience

Evaluation results from second conference
<i>"Overall, a worthwhile dialogue and starting point. This is a REAL issue and I'm happy to see it's being addressed."</i>
<i>"The most valuable part of the conference was networking, hearing different perspectives from different stakeholders, seeing a unified vision develop from different groups independently, developing a modified process and implementation plan."</i>
<i>"Thanks for considering 'Patients' to be in attendance. It was overall an eye-opener to see the problems but also to see the ingenuity and dedication to making a change. It was an overall awesome experience and I will do my part to make a difference."</i>

Table 2. Referral acceptance by division

Refer Month	Rheumatology		Endocrinology		GIM		Hematology		Respiratory	
	Total Referrals	% Not accepted	Total Referrals	% Not accepted	Total Referrals	% Not accepted	Total Referrals	% Not accepted	Total Referrals	% Not accepted
Apr 2008	432	8%			113	18%	139	6%	99	0%
May 2008	406	8%			121	22%	113	3%	72	1%
Jun 2008	419	6%			129	18%	118	5%	70	2%
Jul 2008	433	7%	192	9%	152	23%	115	2%	76	2%
Aug 2008	374	11%	234	11%	110	17%	101	3%	66	2%
Sep 2008	408	6%	338	11%	138	24%	130	3%	185	2%
Oct 2008	461	4%	306	7%	138	20%	132	4%	176	4%
Nov 2008	404	6%	314	7%	152	20%	133	2%	140	3%
Dec 2008	341	2%	334	5%	157	22%	106	4%	138	4%

Table 3. Wait time to appointment

Wait time to appointment based on triage category and acceptance of referrals (weeks)										
	Rheumatology		Endocrinology		GIM		Hematology		Respiratory	
Refer Month	Urgent	Routine	Urgent	Routine	Urgent	Routine	Urgent	Routine	Urgent	Routine
Apr 2008	2	23			1	4	2	10	3	13
May 2008	1	30			1	4	2	7	3	13
Jun 2008	1	24			1	3	6	7	4	11
Jul 2008	0	23	2	18	1	3	3	9	4	10
Aug 2008	1	25	1	19	1	5	2	8	2	11
Sep 2008	3	23	1	17	1	4	1	8	2	9
Oct 2008	0	23	1	16	1	5	3	5	2	10
Nov 2008	1	20	1	15	1	6	3	11	2	10
Dec 2008	3	21	2	13	1	5	3	9	2	9

referral information. Improvements in ease and efficiency in the referral process enhanced patient care and safety. The decrease in referrals not accepted further reduced the time required by specialty clinics in both re-routing and information gathering on referrals. Similarly, the time spent in primary care offices to refer to alternate clinics was also minimized. At the same time unnecessary patient visits in both primary and specialty care were reduced because the required information and test results were provided.

Clinics participating in AIM demonstrated varying results, the work is ongoing and final evaluation has commenced. Some limitations may be that facilitators and faculty were new to the process and in early stages of training. In some cases recruitment of adequate numbers of facilitators was problematic. Although the AIM approach targets wait times in primary care clinics, including specialty clinics in the collaboratives resulted in an indirect benefit of building relationships between specialty and primary care providers and enhancing understanding of each other's challenges. An area for further development is the need to reconcile the AIM philosophy that supply must equal demand, and the concept that triage slows patient flow, with practice in some specialty clinics. Given that some specialty clinics had doubled their number of referrals, the "supply equals demand" goal was considered difficult to achieve. Still, other components within AIM have been instrumental in decreasing wait times. Ensuring that healthcare professionals worked to full

scope of practice, achieved through cross-training, resulted in increased capacity. The collaborative also reinforced the importance of team work and engaged a core group of people at all levels of the organization to ensure buy-in and commitment to the change process.

Adoption of CAT by all clinics within a discipline across all sites in Calgary will be an important first step to delivery of a truly centralized access model that will ensure all patients have access to the first available specialist across the system.

Conclusion

Outcomes achieved through these service innovations reflect change strategies that support integration. Involving patients and families, and cross-continuum multi-disciplinary health-care team members, was integral to creating an ideal design that addressed diverse requirements. Changes implemented have lessons for all specialty services, and there is the potential for broadly spreading the central access and triage model. Enhanced awareness and communication between providers along the care continuum as a result of CAT and prioritization tools facilitated organization and collaboration along the continuum.

Additionally, central access and standardized referral and triage criteria reduced clinical variance. Improving access through process improvement using the AIM methodology increased system capacity. There is ongoing opportunity for continued improvement in the models with which we have had success to date. Adoption of CAT by all clinics within a discipline across all sites in Calgary will be an important first step to delivery of a truly centralized access model that will ensure all patients have access to the first available specialist across the system. Furthermore, as healthcare in Alberta expands to a provincial model, it will be important to spread the work of centralized access provincially. The ultimate goal for all Albertans who need care is one referral form, one point-of-access, and a standardized process to ensure equal access for all, regardless of the locale within the province.

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Enhancing Patient Care via a Pharmacist-Managed Rural Anticoagulation Clinic

Cindy Jones and Guy Lacombe

Abstract

Integrating specialized pharmacist services and follow-up with the laboratory, home care nursing, retail pharmacy and physicians can ensure optimal outcomes for patients receiving anticoagulation, or “blood thinner,” therapy. Improved patient education and discharge care planning can bridge disconnects, enable patients to better manage their care and ensure better patient outcomes and more effective use of health system resources.

Specially trained pharmacists can provide safe and effective management of a high-alert medication to help prevent potentially life-threatening clots or bleeding. With advanced prescribing authorization, the pharmacist can seamlessly provide this service both locally in a commu-

nity and via Telehealth to surrounding areas, potentially for any Albertan. Warfarin therapy may be lifelong or short-term (three to six months), but all patients require regular monitoring with blood tests. Many variables, both lifestyle and medication related, can impact therapy, and through extensive education and access via telephone to an “expert” for questions and follow-up of blood tests, patients are empowered to better regulate their anticoagulants. Anticoagulation pharmacists, as part of an AMS (anticoagulation management service), can provide a continuum of care for patients while in hospital, when discharged home, as an outpatient in the community or as a resident of a long-term-care facility or seniors’ home.

Background

Consider these situations:

- It’s Thursday and you have just been discharged from hospital following heart surgery for a new heart valve. The cardiologist advises you to contact your family doctor to manage your blood thinners, but you are unable to make an appointment until the following week.
- You’ve had a clot in your leg and your doctor requests that you travel to the lab twice a week for blood tests. It’s now been two months, and the “blood test” is still not stable.
- You are a resident of a seniors’ centre but are unable to walk far without assistance. Someone helps you with your medications, but you don’t know what the pills are and aren’t aware that one of them is a blood thinner. The doctor orders blood work for you once a year.

- You have a “clotting disorder” and have had clots in your lungs and your legs. You will be taking blood thinners for the rest of your life. Your work takes you on the road for extended periods, and when you retire you plan to spend several months of the year vacationing in Arizona.

Anticoagulants (“blood thinners”) are used to treat and prevent blood clots for many “clotting” disorders such as deep venous thrombosis, pulmonary embolism, valvular heart disease, hereditary clotting disorders and, more commonly with our aging population, atrial fibrillation which, if not adequately treated, poses a risk for cardioembolic stroke. Effective therapy with warfarin can be measured only with a blood test (INR/PT), and if the range is suboptimal (too low or too high) the patient is at risk for a clot or bleeding. The strongest predictor for improved health outcomes is achieving and maintaining patients within this narrow INR range. However, monitoring, prescribing and follow-up can require complex pharmacological responses and close integration between patient, lab, physician and pharmacist.

Traditionally, anticoagulation therapy in rural Alberta has been managed by family physicians. Patients have their blood draw in a laboratory, and the technician performs the coagulation test after a batch of blood has been collected. Test results are usually faxed to the doctor’s office later in the day. These results are reviewed and, unless urgent, may be left until the following day. The physician may instruct the receptionist or nurse to contact the patient only if the lab value is out of range. Alberta physicians are compensated with a fee per INR followed, and an enhanced fee if the value is out of range. This traditional model of care may not include systematic education for patients about all the factors affecting their blood test results. If patients are contacted only when out of range, they are limited in their ability to document or track their lab results, or correlate them with lifestyle or medication changes. The patient may not know if everything is okay. As well, many physicians have no systematic approach for tracking and scheduling INRs. Patients who are not getting their lab work done routinely may not be discovered until a doctor’s appointment or a prescription renewal. In order to address this, some physicians have adopted the practice that patients schedule an appointment every month to follow up their lab results. However, this is time-consuming for both the patient and physician and can be an inefficient use of the healthcare system.

Warfarin therapy can be complex, and many factors can affect therapy. In the past, physicians took responsibility for blood tests, and patients were not encouraged to get involved with their therapy, continuing to take their warfarin the same way until notified to change. Unfortunately, if the patient is not informed of the complexities, it may contribute to a “critical” result (blood too thin) due to lack of understanding. When this happens the patient needs to be contacted immediately to assess the risk of bleeding, and then, after the event, the patient and

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physician review the possible contributing factors. If the patient has signs of bleeding, an “antidote” (vitamin K) can be administered to reverse the effect of the blood thinners. Some physicians may not be aware of the correct dosing and administration of vitamin K, and this can lead to the inappropriate administration of an intramuscular or subcutaneous injection (causing severe bruising/poor absorption), or utilizing the intravenous route when the drug could have easily been given orally without a hospital admission. On the other hand, if the INR is too low and the physician is busy, it may be overlooked because the risk of bleeding is less. But many patients can have high risk factors for clotting (Oake 2008). For example, if the diagnosis is atrial fibrillation and the patient has recovered from a previous stroke and has other medical conditions, the risk of a subsequent stroke is doubled with an INR just 0.3 below the therapeutic range of 2.0 to 3.0 (Van et al. 2008; Connolly et al. 2008).

Specialized anticoagulation management services (AMSs) have been successful for optimizing therapy in clinics operating in the United States and have consistently demonstrated superior control of warfarin therapy that has translated into improved patient outcomes and cost-savings to healthcare systems. The American College of Chest Physicians (ACCP) recommends optimal management of warfarin “as occurs in an anticoagulation management service” (Hirsh et al. 2008; Garcia et al. 2008). In Canada, AMSs are uncommon and usually limited to larger urban centres. They may be limited in scope by either offering the service to only a few referring physicians or to a limited segment of patients (Hirsh et al. 2008). More locally, in Alberta, Bungard et al. have demonstrated improved adequacy of anticoagulation and reduced rates of complications at the University of Alberta Anticoagulation Management Service, compared with standard care (Bungard et al. 2009).

Intervention

In 2002, the Capital Health Region’s Anticoagulation Management Service in partnership with the University of Alberta Faculty of Pharmacy conducted a research study through EPICORE, the University of Alberta’s Epidemiology

Coordinating and Research Centre. The goal was to extend AMS services into communities by establishing satellite clinics. The education of pharmacists, establishment of standard operating procedures, clinical practical experience and ongoing support was provided by the University of Alberta Hospital [UAH] AMS. All Alberta pharmacists were encouraged to apply, and the Athabasca AMS was successfully implemented in January 2003.

The original goal was to enrol 50 patients, although the Athabasca site initially enrolled 77 patients. The satellite clinic was so successful that at the conclusion of the study all the enrolled patients preferred to be managed by the AMS.

Results

The original goal was to enrol 50 patients, although the Athabasca site initially enrolled 77 patients. The satellite clinic was so successful that at the conclusion of the study all the enrolled patients preferred to be managed by the AMS. At that time, there were five family physicians in Athabasca; two immediately signed over all their warfarin patients, two referred all their “complicated” patients and the vast majority of their regular patients, and one preferred to manage his own patients. This rural AMS service is provided by one pharmacist in addition to regular pharmacy services at the Athabasca Healthcare Centre. As well, anticoagulation therapy is monitored at the centre for residents in the community, having been initiated with referrals from about a 90 km radius.

In February 2004, a physician in Whitecourt, a town 230 km from Athabasca, discovered the service. Soon after, the physician and others at Associate medical clinic in Whitecourt began to refer “complicated” patients to the Athabasca AMS. The first referral drove a six-hour round trip for the initial assessment. Since extended travel is not practical, the AMS is now able to effectively use Telehealth technology to provide initial “visits” for enrolment into the program remotely. Over a six-year period the program has expanded to over 275 patients, 156 of whom are currently being managed remotely, from the community, seniors’ homes, nursing homes and as inpatients in the hospital. The AMS can access lab values via local systems or Alberta Netcare, Alberta’s portal for patient electronic health records, so the location of the blood draw is no longer a barrier to routine patient follow-up.

Why Do Patients Prefer to Be Managed with an AMS?

Providing People-Centred Care

Education: Every new patient accepted into the AMS spends an initial one-hour visit talking with an anticoagulation pharmacist.

A folder of written information is provided to take home, as well as a calendar to track INRs and warfarin dosage. Some patients are well informed about their anticoagulation therapy; others require intensive teaching. All patients benefit by reviewing factors that can affect their anticoagulation therapy. The AMS also takes this opportunity to assist with patient compliance by providing dosettes, pill boxes and pill splitters.

Regular communication and follow up of INR tests: The AMS contacts every patient, whether their INR is in range or not. Patients are encouraged to document their results and assess factors that may have affected their blood thinners. When patients take a more active role in their therapy, they are more likely to remain in their target range, which improves health outcomes and reduces the chance of bleeding or critical INRs. Patients who are frustrated by frequent blood tests may be stabilized sooner. Since patients are contacted by a pharmacist regularly (at least monthly), they are also able to communicate other health or medication-related concerns. The pharmacist assesses whether a medical intervention is required and encourages the patient to make an appointment with his or her family physician if required.

Ongoing access to information and support: The AMS is available by telephone Monday through Friday during regular business hours to answer any questions and to assist with dosage adjustment if new medications are prescribed. The pharmacist can also assist if the patient is required to stop taking warfarin for surgical or dental procedures. If a patient is at high risk of a clot, “cross-coverage” with heparin can be safely arranged by a professional trained to assess risk of clots and bleeding.

Lifestyle and travel: The AMS can adapt to the patient’s lifestyle, which is important in our society. Home-monitoring devices (CoaguChek XS®, Roche Diagnostics, Basel, Switzerland) are available for patients who travel out of the country, work in remote areas or are unable to travel to a lab. The INR still needs to be communicated back to the AMS, but with online encrypted software the patient can log in to view the warfarin dosing history and enter the results. The pharmacist can then update the patient’s file to provide warfarin dosing instructions. The cost of point-of-care monitoring, such as with the CoaguChek XS meter, has been reduced quite dramatically in recent years, though it remains somewhat expensive when combined with the cost of consumables such as testing strips. This combination of care does, however, allow patients to carry on with their normal duties and activities while still optimizing their medical care. Patients can choose how to access the anticoagulation service and can safely monitor their warfarin therapy. The AMS provides clinical expertise and improves patient outcomes with the flexibility to adapt to technology and lifestyles.

Adaptation to changing patient needs: The AMS has managed patients as their healthcare requirements change over time and can optimize access to healthcare during changes in health due to aging or disease progression. We have provided care for patients who were living unassisted at home, supplying a dosette or pill reminder to help their compliance in taking their medication. We have transferred their care to a nursing home with a MAP (medication assisted program), and when they were not able to ambulate for blood work, we have coordinated home care blood draws.

When patients take a more active role in their therapy, they are more likely to remain in their target range, which improves health outcomes and reduces the chance of bleeding or critical INRs.

What Are the Other Advantages of a Rural AMS?

Reducing Clinical Variance

Delivery of optimized anticoagulant therapy: With specialized training, an anticoagulation pharmacist can provide a consistent and efficient service to patients taking blood thinners. Since the Athabasca AMS was originally a satellite of the UAH, operating procedures and provision of care are similar to those of a specialized service operating in a teaching hospital. This rural AMS pharmacist received clinical and hands-on experience at the UAH AMS prior to initiating the service. The University of Alberta Faculty of Pharmacy continues to partner with other AMS providers in Alberta to offer courses to pharmacists with an interest in anticoagulation therapy. The Athabasca AMS has developed liaisons with other AMSs in Alberta and operates within standardized guidelines (e.g., ACCP, American College of CHEST Physicians; TIGC, the Thrombosis Interest Group of Canada). The experience and expertise gained by the AMS pharmacist monitoring large numbers of patients over a prolonged period of time can solidify the foundation for providing a superior service in this area of patient care. Patients are stabilized sooner with few blood draws, benefiting not only the patient, but the healthcare system as a whole.

Consistent patient monitoring: Warfarin has been identified in hospitals as a high-alert medication, as errors in dosage or administration can have severe consequences (Institute for Safe Medical Practices; ISMP). With the shortage of medical staff, locums providing services and the physician on-call schedule, warfarin dosing may not be as consistent as if one specialized AMS provider were monitoring this aspect of patient care.

Organizing the Care Continuum

Communication with retail pharmacists: Compliance with warfarin therapy is essential for stable control of INRs. One missed dose in the seven to 10 days prior to a blood test can result in suboptimal results, and complicated or unstable conditions are often due solely to compliance problems. The AMS communicates with retail pharmacies for prescriptions and to provide compliance packaging for special needs clients, and contacts home care nursing for patients with additional needs. The location of the pharmacy is not a hindrance, as regular communication with the pharmacies in Boyle at a distance of 50 km, and Whitecourt at 230 km has not been any more difficult than locally in Athabasca. In addition, the local pharmacies recognize that AMS is part of their patients' care and consult with the AMS pharmacist when a customer taking warfarin is starting a potentially interacting prescription drug or over-the-counter medication.

Communication with home care nurses: If a patient is not able to physically ambulate to the laboratory, the AMS contacts home care and arranges blood draws. If several patients residing in a long-term-care home are taking warfarin, blood draw days are scheduled to minimize visits. Before the advent of the AMS, several residents in a nearby seniors' home were discovered to have been taking warfarin for over a year without lab work to monitor therapy; medical services had changed, and the patients' anticoagulation therapy had been overlooked. The AMS can partner with home care to better provide services for seniors living independently, in seniors' homes or in long-term-care facilities.

Communication with laboratory technicians: The on-site lab recognizes that there have been fewer blood draws and there is less potential scarring since the AMS has been managing warfarin patients. Prior to the AMS, daily INRs were routinely ordered for inpatients. With one provider monitoring and adjusting warfarin dosages, therapy is stabilized quicker. As well, nursing staff are not required to contact the physician at their office for follow-up of INRs and warfarin orders, saving time for all staff involved in the medication process. Lab results and critical INRs are communicated in a more efficient manner, as the lab contacts the AMS directly, and the AMS does not have to wait for a faxed report.

Communication with other healthcare professionals: Once an AMS has been established and is recognized as a service in the hospital and community, referrals can occur from unexpected sources. Recently, the hospital physiotherapist contacted the AMS to assist with a patient who had a hereditary clotting disorder and was undergoing rehabilitation for a knee replacement. As this patient had previously been enrolled in a program

in Edmonton, she preferred that the local AMS, rather than her family physician, manage her therapy.

Collaboration with family practitioners: Family practitioners can access the AMS for expertise in managing supra-therapeutic or critical INRs, and, if the patient is not already enrolled, the AMS will be consulted to recommend an oral vitamin K dosage. The AMS is also available for information pertaining to drug interactions and clinical expertise in deep venous thrombosis (DVT) prophylaxis or management. The clinic is located within a 10-second walk of both the emergency department and the acute care nursing station. The clinic/pharmacy department is available during regular morning rounds and by telephone during regular business hours. Although initially not all the local physicians referred patients to the AMS, there is now 100% recognition of the benefits. The AMS has reduced the daily workload for physicians following INR lab results. The AMS provides specialist support to physicians, pharmacists and other healthcare providers.

Improving Process Management

Local hospital transition: Since the AMS service operates in a community hospital and provides AMS services in-house, newly diagnosed inpatients can seamlessly transition back home at discharge. Patients can be educated and set up in the program while still in hospital, and then their therapy can be managed at home. As well, lifelong warfarin therapy can be consistently managed over time when patients are admitted to hospital for other medical conditions. The potential for error is reduced with optimized communication.

Tertiary care transition: Patients can also be referred directly from tertiary care centres when discharged back to their community. Two patients with new heart valves were referred to the AMS this past December, 2008, and there was no interruption in their warfarin therapy management during the busy holiday season. In February, a patient was discharged home from an Edmonton hospital following a knee replacement. The AMS communicated with home care for blood draws, and the hospital records were faxed directly to the AMS thus enabling continuity of care.

Reduced hospital admissions: The AMS can reduce unnecessary patient admissions for non-urgent DVT. For example, a patient newly diagnosed with a clot in the lower leg can be managed by an anticoagulation pharmacist in the outpatient department with heparin, or be taught to self-inject at home. The AMS provides education, initiates warfarin and follows subsequent blood work for the duration of therapy, whether short- or long-term. In the traditional setting, this type of patient may have been admitted for one week or longer to receive drug treatment.

Accessibility: With one centre for patient anticoagulation services, the AMS can communicate with healthcare providers and patients via telephone, fax, email, or online via an encrypted software program. The AMS provides care for long-term-care patients, locally hospitalized patients, patients in the community and patients in other locations. Telehealth equipment is based in the hospital and is used to bridge the gap for remote care.

Collaborative relationships: In order to organize and improve patient-centred care, the anticoagulation pharmacist is in an ideal position to establish a collaborative relationship with physicians and other members of the healthcare team. Not only do patients benefit from having only one resource to contact about the complex management of their blood thinners, but that link enhances the connection to other caregivers and facilitates a team-centred continuum of care.

Ongoing Challenges

One of the challenges of establishing collaborative relationships with physicians and providing support for patients is remuneration. Currently, the fee structure in Alberta supports only compensation to physicians as a fee for service, so changes are required to support pharmacist involvement and training, given their direct involvement with this component of patient care. Advanced prescriptive authority for pharmacists supports this model very well in both the rural and urban setting, as the patient can choose to enrol in the AMS, rather than defer to the physician for that decision. The patient and healthcare team rely on the physician for diagnosis of conditions requiring anticoagulation. Education, ongoing management and support are provided by a pharmacist within the scope of an AMS clinic. As physicians become aware of the unique ability of AMS clinics to improve patient care and outcomes by providing advanced education and management, these clinics can become very busy. Demand also increases for provision of this service to complex and hard-to-manage cases because of the clinical expertise involved. Bungard et. al noted that "Although anticoagulation management services improve patient care and outcomes, they are often overwhelmed by the demand for the service – they become victims of their own success" (Bungard et al. 2008: 254). This clinic is no exception and is managed by one pharmacist trying to balance new referrals, manage the current patient load and provide other hospital job duties. The AMS has reached its maximum capacity given the current staffing.

Innovative software is required for clinical data collection and support (monitoring warfarin dosage and appointment scheduling), as well as for generating workload and quality assurance reports. Facilitation of patient involvement and awareness necessitates web-based software in place to allow seamless communication and sharing of data such as INR and dosing information between patient, pharmacist, laboratory and

physician. For example, giving other healthcare providers the capability to view the patient's INR and warfarin history could improve communication and continuity of care. This would be especially important for patients on warfarin who present to a hospital emergency department.

The Future

As we look to the future with increasing demands and shortages of physician time and availability, the rural setting is ideal for this type of team-centred approach. Based in the local healthcare institution, this type of ambulatory care clinic allows contributions from all members of the healthcare team, thus improving the process of patient care and management. The service is then also available to the inpatient population, who are at higher risk of poor anticoagulation control and adverse effects (Biscup-Horn et al. 2008). Thus, again the continuum of care is improved. Supported with adequate staffing and reimbursement for the clinic, patients can benefit from enhanced monitoring and engagement with their own health, either at the clinic or from a distance.

With specialized training and clinical experience, pharmacists can apply this model of care to managing other chronic diseases such as hypertension, cholesterol and diabetes, and also aspects of women's health. If an urban teaching hospital can establish satellite support for rural clinics, patients can receive improved care in their communities and ease the patient burden for family practitioners. This represents a workable combination of the elements of integration, including patient-centred care, workforce optimization, an organized care continuum, reduced clinical variance and improved process management. **HQ**

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Organizing Care across the Continuum: Primary Care, Specialty Services, Acute and Long-term Care

Nelly Oelke, Leslie Cuning, Kaye Andrews, Dorothy Martin, Anne MacKay, Katie Kuschminder and Val Congdon

Abstract

Primary care networks (PCNs) facilitate integration of healthcare across the continuum. The Calgary Rural PCN implemented a community-based model where physicians and Alberta Health Services work together to deliver primary care addressing local population needs. This model is highly valued by physicians, decision makers and providers, with early impacts on outcomes.

Introduction

Integration of the planning and delivery of services is an important component of healthcare systems. This paper describes the planning and implementation of a community-based model of primary care in the Calgary Rural Primary Care Network (CRPCN), a collaborative initiative between family physicians, Alberta Health Services (AHS), Calgary Zone managers and other stakeholders to ensure an integrated system across the continuum of care.

Background

Prior to the development of primary care networks (PCNs) in Alberta, the primary care system was isolated and functioned independently from other components of the healthcare system.

Primary care consisted of disparate components; more specifically, the care provided by family physicians was disconnected from other primary care services and the system as a whole. This marginalized family physicians from their specialist colleagues and the healthcare system, resulting in poor or non-existent relationships with health authorities (Lester et al. 1998; Oelke et al. 2006).

Rural areas were also known to have additional, unique challenges impacting the delivery of healthcare services and realization of integration. These included geographical distance (Bolda and Seavy 2001; O'Meara 2003); lack of communication between providers and service organizations, often intensified by distance (O'Meara 2003); and animosity between communities (Hanlon 2001). Healthcare providers in rural settings were often regarded as second class by other providers. Rural health services tended to have higher case loads and fewer resources (e.g., support services, continuing education) than their urban counterparts (Halma et al. 2004; McCabe and Macnee 2002; Rogers 2003). On the other hand, rural settings exhibited a number of strengths. These included strong local leadership, a greater sense of community ownership, willingness to support local initiatives and the flexibility of small teams, where identification of needs and solutions can be expedited (Bolda and Seavy 2001).

The redesign of Alberta's primary care system has been a key response to these issues. Physician integration has been recognized as key to successfully integrated systems (Suter et

al. 2007). Both the health system and physicians realize that integration is no longer an option but a necessity (Budetti et al. 2002; Gillies et al. 2001; Lester et al. 1998), considering the complexity of today's healthcare system (Alexander et al. 2001). In 2003, PCNs were initiated through a trilateral agreement (Alberta Medical Association 2003) between the Alberta Medical Association, Alberta Health and Wellness and regional health authorities. PCNs establish a formal relationship between physicians and the health region to collaboratively plan and deliver health services for a geographic area based on population needs. PCNs were developed to better integrate healthcare delivery across the continuum of care (e.g., specialty services, acute and long-term care). Objectives for PCNs include: (Primary Care Initiative 2008):

- Improving coordination of primary health services with other healthcare services including hospitals, long-term care and specialty care services, and
- Fostering a team approach to providing primary healthcare.
- Family physicians work in cooperation with AHS to plan, coordinate and deliver care for patients (Primary Care Initiative 2008.).

The Calgary Rural PCN began its operations in February 2006. It covers a large geographic area southwest and southeast of Calgary and services approximately 110,000 residents. Currently, 100 physicians are registered with the CRPCN, with a

physician participation rate of 100% in communities taking part in the initiative.

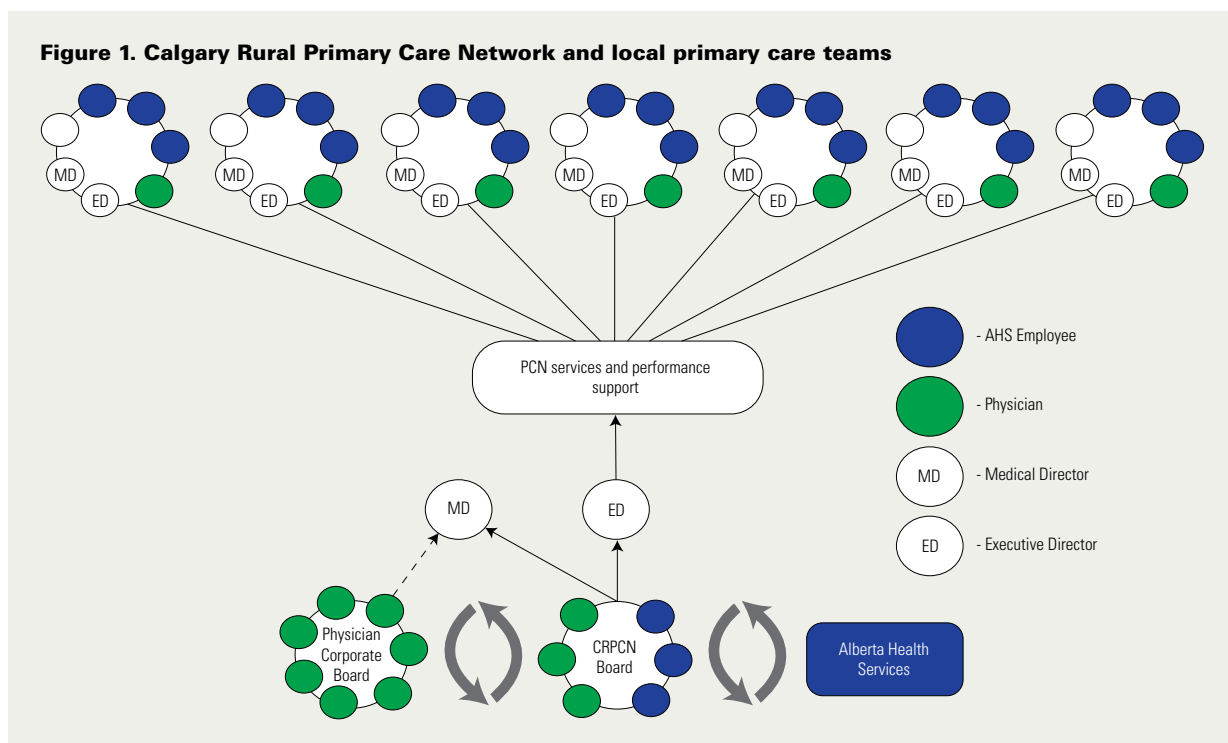
Intervention

Six local primary care team members across communities were interviewed. They described and articulated the model, successes and challenges and the impact on outcomes. Themes from these interviews provided the foundation for this paper.

Description of the Model

The CRPCN chose a community-based model; seven geographic communities each with a local primary care team. Each local primary care team consists of the community physician and AHS, Calgary Zone managers accountable for various primary healthcare programs in that community (e.g., public health, continuing care). The model is illustrated in Figure 1.

The majority of CRPCN funding is distributed at the local level; therefore each local primary care team sets its own priorities for service delivery based on local community needs as determined by the team, local community experts. More recently, population, healthcare utilization and evaluation data have been used in planning services. Provider interests, opportunities and long-term gaps have also been used to determine priorities for service delivery. This funding model allows "local autonomy that enables freedom and flexibility in a complex adaptive system" (interview participant) in planning and implementing primary care services for the population residing in that community.



The CRPCN Executive Director and Medical Director attend all local primary care team meetings. Other CRPCN physicians and staff and AHS, Calgary Zone staff attend meetings, depending on agenda items. Local primary care team meetings are led by the co-chairs – the physician leader and a health system manager. Teams are characterized by collaborative decision making through discussion and consensus of team members. Because decisions are made locally, there is “greater buy-in and accountability for funding, performance measurement and improved health outcomes for patients” (interview participant).

The model has changed little over time, although relationships and services have evolved and ownership has been strengthened. While the same model is used across communities, the maturity of the model varies, with some teams being more integrated and collaborative than others.

Why Was This Model Chosen?

Initial CRPCN planning discussions “focused on community-based services to truly meet unmet health needs” (interview participant). Local solutions were highly valued by decision makers and providers, particularly family physicians. This was reinforced at a recent CRPCN retreat, where there was unanimous agreement that the local primary care model needed to be maintained. The model was chosen to facilitate “the integration that this type of model provides...an opportunity to work alongside physicians that we did not previously have” (interview participant) and to engage physicians. The model allows for services that address care and access specific to each community’s population. Also, the community-based model was well aligned with rural culture.

Methodology, Change Process and Results

Local primary care teams meet monthly to plan and openly discuss ongoing issues in implementing primary care services in their communities. Having the CRPCN leadership at the table provides connection to other teams and the provincial vision and mandate. Learning across teams is facilitated by the participation of AHS, Calgary Zone managers on more than one local primary care team. The model requires leadership and champions at the local level. Relationships are the foundation of the model and require time to develop, assisted by regular meetings and connections.

Impact of the Model

Early outcomes are described at the patient, provider and system levels.

Impact for Patients

There is a strong sense from members of local primary care teams that the quality of patient care has improved. Patients are receiving services locally that previously were not avail-

able or would have required travel to Calgary. Overall, care is more comprehensive for patients. For instance, chronic disease management (CDM) has been enhanced by adding pharmacists and CDM nurses in each community. From April to September 2008, CRPCN pharmacists had a total of 437 patient encounters involving 310 patients. Providers perceived a decrease in acute care admissions and increased self-care capacity for chronic disease patients. Although outcome data are not yet available, clinical indicators (e.g., HbA_{1c}, BP [glycosylated hemoglobin, blood pressure]), utilization of healthcare services (emergency room admissions, inpatient admissions), quality of life, self-efficacy and patient satisfaction are being collected for future evaluation.

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Each of the local primary care teams in the CRPCN has designated resources to a social worker (SW). SWs have been involved with a variety of patients through various PCN and AHS programs. One patient described the integration of services and providers organized by the SW as follows:

I wouldn’t be where I am today if it wasn’t for the social worker. Between the social worker and my doctor...the psychiatrist, the mental health people, all of that was because of the social worker. And so, truthfully, I don’t know where I would be today if it wasn’t for the social worker in my life.

With the introduction of community development and primary prevention initiatives, there is an increased focus on wellness. A teen and young-adult health clinic was initiated in one community early in the development of the PCN. Between September 2007 and September 2008, 1002 clients were seen at the clinic, with an increase every six months since opening. In a sample of 124 new clients, 42% cited “the accessibility of the clinic” as their reason for choosing this clinic over another facility or provider. Four key themes were perceived by staff to increase accessibility of the clinic to youth: confidentiality of services; open attitudes of staff; multiple services provided (e.g., diagnosis, treatment and prevention of sexual health issues); and the connections to other services in the clinic (e.g., mental health, addiction, smoking cessation). The clinic has been so successful in providing access to teens and young adults, where

previously there was no access to such services locally, that clinics have been initiated in two other communities in the CRPCN.

Impact for Providers

The community-based model has increased the satisfaction of health system managers, physicians and other healthcare professionals. There is a stronger working relationship between physicians and AHS, Calgary Zone managers as well as physicians and other healthcare professionals. Decisions regarding services are based on discussions between these parties. The PCN initiatives have brought all providers into a closer working relationship, and regular meetings have provided a forum to enhance communication between providers. One manager stated that there is an increase in respect for physicians and valuing of their input. This proactive collaborative approach to meet the needs of their communities has resulted in increased provider satisfaction.

Impact on the System

The community-based model has promoted “a more integrated primary care system with enhanced collaboration between family physicians, public health, continuing care, social work, etc.” (interview participant). Although the local primary care team was focused primarily on collaboration between physicians and the health system, increased collaboration between departments within the health system has also been realized. The enhanced collaboration between all components of the primary care system has increased the efficiency of service delivery and provided an opportunity to involve services that were previously absent.

Collaboration has moved beyond the primary care realm and has created linkages to acute care and seniors’ care. This is evidenced by the “Blueberry Muffin” example. Monthly meetings initially organized by the PCN’s pharmacist (where blueberry muffins were served, hence the name) to review patients’ medications have broadened to include all patient issues. Interprofessional team members including the pharmacist, CDM nurse, physicians, home care staff and social worker are invited to review patients in a case conference format. Integration of primary care in a seniors’ setting has created the opportunity for interprofessional collaboration and improved outcomes for residents.

The implementation of the social work role has been unique to each community to meet local needs. As an example of the integration of the social work role, one social worker has established a strong network with providers and programs in acute care, with physicians while they are doing rounds in the hospital, long-term care centres, community healthcare services (e.g., public health, home care, mental health services) and with other community organizations (e.g., the RCMP, Legal Aid, schools). The social worker attends various community meetings for the purposes of prevention/promotion activities, networking, community wellness education and advocacy.

A data-sharing agreement among clinic physicians, continuing care and emergency medical services (EMS), AHS, Calgary Zone was developed in one community to enhance integration. Coupled with iPhone technology, home care nurses and EMS staff now have access to physician electronic medical records, providing better continuity of care for patients. The success of this program has resulted in its expansion to other communities.

The CRPCN community-based model fosters an environment of creativity in the delivery of primary care services. Community expertise facilitates local primary care teams in identifying local needs. Funding is managed locally and stakeholders all sit at the table, allowing for expedited decision making with services “tailored to community needs” (interview participant). Both managers and physicians state that the CRPCN allows for “true innovation” in service delivery.

With the introduction of community development and primary prevention initiatives, there is an increased focus on wellness.

Discussion and Conclusion

Research identifies 10 characteristics found in successfully integrated systems (Suter et al. 2007). The CRPCN’s community-based primary care model possesses a number of these characteristics, with early positive outcomes being realized for patients, providers and the healthcare system. First, the CRPCN is patient focused, with a community-needs-driven approach that is utilized by each local primary care team. The benefit is that local needs of patients and populations are being addressed. Services must be responsive to the changing needs of community members (Roberts 1996) in order to receive funding from the PCN, emphasizing accountability by each local primary care team. To date, community needs have largely been determined through local team expertise, but there is recognition that utilizing health services administrative and social district data from AHS, Calgary Zone is necessary to better understand community needs.

Secondly, while still in the infancy stage, performance measurement, another characteristic of integrated systems (Suter et al. 2007), is a key focus of the CRPCN and its local primary care teams. Local teams are accountable for their finances as well as the outcomes for services delivered. Regular evaluation is carried out at the program and PCN levels, and data on ambulatory care sensitive conditions is being utilized in decision making. This information is of benefit to each of the local teams to ensure that quality services are being delivered and the PCN continues to work on collecting further outcome data.

Third, the community-based model adopted by the CRPCN facilitates strong physician integration and leadership, essential

at all levels of the healthcare system to ensure successful integration (Appleby et al. 1999; Coddington et al. 2001). Physicians are highly involved and have taken on a leadership role to deliver primary care services in partnership with AHS, Calgary Zone management. Challenges continue to exist with differing philosophies and agendas regarding services and fund allocation, but these issues are being addressed by local primary care teams.

Fourth, utilization of interprofessional teams is highly evident in the CRPCN, ensuring communication among providers and facilitating continuity of care for patients. The PCN "has allowed us to explore all pieces of interprofessional practice" (interview participant). The right practitioners are doing the right things; territorial boundaries have been blurred and silos dismantled, even though standardized care delivery has not been a focus for teams. An additional benefit of the interprofessional practice has been the building of relationships between providers within the PCN and those in AHS.

The CRPCN has successfully created an integrated system for planning and implementation of service delivery at the community level. The CRPCN model shows significant integration within the primary care system in each rural community. Linkages have been initiated with other components of the health system (e.g., long-term care, acute care, EMS), but continued efforts will be required to ensure better integration across the continuum of care to further impact outcomes for patients. **HQ**

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Integrated Stroke Care Across a Province – Is it possible?

Agnes Joyce and Shy Amlani

Abstract

Using a patient's perspective on her journey through the care continuum, this article describes Alberta's newly integrated provincial stroke system. It then explains the integrative system development that has occurred both within the Edmonton area and the province to allow this patient's successful post-stroke experience.

Introduction – Case Outline

Helen Jones is a 55-year-old woman who lives 140 km south-east of Edmonton. She developed stroke-like symptoms, so the ambulance bypassed her local hospital, diverting her to St. Mary's Hospital in Camrose. On arrival, she was rapidly assessed by a stroke neurologist at the University of Alberta Hospital in Edmonton using a Telehealth link. The conclusion of this assessment indicated she could receive without delay a specific time-sensitive clot-busting drug to treat her condition. She improved immediately and the lasting effects of her stroke were minimized, allowing her to maintain her independence, speech, mobility and overall quality of life. She now receives stroke follow-up in her local area rather than driving to Edmonton, using both Telehealth and local services.

Background

Stroke is the number one cause of disability in Canada and costs the Canadian economy over \$2 billion per year (Heart and Stroke Foundation of Canada 2009). Each year, over 1800 people in the Edmonton area alone have strokes, with over 5500 strokes occurring yearly in Alberta. These numbers are expected to rise by 1% to 2% per annum for the next decade. To further complicate matters, timely access to appropriate assessment and treatment is critical to effective stroke management (The Canadian Stroke Strategy Steering Committee 2000). In response to the increased demand for timely stroke care, in 2005 the former Capital Health (CH) region developed a five-year regional stroke service plan of comprehensive services across the continuum of care in the Edmonton area. The overall vision of this plan was to embrace integration concepts to strengthen connections between health services, people and providers. As such, the plan articulated six guiding principles to achieving a regional integrated model of care for stroke patients:

1. Stroke care will be integrated across the region and care continuum, allowing all sectors, services and sites participating in the care of stroke patients to build upon existing strengths.
2. Patients requiring care for stroke in the region will receive equitable access to such care, enabling patients to receive appropriate care in the right setting, at the right time and

from the right provider within an interdisciplinary model of care.

3. Stroke care will be evidence-based and supported by best practice, with the integration of research and education into clinical practice.
4. Technology resources will be appropriately utilized, including Telehealth, diagnostic imaging and other technologies, to advance practice and support equitable access to care for patients from both within and outside of the Edmonton area.
5. Stroke care will evolve and change based upon clinical requirements for care and advances in practice and technology, supported by research and expert knowledge.
6. CH will partner and collaborate with other regional health authorities, Alberta Health and Wellness, and external agencies to develop, implement and evaluate practice, research and education initiatives to advance standardized stroke prevention and care throughout the province (Regional Stroke Steering Committee 2005).

CH worked to create the comprehensive and integrated stroke services included in their vision. Four cross-continuum strategies have been implemented, considering the Quality Dimensions framework originally developed by the Health Quality Council of Alberta. The strategies endeavor to provide:

1. Accessible and effective stroke prevention services by enhancing and expanding stroke prevention clinics to all three major hospitals.
2. Accessible and effective emergency care for stroke patients by developing stroke transport protocols.
3. Accessible, acceptable, appropriate, effective and safe inpatient care for stroke patients.
4. Accessible, acceptable, appropriate, effective and safe rehabilitation services.

Application of these strategies will be further described in the intervention sections below.

Along with its regional initiatives, CH was a partner in the Alberta Provincial Stroke Strategy (APSS), and CH service plans aligned with this provincial framework. APSS is an approximately \$42 million project funded by the Alberta provincial government and the Heart and Stroke Foundation of Alberta, NWT and Nunavut to improve stroke care and prevention throughout the province. It is a collaborative partnership between Alberta Health and Wellness, all nine former health regions and the Heart and Stroke Foundation. APSS provides a structure so that its partners can share information about their stroke services, coordinate service delivery across boundaries and develop common strategies to facilitate access to evidence-based care for optimal practice (Alberta Provincial Stroke Strategy 2006).

CH work now continues as the Stroke Program, Edmonton Area, within the new provincial health structure, Alberta Health Services.

Interventions

The initial phase of development of integrated stroke care in Alberta required the creation of two comprehensive stroke centres, one at the University of Alberta Hospital (UAH) in Edmonton and another at the Foothills Medical Centre in Calgary. Their purpose is to serve as hubs for clinical expertise and support in order to increase rural capacity to manage stroke care throughout the province. Thus, along with its own service integration, Stroke Program, Edmonton Area is mandated to support both the treatment of patients and the development of integrated stroke services in central and northern regions. Through extensive education and mentorship of physicians, health professionals and program leaders, Numerous central and northern Alberta communities were supported to create Primary Stroke Centres (PSCs). A proposed PSC must meet the provincial guidelines to receive the PSC designation. To ensure it meets these guidelines, each PSC is provided standardized tools, including written algorithms, protocols/order sets and healthcare-provider education. The stroke toolkit provided to hopeful PSCs ensures replication of the desired model for stroke care best practice. In our case example, Helen was assessed at the PSC in Camrose, which had been established in March 2007. More PSCs are proposed, and similar work is being completed in the southern half of Alberta. The Foothills Medical Centre provides leading-edge support to build capacity so that rural areas can also offer effective stroke care.

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Stroke Prevention

Prevention of recurrent stroke events and management of high-risk individuals to prevent first events are imperative if we are to manage increasing stroke numbers and encourage a healthier population (Rothwell et al. 2007). In the past, individuals in the Edmonton area have experienced considerable wait times that have extended beyond national best practice recommendations for secondary stroke prevention. In addition, individuals in rural and remote areas who needed secondary stroke prevention services were required to travel to the UAH in Edmonton to

receive those services. Three initiatives are targeted to improve the access to standardized stroke prevention services in the Edmonton area and the province.

To begin, stroke prevention clinics have been expanded to offer comprehensive care at all three major hospitals and now include services at the Royal Alexandra Hospital (RAH) and Grey Nuns Community Hospital (GNCH). Despite an increase in total visits at the hospitals from 1849 in 2005/06 to 3200 in 2007/08, urgent patients are still being seen within seven days, in keeping with best practice guidelines. These clinics are also working together to develop a central intake system to provide a single point-of-access, thereby further improving the triage of very high-risk individuals.

A second initiative aims to increase community access to stroke expertise by targeting individuals experiencing transient ischemic attacks (TIAs), a key warning sign of an impending stroke (Giles and Rothwell 2009). The province is currently implementing an extensive provincial network to triage TIA patients anywhere in Alberta for appropriate care. Best practice guidelines in stroke care now identify TIAs as a medical emergency. To meet these standards, we have collaborated at all levels across the province to establish a TIA hotline. The hotline provides referring physicians a single point-of-entry to effectively triage patients who experience a TIA throughout Alberta. The hotline now ensures that any emergency department (ED) or community-based family physician has a direct and effective link to stroke expertise. This initiative required cooperation from administration and clinicians province-wide, including stroke neurologists, stroke prevention clinics, the regional patient transport office (urgent care line), emergency medical services (EMS), PSCs and comprehensive stroke centres. In order to be viable, the project required an existing and extensive inter-collaborative foundation between provincial stakeholders and staff. This groundwork was previously laid by the APSS collaborative to set up the primary and comprehensive stroke centres and the Telestroke (Telehealth for stroke assessment and prevention services) network throughout the province. This hotline initiative is spearheaded by the Alberta Stroke Prevention in TIAs and Mild Strokes (ASPIRE) research project and is an example of leading-edge innovation to improve stroke care on a provincial scale using integrative concepts.

Complementing the added clinics, Telestroke stroke prevention services have been developed to improve access to the suburban and rural patients who are unable to travel for either initial or follow-up visits. This patient-focused service uses Telehealth to complete the same assessment that the patient would receive if visiting one of the Edmonton clinics in person. In 2005/06, Telestroke provided secondary stroke prevention care to 53 patients in central and northern Alberta. This number has grown substantially, with 191 patients in 52 sites in 2007/08, and 189 patients as of December for 2008/09 (the

year ends March 31, 2009), with Telestroke prevention now also available at GNCH and RAH. In our case study example, Helen Jones was able to receive her follow-up after an initial assessment by stroke neurologists from the UAH via Telehealth. Thus, she avoided having her husband take the day off work to travel into Edmonton, and she is now able to receive her subsequent follow-up visits in her local area at the Camrose PCS.

Telestroke stroke prevention
services have been developed to improve access to the suburban and rural patients who are unable to travel for either initial or follow-up visits.

Emergency Management

Timely access to services is critical in the management of stroke in order to minimize its potential effects (Hacke et al. 2008). Suspected strokes must be evaluated by appropriate diagnostic imaging and stroke experts to determine the type of stroke and appropriate course of care. This rapid evaluation can result in significantly more positive patient outcomes. Rapid and effective pre-hospital care is essential to minimize scene time, provide optimal pre-hospital assessment and treatment and quick transportation to an appropriate ED. To achieve this, our first application has drastically improved management of stroke patients prior to arrival at the hospital. Through coordination with Health Link Alberta, the Regional Patient Transport Office (Critical/Urgent Care Line) and EMS, the Edmonton Stroke Program developed stroke bypass protocols and guidelines. These ensure stroke patients are appropriately identified and transported to a hospital with the ability to administer tPA, a vital clot-busting medication. tPA administration has increased from 100 patients 2006/07 to over 140 patients in 2007/08. These bypass protocols have been adopted province-wide, and were used in Helen Jones' case. EMS was aware that the local hospital was not equipped with the imaging technology, trained staff and Telehealth support for proper stroke assessment; thus Helen was appropriately diverted to the nearest PSC, in Camrose.

The second application is the capability to use Telestroke to provide comprehensive assessment to the hyper-acute stroke patient in a rural or remote area. It uses video conferencing and CT image-sharing technology to allow stroke specialists from comprehensive stroke centres in Edmonton and Calgary to examine patients at PSCs, thereby effectively diagnosing the patient's condition and recommending a plan of care. PSCs can deliver this time-sensitive acute-stroke care for patients without physically transferring them to comprehensive centres for an

exam. As of December 2008, hyper-acute Telestroke at UAH completed consults with 51 patients, eight of whom received tPA which, in the past, could have been delivered only if the patient had attended the UAH. These numbers are expected to continue to rise, as GNCH is now also able to manage hyper-acute strokes via Telehealth. Helen directly benefited from the use of Telestroke for this hyper-acute management by receiving a consult from stroke neurologists at UAH who determined she was eligible to receive tPA. This medication minimized the non-reversible effects of her stroke and maximized her quality of life.

...outpatient rehabilitation services have been enhanced to decrease wait times for certain types of therapy from up to eight weeks to less than one week.

Inpatient Care

It is internationally recognized that organized “stroke units” are critical to the successful treatment of stroke patients (Lindsay et al. 2005). A stroke unit is defined as “multi-disciplinary specialized care for patients who have had an acute stroke” (Hill 2002: 649). To satisfy this best practice recommendation, acute inpatient stroke services were enhanced at UAH, and new stroke units were created at the RAH and GNCH. With a total of three stroke units, the number of acute-stroke inpatient beds has increased from approximately 30 to 56. Processes have also been developed to improve the flow of stroke patients into these beds from other hospital units. Through the Alberta Provincial Stroke Strategy, organized stroke units have been created within each PSC as part of the requirement to meet PSC designation. Our case, Helen would have benefited from the local stroke expertise at the Camrose hospital for her inpatient stay if she had required it.

Rehabilitation and Community Re-integration Services

Research now clearly indicates that early and comprehensive post-stroke rehabilitation is essential to improving patient outcomes (Teasell et al. 2008). In order to achieve this recommendation, stroke unit staffing has been enhanced at all three Edmonton acute care sites to ensure access to timely physical and occupational therapy and speech-language pathology services. It also now includes weekend access to therapy, and a new level of care was created to serve the “slow-to-progress” stroke patient. These long-duration rehabilitation beds at the Glenrose Rehabilitation Hospital offer therapy to patients who may previously have been denied this level of rehabilitation due to their slow progress. Further to the inpatient improve-

ments, outpatient rehabilitation services have been enhanced to decrease wait times for certain types of therapy from up to eight weeks to less than one week. Finally, the role of the caregiver in the care of a stroke survivor is more fully recognized, starting in acute care and rehabilitation. Programs designed specifically for caregivers of stroke survivors have been created by the health system, and alliances have been built with non-profit organizations such as the Stroke Recovery Association of Alberta, which can provide support to both stroke survivors and caregivers.

Regional Stroke Navigators

To support the region and central and northern Alberta, the Stroke Program, Edmonton Area has put coordinators in place to provide assistance to healthcare professionals, stroke survivors and their caregivers. These “navigators” help to ensure patients are receiving the right service and the right time, delivered by the right provider. They coordinate education for healthcare providers, including learning resources and staff orientation materials. In addition, they make recommendations or provide education for stroke survivors and caregivers. There are equivalent positions in each former health region to act as a point-of-contact. These positions make up a provincial alliance in frequent consultation to review and improve practice through APSS activities.

Discussion

Providing effective and equitable access to appropriate stroke care for all Albertans is an overwhelming task. Regardless of the patient’s location, the expediency for rapid assessment is critical. Management of the stroke patient upon arrival at an emergency department requires precise and accurate protocols and trained staff. Rehabilitation of the post-stroke patient and preparation for community re-integration, including identification of caregiver needs, is of growing concern as the occurrence of stroke in younger populations grows. As a result, integration of the parts of the healthcare continuum on a local and provincial level is also crucial. By definition, integration is the building of stronger connections between health services, people and providers to better support people in their care journey and realize all the benefits of a health system. In Alberta, program leaders, physicians and clinicians throughout the province have been able to effectively collaborate with support and guidance from APSS. The result of this collaboration is an extensive network with a focus on improving stroke care for all Albertans and meeting best practice recommendations for stroke care regardless of location within the province. Our case study highlights how the integrative work completed by the Stroke Program, Edmonton Area has been vital to the development of effective stroke care in the central and northern part of Alberta. However, it is only one example of the exceptional efforts that have and will continue to take place throughout the province.

Our case study highlights how the integrative work completed by the Regional Stroke Program in Edmonton has been vital to the development of effective stroke care in the central and northern part of Alberta.

The Edmonton Area's mentorship is mirrored in the south by the Calgary area and is evidenced by the growing number of PSCs also arising in the southern half of the province. Equally, rural regions have demonstrated extreme dedication to improvement of stroke care with every current and proposed PSC, as seen in Helen's case with St. Mary's Hospital in Camrose.

An extensive evaluation plan has been put in place both at a local and provincial level to measure the effects of these integrative efforts. Preliminary data are just coming in, and results to date are encouraging. As mentioned, markedly increased patient visits to prevention clinics both in person and via Telehealth and the number of people treated with tPA are expected to continue to rise. Another important area of interest includes a significant downward trend of stroke recurrence after prevention clinic visits of people who visit emergency with signs of stroke. It is expected that the ASPIRE project results will strengthen these data even further.

Conclusion

The concept of integration provides an effective framework for the health system to reorganize, streamline and improve access and equitability for all Albertans. This has been the experience to date in the example of the development of an integrated stroke system both in the Edmonton area and in the province. And, of utmost most importance, Albertans can anticipate the benefits of this improved system as demonstrated in our case example of Helen Jones. **HQ**

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The Alberta Cardiac Access Collaborative: Improving the Cardiac Patient Journey

Robyn Blackadar and Mishaela Houle

Abstract

The Alberta Cardiac Access Collaborative (ACAC) is a joint initiative of Alberta's health system to improve access to adult cardiac services across the patient journey. ACAC has created new care delivery models and implemented best practices across Alberta in four streams across the continuum: heart attack, patient navigation, heart failure and arrhythmia. Emergency medical providers, nurses, primary care physicians, hospitals, cardiac specialists and clinicians are all working together to integrate services, bridge jurisdictions and geography with one aim – improving the patient journey for adults in need of cardiac care.

Introduction/Background

Cardiovascular disease is the leading cause of death in Canada, accounting for approximately 80,000 deaths each year. More than 450,000 Canadians were hospitalized for cardiovascular disease in the year 2000. In 2006/07 there were over 80,000 heart failure patients in Alberta, with over 10,000 new cases diagnosed each year since 2000. Alberta will be facing increasing demands for cardiac services at a time when there are shortages

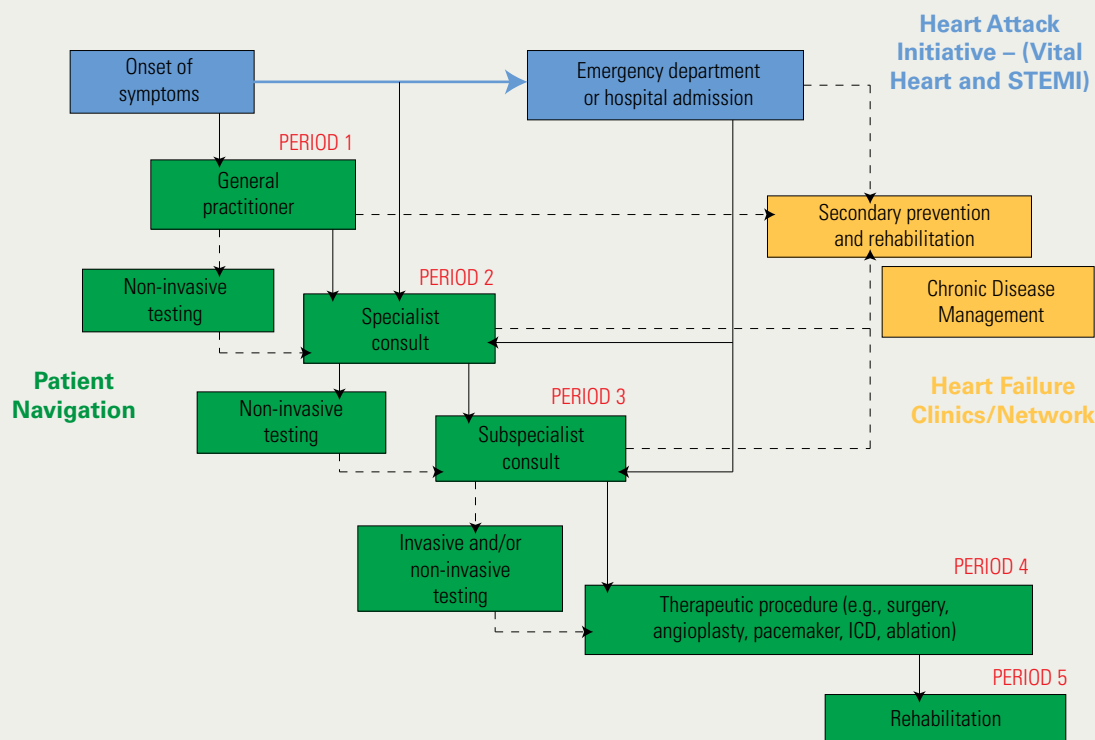
in healthcare providers and infrastructure as well as geographic barriers to access. Cardiac service delivery needs to be innovative, collaborative and systematic in order to meet current demand and future growth.

The Alberta Cardiac Access Committee was established in 2003 to develop appropriate wait times for coronary artery bypass surgery and angioplasty. By 2006, the committee recognized that disconnects in the patient journey and distance to services were creating barriers to access. In June 2006 the committee hosted the Patient Journey symposium for all regions and invited them to participate in a provincial plan to improve access for cardiac patients and families.

At the Patient Journey symposium all regions agreed to adopt and implement the Canadian Cardiovascular Society (CCS) benchmarks for adult cardiac patients across the full continuum of care (Figure 1) (The Wait Time Alliance for Timely Access to Health 2005). Participants also agreed with the following four priority interventions: ensuring timely treatment for heart attack, improving patient navigation for planned cardiac care and improving access to heart failure and arrhythmia services across the province.

In developing the Alberta Cardiac Access Collaborative project, participants were asked to identify how improved coordination would be evident in their region. The following is a selection of responses received:

Figure 1. The continuum of care



ICD = implantable cardioverter defibrillator; STEMI = ST segment elevated myocardial infarction.

Decreased waiting times, decreased time to reperfusion with better patient outcomes, educational opportunities with the project where system problems will be identified and repaired quickly, better distribution of resources both provincially and within David Thompson Health Region, better and more consistent access to resources.

Improving the coordination and management of cardiac patients will enable East Central Health staff to track patients more effectively, ensuring their flow through the continuum of cardiac care.

Improved access to evidence-based protocols and standards will result in improved patient outcomes and service provision. Establishment of benchmarks will assist us in service and budget planning. (Peace Country Health)

Hopefully we will address the challenges of working with many diverse sectors to accomplish best care approaches. (Chinook Health Region)

The results of the Patient Journey symposium were the foundation of a comprehensive proposal that was approved and funded by the Alberta Wait Times Management Steering Committee.

In June of 2007, a central provincial coordinating structure was established to support each of the regions as they planned, implemented and evaluated each intervention. Provincial coordination has ensured increased use of common clinical guidelines and improved information collection and dissemination, with the long-term aim to improve clinical outcomes.

Project planning started in September 2007, and implementation of the interventions commenced in February 2008.

Intervention

The Alberta Cardiac Access Collaborative has focused on the entire patient journey to better support patients and their families as they travel through the cardiac system as well as healthcare practitioners who provide services along the continuum. The heart attack, patient navigation, heart failure and arrhythmia interventions each focus on a separate area of the continuum of care. Each has a unique focus, but all four are committed to

meeting the principles of integration: providing people-centred care, reducing clinical variance, organizing the care continuum and improving process management.

Implementation of the heart attack initiative in rural settings allows non-tertiary centres and emergency medical providers to send ECGs electronically to specialists who can provide a diagnosis and a treatment plan over the phone.

Heart Attack

Acute myocardial infarction is a leading cause of death in Canada and a common antecedent event leading to other cardiovascular conditions including heart failure and cardiac arrhythmias.

Built on the foundation of existing programs in Edmonton and Calgary, the heart attack initiative focuses its attention on a specific type of heart attack known as STEMI (ST segment elevated myocardial infarction). The objectives of the heart attack initiative are to reduce time to treatment for STEMI patients, reduce reperfusion delays, increase collaboration between healthcare providers and improve communication between healthcare professionals. Developed from national/international guidelines and the application of evidence-based medicine, the heart attack initiative has developed standardized care pathways to treat patients diagnosed with STEMI. Implementation of the heart attack initiative in rural settings allows non-tertiary centres and emergency medical providers to send ECGs electronically to specialists who can provide a diagnosis and a treatment plan over the phone. This collaboration between acute care nurses, emergency service providers, emergency physicians, internists and cardiologists has significantly improved treatment of the rural STEMI patient. Early initiation of treatment provides patients with the best possible outcomes and increases their chances of a successful recovery.

STEMI treatment programs previously existed in Edmonton and area, Camrose, Westaskawin and rural/urban areas serviced by the Calgary jurisdiction. These programs included both hospital and EMS care pathways and have focused on process optimization during the heart attack initiative.

New STEMI care pathways have been implemented in the following communities: Fairview, Viking, Tofield, Rocky Mountain House, High River, Okotoks, Airdrie, Banff, Medicine Hat, Brooks and Bassano. The following EMS providers have also implemented the program: Peace Country Regional EMS, Beaver Ambulance, Specialty Medical Service Ltd. and Mountain View EMS.

Patient Navigation

The healthcare system today is very complex, with multiple entry points and numerous service providers. These complexities make it very difficult for patients, their families and healthcare practitioners to effectively navigate the cardiac healthcare system. "Patient navigation" has emerged as a valuable approach to address these concerns.

The objectives of the cardiac navigation initiative are to reduce wait times; improve quality, appropriateness and continuity of care; and create a system that meets divergent needs and increasing demands. Based on these principles, the navigation initiative has developed a program to improve the journey for patients and healthcare practitioners alike.

Acting as a single point-of-access to cardiac care for healthcare practitioners, patient navigators focus on improving coordination of services between multiple care providers, decreasing duplication of services, increasing patient preparedness and facilitating transition of care between numerous healthcare providers. Moreover, acting as a liaison between practitioners, navigators provide relevant and timely information to support patients and their caregivers on disease adjustment, therapeutic options and anticipated care paths.

The cardiac navigators are an excellent resource for patients, ensuring that each patient and their family members have the information, knowledge and support they require as they move through the cardiac care system.

The Alberta Cardiac Access Collaborative website was established to support the project on a provincial basis. Intended for public and member access, the site not only contains information for patients and families, but also houses information integral to a provincial delivery system. As a repository for information such as region- and service-specific referral requirements, a provincial inventory of cardiovascular resources and member contact information, the site is an excellent support for the patient navigation team.

Various region-specific patient navigation models have been developed to remove barriers and improve access to timely treatment in Lethbridge, Medicine Hat, Calgary, Camrose, Red Deer, Edmonton and Fort McMurray.

Heart Failure

As the population continues to age, the number of individuals diagnosed with heart failure will increase dramatically. Those diagnosed with heart failure have high readmission rates to hospital, multiple co-morbid conditions and require a high level of specialized care to optimally manage their condition. Heart failure clinics provide a multi-disciplinary approach to treating and managing patients diagnosed with heart failure. Physicians, registered nurses, pharmacists, dieticians and social workers all play a key role in providing treatment, support, education and self-management strategies to this patient population.

The majority of patients with heart failure cannot or do not have access to specialized heart failure services due to travel distance and lengthy appointment wait times. Leveraging the successes of existing heart failure clinics in Lethbridge, Calgary, Red Deer and Edmonton, multi-disciplinary clinics were established in the rural/suburban areas of Alberta in order to bring care closer to patients. Having the resource close to home has improved compliance and increased patient satisfaction, and we anticipate that it will reduce emergency visits.

Implementation of heart failure clinics across Alberta involved a multi-phased educational approach. The training program for nurses, allied health professionals and physicians increased their knowledge of heart failure. The educational support for new clinics included small-group educational sessions, job shadowing where new clinic staff worked within existing clinics and on-site clinical support provided by a Registered Nurse specialized in heart failure who travelled from an existing clinic. Ongoing educational sessions and opportunities to shadow in the existing clinics have been offered when appropriate. Heart failure clinics have successfully been implemented in the following communities: Medicine Hat, Camrose, Wainwright, Grande Prairie and Fort McMurray.

Arrhythmia

The Arrhythmia South clinic has streamlined the referral, triage, education and assessment process for primary prevention implantable cardioverter defibrillator and for supra-ventricular tachycardia patients.

Providing with a central point of referral, both patients and referring physicians are working with a small, specialized group of nursing and support staff. Patients are engaged early in the referral process and provided with written educational materials as well as necessary diagnostic testing prior to the first clinic visit. This has improved patients' awareness and understanding of their condition and of available treatment options. Patients also appreciate knowing who to contact with questions, both before their visit and during ongoing follow-up.

Physicians are able to see more new referrals as their time is more effectively utilized, with the addition of nurse clinicians providing the bulk of the history retrieval and education at the clinic visit. This has led to a decrease in the wait times from referral to clinic visit and ultimately to initiation of treatment.

Methodology, Change Process and Results

Implementing new programs can be very challenging. The following factors have contributed to the success of the interventions:

- **Motivated medical and/or administrative leads:** Each intervention at the provincial level is led by two clinical and/or administrative leads who are highly motivated

and committed to creating programs that improve service delivery for patients and their families.

- **The right people:** The initiatives are strengthened through the use of multi-disciplinary teams. Where appropriate, administrators, EMS personnel, Physicians, nurses and allied health professionals have all played a role in program development and implementation.
- **Evidence-based guidelines:** Clinical protocols and developed care pathways are based on current literature and national/international best practice guidelines.
- **Physician engagement:** The ACAC project demonstrates that interventions are most successful where there is strong physician support. Engagement of both healthcare practitioners who use the service and specialists who support the service is essential.
- **Flexibility is a key to success:** Each site tailored the initiatives to support its unique geographical and organizational differences. This ensured that each area had a program most suited to its needs.

The lack of a province-wide collaboration framework for on- and off-line data and information sharing has been challenging. Interfaces between existing systems are needed, as well as tools for provincial wait list management to effectively care for cardiac patients.

As with all program implementations, several challenges were encountered:

- **Resource availability:** Although funding for resources was available, qualified candidates for project and clinical positions were not always readily available.
- **Buy-in is not always simple:** Despite multiple varied approaches to gain acceptance, there are sites that have struggled in gaining physician buy-in to the new programs. This applies to both physicians supporting the services and physicians referring to the services.
- **Technology and/or information management issues:** The lack of a province-wide collaboration framework for on- and off-line data and information sharing has been challenging. Interfaces between existing systems are needed, as well as tools for provincial wait list management to effectively care for cardiac patients. Specifically, the heart attack initiative is very dependant on technology for transmission of ECGs, and as technology changed this posed problems for the program.

- **System capacity:** In some cases system capacity has posed a significant problem, impeding implementation of developed care pathways.

Evaluation of the four initiatives that fall under the Alberta Cardiac Access Collaborative will be completed to assess viability and sustainability of the demonstration projects prior to undertaking a province-wide rollout. The evaluation framework incorporates a number of perspectives, including the Alberta Quality Matrix for Health and guidelines from the Canadian Cardiovascular Society.

A province-wide common data set for the purposes of evaluating each initiative was developed after consultation with numerous key players. The defined elements will be used in various combinations to evaluate each initiative. Interim evaluations were conducted to refine the data collection framework and process. The final evaluation report will be submitted to the Alberta Wait Times Management Steering Committee at the end of May 2009.

Early evaluation results have been very positive:

- The heart attack initiative has trained 735 nurses, 115 physicians and 770 EMS personnel regarding standardized reperfusion protocols.
- There are 12 patient navigators located across the province. These individuals have started to build a network using each other as resources and access points for patients moving from one jurisdiction to another. Over 4500 patients have benefited from the streamlined referral process and improved communication.
- The heart failure initiative has implemented five new heart failure clinics in regions outside the urban centres. This has drastically reduced travel time for patients and significantly improved the quality of care they receive. Since implementation of the clinics, over 200 patients have been referred to them. Fifteen registered nurses, six pharmacists, three dietitians and four physicians have been educated regarding best practices in heart failure treatment since the intervention began.

The arrhythmia clinic in Calgary has effectively streamlined the referral process for patients requiring assessment for primary prevention implantable cardioverter defibrillator and for supraventricular tachycardia patients. To date over 325 patients have been assessed in the arrhythmia clinic, and wait times to see a specialist have improved substantially.

Conclusion

The Alberta Cardiac Access Collaborative is clearly an example of applying the principles and practices of health system integration. Since its inception at the Patient Journey symposium in 2006,

the project team has worked with stakeholders across the entire province to implement the four key change strategies of providing people-centred care, reducing clinical variance, organizing the care continuum and improving process management.

Providing People-Centred Care

From the outset, the focus on the patient's experience has been a priority. Attempting to address the continuum of care, implement best practices across the province and ultimately improve patient outcomes has been integral to each intervention. Patients surveyed as part of the evaluation process have commented on the value of having services close to home and access to navigators, and on increased levels of comfort that their needs are important.

Reducing Clinical Variance

Adopting the Canadian Cardiovascular Society guidelines in Alberta was the first major step toward standardization of cardiac care. Providing a single point-of-entry to access cardiac services, standardizing referral forms, developing care pathways and provincial transfer guidelines, and investigating innovative ways to use Telehealth has reduced clinical variance across the province of Alberta. The Alberta Cardiac Access Collaborative has set up a foundation for tracking the CCS guideline update and compliance.

Organizing the Care Continuum

Key to this principle is the use of inter-sectoral and multi-disciplinary teams. In all of the interventions, multi-disciplinary teams have worked together to identify barriers, seek solutions and implement best practices to ensure that each patient receives optimal cardiac care.

Improving Process Management

Implementing standardized quality improvement models founded on evidence-based guidelines has resulted in improved process management. Implementation of consistent care pathways and both treatment and transfer guidelines has ensured that each cardiac patient receives appropriate care, despite their geographical location.

In summary, the ACAC has had considerable success in applying the goals of integration. This achievement was not without significant challenges, some of which are highlighted in this article. A comprehensive evaluation report will be submitted to the Wait Times Management Steering Committee at the end of May 2009. With the recent news of a 12-month extension, planning is under way to transition the successful components of this project into ongoing operations within Alberta Health Services. The project has been built on the key principles of integration, service coordination and process optimization, and these principles will continue to be incorporated in the months ahead. **HQ**

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Implementation and Evaluation of a Community-Based Medication Reconciliation (CMR) System at the Hospital–Community Interface of Care

Allan L. Bailey, Grace Moe, Jessica Moe, Ryan Oland

Abstract

The WestView community-based medication reconciliation (CMR) aims to decrease medication error risk. A clinical pharmacist visits patients' homes within 72 hours of hospital discharge and compares medications in discharge orders, family physicians' charts, community pharmacy profiles and in the home. Discrepancies are discussed and reconciled with the dispenser, hospital prescriber and follow-up care provider. The CMR demonstrates successful integration that is patient-centred and standardized, bridging the hospital–community interface and improving information flow and communication channels across a family-physician-led multi-disciplinary team. A concurrent research study will evaluate the impact of CMR on health services utilization and to develop a risk prediction model.

Introduction and Background

The WestView Primary Care Network (WPCN) is a joint venture between Alberta Health Services (AHS) Edmonton Area and the WestView Physician Collaborative (WPC), a not-for-profit corporation of 51 primary care physicians

serving a population of approximately 72,000 people in the suburban rural tri-communities of Spruce Grove, Stony Plain and Parkland County. Eighty percent of network physicians provide emergency (ER) and/or in-hospital care at the local AHS WestView Health Centre (WHC).

Hospital discharge and coordination of patient care present challenges to the family physician (FP) responsible for post-hospitalization follow-up. Nearly half (49%) of hospitalized patients experience at least one error related to medication or diagnostic testing following hospital discharge (Moore et al. 2003). In a prospective analysis by Coleman et al. (2005), 23% of 328 patients discharged from a Canadian in-hospital medicine unit had an adverse event(s) within 30 days of discharge. Among these events, 72% were medication related, 50% were considered preventable and 17% resulted in an ER visit or a hospital re-admission (Coleman et al. 2005). Deficiencies in communication between hospital providers and primary care physicians are frequent causes of post-discharge adverse drug events (ADEs; Kripanlani et al. 2007). Other studies demonstrate the need for multi-disciplinary medication reconciliation at hospital discharge (Nickerson et al. 2005; Vira et al. 2006; Wong et al. 2008).

In November 2008, the WPC/WPCN developed and implemented a WestView community-based medication reconciliation (CMR) system with the goal of reducing or eliminating the risk of preventable ADEs at the hospital–community interface. Using the WestView CMR system, multi-

disciplinary providers collaborate on standardized CMR processes that reduce risks associated with medication – prescription, dispensing and administration across settings. Implementation of the CMR system is guided by the principles of “high-reliability organizations” (Institute for Safe Medication Practices [ISMP] 2005). This initiative supports the patient-centred and integrated “learning organization” among the WestView healthcare provider communities. Furthermore, the initiative will develop coordinated connectivity and collaboration within and between settings and sectors at the resource, administrative, organizational and provider levels, resulting in a local culture that emphasizes patient safety.

This article provides an overview of the WestView CMR initiative, recounts the experience of its development and implementation, describes the evaluation plan and examines the program’s early successes and challenges.

Using the WestView community-based medication reconciliation (CMR) system, multi-disciplinary providers collaborate on standardized CMR processes that reduce risks associated with medication – prescription, dispensing and administration across settings.

Goals and Objectives

The first objective of this initiative is to develop the project “intervention” – a pharmacist-led medication reconciliation (MR) in the patient’s home. The second objective is to implement a standardized CMR program, which calls for multi-disciplinary adherence to consistent and reliable procedures defined for each point of care. The third objective is to evaluate the CMR program using a randomized controlled trial (RCT) to examine the impact of the intervention on health services utilization. Lastly, as a component of the RCT, this initiative intends to design a risk prediction model to assist in the selection of high-risk patients who would benefit from the resource-intensive intervention.

The Intervention: Pharmacist-Led Medication Reconciliation in the Patient’s Home

The intervention is a CMR carried out by a clinical pharmacist (CMR pharmacist) in the patient’s home within 72 hours of hospital discharge. Medication reconciliation is defined as the process of identifying and correcting medication discrepancies. Uniquely, the WestView CMR intervention is a community-based medication reconciliation process adapted from the ISMP Canada /Safer Healthcare Now (SHN) in-hospital medication

reconciliation process¹ (originally developed by the Institute for Health Improvement). A literature review of community-level interventions found no program or study that parallels the WestView CMR intervention in its entirety (Gardner et al. 2004; McGowan et al. 2001; Sorensen et al. 2004; Triller et al. 2003; Virani and Flanagan 2007).

During the home visit, the CMR pharmacist inventories and reviews all medications the patient is taking, including over-the-counter and herbal medicines, and removes expired and unused medications from the patient’s home (with the patient’s permission). The CMR pharmacist then compiles a best-possible medication history (BPMH) (Institute for Healthcare Improvement, n.d.), comparing actual home medications, hospital discharge medication orders, the patient’s medication list in the FP’s chart (electronic medical record or otherwise) and the patient’s current community pharmacy profile. A medication discrepancy tool (Smith et al. 2004) is used to track the cause(s) and contributing factor(s) – at patient and system levels – of each noted medication discrepancy. These discrepancies are discussed and reconciled with the dispenser, hospital prescriber and follow-up-care provider.

The final medication list is mailed to the patient following reconciliation with his or her physician. This final list is also distributed to the family physician, community pharmacy and AHS home care services (where relevant). The pharmacist also assesses the patient’s need for compliance packaging and educates the patient about keeping the medication list up-to-date, instructing him or her to take the list to all medical appointments, labs, the pharmacy and hospital visits.

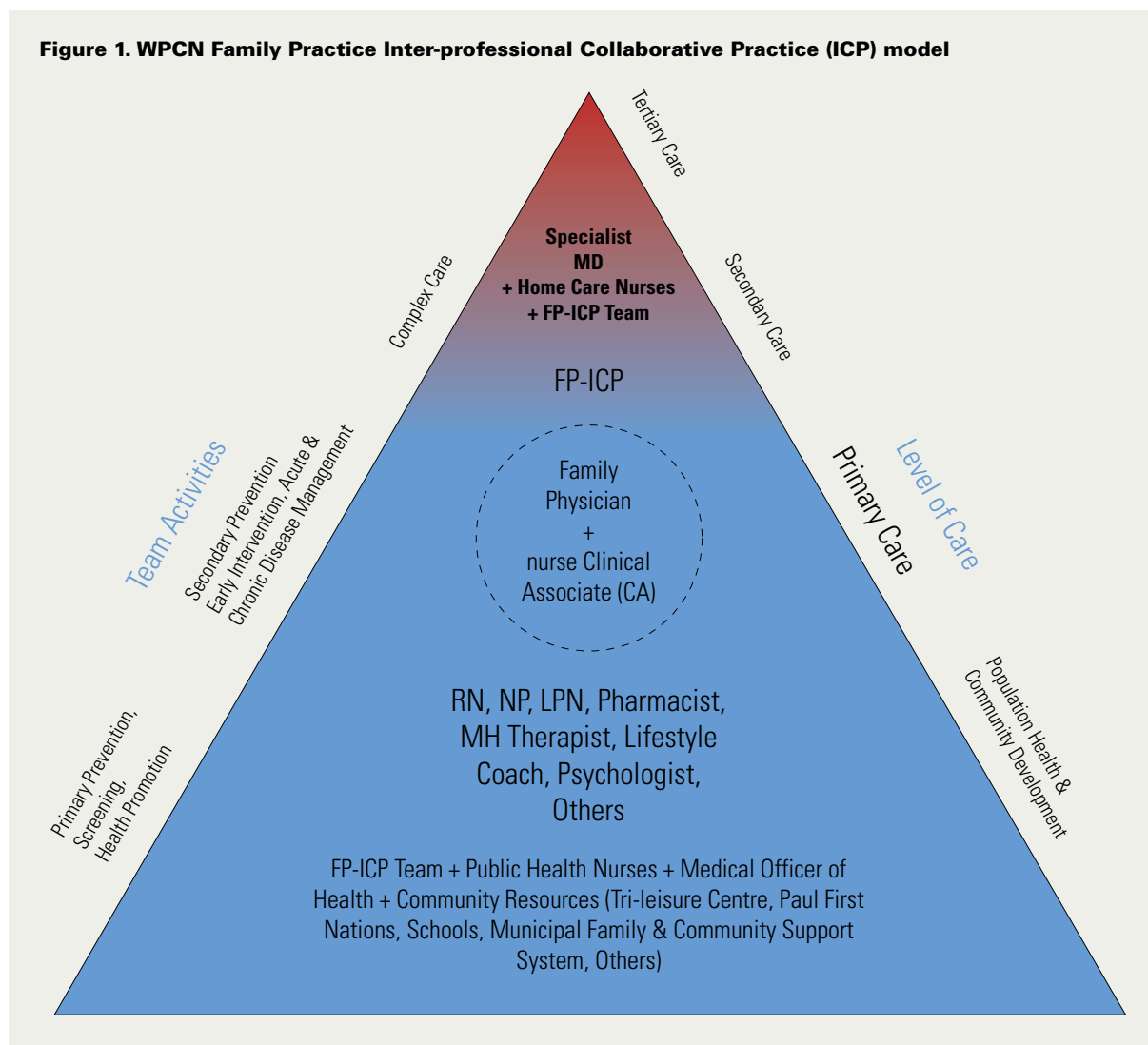
Design and Implementation of a Standardized CMR Program

While steps toward meeting the first objective are relatively simple, the second objective of this initiative – to establish and implement a standardized CMR program – is complex. It calls for multi-disciplinary adherence to consistent and reliable processes and procedures that have been defined for providers and disciplines involved at multiple points-of-care. It entails creating inter-organizational care requiring integration of systems and merging of resources across sectors. It brings together elements that were formerly complementary silos.

Methodology

Integrating organizational processes and infrastructure

At the hospital: The AHS – Edmonton Area piloted its first in-hospital MR project at the WestView Health Centre, Stony Plain, in 2006. The project was modelled after the ISMP Canada/SHN in-hospital medication reconciliation process.¹ Initially, the project involved reconciling admission medication only. Three years into implementation, AHS – Edmonton Area has expanded the project to include MR at discharge. Before

Figure 1. WPCN Family Practice Inter-professional Collaborative Practice (ICP) model

implementation of the CMR program, there was minimal communication of MR outcomes between in-hospital and community providers beyond the discharge summary.

At the family practice clinics: Prior to implementing the CMR program, physicians of the eight WPCN family practice clinics did not have an established system to track medication(s) prescribed for their patients by others. Community FPs, in particular those without hospital privileges, are dependent on the hospital discharge summary for developing a follow-up care plan. The discharge summary, however, is often not available in a timely manner. Information from ER may arrive at the FP office with illegible hand-written notes, if at all.

The FP's ability to reconcile the patient's medication list in the clinic's medical record with the new, actual medication list is further hindered by a lack of physician time and a shortage of

supporting personnel at the family practice clinic. Traditionally, the FP's only avenue for medication reconciliation was through "history-taking" during the patient's visit. The introduction of a WPCN-funded pharmacist to provide medication management/reconciliation services one day a week at each family practice, as described below, is a useful step toward supporting best practices for medication safety in the primary care setting.

At the WestView Primary Care Network: The WPCN has developed and implemented an FP Clinic-Based

Traditionally, the FP's only avenue for medication reconciliation was through "history-taking" during the patient's visit.

Inter-professional Collaborative Practice (CIPC) program, where nurses, pharmacists, a mental health therapist and other healthcare providers (OHCPs) are recruited as independent contractors working with FPs as clinical associates (CA).

The FP and CAs serve together as the patient's "Core Primary Care Providers," leading and coordinating the patient's needs, consulting with and referring to other health professional team members as relevant (see Figure 1. WPCN Family Practice Inter-professional Collaborative Practice [ICP] model).

The CA program was implemented in October 2006 and today includes a team of 16 full-time equivalent (FTE) nurses and 1.76 FTE pharmacists, among others, serving eight FP clinics and 51 physicians. These providers practise at the advanced end of their professional scope of practice, as regulated by their professional regulatory bodies.

Attending six of eight PCN family practice clinics one day a week, the PCN pharmacists provide services to challenging, complex and chronic care patients who have co-morbidities and are on multiple medications. Pharmacist services include structured medication review, drug education, consulting with providers and participating in interdisciplinary chronic-disease management clinics with clinic-based FP–CA teams.

The FP coordinates integrated patient-focused care, reducing isolated or compartmentalized types of professional care and creating a clearer definition of roles and responsibilities among team members.

The ICP program has built a clinic-based collaborative care team, which enhances implementation of the CMR program.

The WHC, the WestView area family practices, the WPC and the WPCN have each taken individual steps toward building a culture for patient safety and quality care. Optimizing pre-existing infrastructures of the three organizations and community pharmacies, the CMR program tracks each patient's journey across the continuum of care.

Integrating providers, service delivery and clinical care

The CMR intervention – a pharmacist-led MR in the patient's home – is one service component of the WPCN CIPC–pharmacist program. It supplements the MR process that already occurs at the local hospital (WHC). Though not formalized, and not performed consistently, WHC home care nursing performs informal MR at the patient's home as needed.

CMR requires collaboration among the WPCN-funded CMR pharmacist, hospital-attending physicians (if different

from the FP), the in-hospital MR team, hospital discharge coordinator, FP, FP clinic-based pharmacist, community dispensing pharmacist, home care nurse and the patient.

The WestView CMR model designates the patient's FP as the centre and lead of the interdisciplinary and intersectoral team. The FP coordinates integrated patient-focused care, reducing isolated or compartmentalized types of professional care and creating a clearer definition of roles and responsibilities among team members. The cross-sectoral CMR-provider network is organized and joined together by standardized referral and intake procedures, health and medication data collection and recording, shared information systems, and established communication tools and processes. Through partnerships facilitated by the WPCN with the various local healthcare providers and between the healthcare sectors (including the community, home care and hospital systems), this initiative captures many elements of successful integrated care (Leutz 1999; Kodner 2006).

A CMR operational working group is chaired by a community-based FP holding the position of both site medical director of the WHC and director of WPCN research and evaluation. The group includes members from the WHC – the in-patient MR project coordinator and site director; from the WPCN – the chief administrative officer, CA program lead, lead pharmacist and CMR pharmacist; and from the WPC – physician representatives from member clinics and the emergency department.

Integrating organizational cultures and merging of resources

Stakeholder incentives: Forty FP practising in eight clinics across the WestView region support the CMR initiative, with the expectation that the initiative will improve communication, optimize care and decrease liability to FPs providing follow-up care for discharged patients.

Healthcare professionals in collaborative practice with physicians in the community and hospital report their professional satisfaction with this initiative, which provides more reliable and consistent medication management. Community dispensing pharmacists are invited (many for the first time) to contribute to clinical care for clients they serve in the retail sector, and are valuable members of an integrated inter-organizational team.

Considering the joint benefits of improved patient care and safety and the promise of decreased future health services utilization due to ADEs, hospital site management was able to justify lending its support to the project.

Merging of inter-organizational resources: The WPCN CMR initiative complements the AHS in-hospital MR process. Starting with two-way communication between the in-hospital MR and CMR teams, a coordinated flow of information sharing then follows the patient's path along the continuum of care, including the patient's home. This process requires resources from multiple sources including private, public, provider and user.

The in-hospital MR was initiated three years prior to the introduction of the CMR. Only minor changes were required to support the WPCN CMR. The project was leveraged with minimal additional resources by utilizing AHS hospital staff already involved in MR and integrating the externally funded WPC-initiated research project processes.

The WPCN-funded pharmacist team conducts the home visit for the CMR as part of their defined duties and responsibilities. Funding for their time in this activity is derived in part from the research grant budget, which was awarded to the study principal investigator and is administered by the WPC.

Family physicians involved in the program receive faxed notification that their hospitalized patient has consented to the CMR intervention. They are reminded that the CMR pharmacist may contact them and that the clinic-based WPCN-funded pharmacist may conduct a structured medication review.

...the community-based medication reconciliation intervention is being evaluated through a randomized controlled trial involving patients discharged from the WestView Health Centre.

Integration and cost sharing of this project involved senior management in the WPC, the WPCN and their local partners at the AHS–WHC site. Their leadership by example encourages a culture of cooperation and striving for excellence among front-line interdisciplinary staff.

Evaluation: A Randomized Controlled Trial and a Risk Prediction Model

Funded by the Canadian Medical Protective Association Collaborative Research Grant, the CMR intervention is being evaluated through a RCT involving patients discharged from the WHC. The RCT is designed to determine the impact of the intervention on health services utilization for patients who receive standard discharge teaching *or* standard discharge teaching *and* a home-visit MR by a pharmacist within 72 hours of discharge. Patients discharged from the WHC are offered participation in the RCT during a 12-month recruitment period that started on November 1, 2008.

Outcome variables are health services utilization, including number of ER and hospital re-admissions, services provided by physicians and home care, and changes in care status over an 18-month period post-index discharge. A cost-effectiveness study will be conducted at completion of the study.

In order to guide future application and implementation of this resource-intensive intervention, the initiative will also design

a risk-prediction model. It will help identify patients discharged from inpatient care with the highest level of need for the intervention. Predictor variables measured at discharge include age; number of medications; number of chronic co-morbidities; admission to home care nursing follow-up; and cognitive, health and functional mobility status at discharge.

Results

At only five months into implementation, health services utilization data are not yet available for inferential analyses of the impact of the CMR on service and patient outcomes. However, it is evident that the project implementation process has created a number of positive partnerships that have integrated funding, resources, organizational structures, service delivery and clinical processes of multiple sectors.

Discussion: Lessons in Integration

The pre-existing in-hospital MR process is complemented by the WPC/WPCN-initiated CMR at the interface of hospital and community care. Together they represent an integrated solution across sectors and interdisciplinary boundaries to a problem that consumes significant healthcare resources and directly affects patient safety. This is being done seamlessly, with the FP at the centre of a dedicated team of local healthcare providers.

The CMR intervention is being piloted and rigorously evaluated as a result of managerial cooperation across different sectors and by organizations that hold similar values. These values include defragmenting care and optimizing patient-centred case management with efficient application of scarce resources.

Financial and human resources were brought together for this project by innovative cost sharing and by bridging agency support from the national level (CMPA) to the most local level (FP offices) through the infrastructure of the WPCN and the regional health authority.

The CMR initiative provides a strong example of how a model of enhanced integration can effectively address gaps in patient care at a transition point in the healthcare system.

According to Kodner and Spreeuwenberg's definition, the goal of patient-oriented integration 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" (2002, p.3). The CMR model observes these same principles.

CMR is fundamentally centred on the patient, whose safety and health experience continues beyond an acute care visit. Standards of patient care and of system-level efficiency require responsibility to the patient to extend beyond the hospital stay, including the return to the community and home.

CMR improves both quality of care and system efficiency by introducing standardized procedures that reduce potentially dangerous variations in post-discharge medication management.

CMR is a novel initiative that adapts standardized protocols for hospital medication reconciliation to the setting of patients' homes. It creates a flow of information from hospital MR to discharge coordinator, to clinical pharmacist, community pharmacist, patient and FP. Where none existed before, protocols have been defined at every point to streamline the identification, reporting and rectification of medication discrepancies.

The CMR program strengthens the continuum of care by linking health sectors and providers, with the patient and FP playing central roles. It bridges a discontinuity at the hospital–community interface and builds comprehensive patient-centred care founded on the grassroots capacity of FP–coordinated primary care teams. CMR recognizes that a compartmentalized system cannot meet individual health needs: separating primary care and acute hospital care into isolated silos is artificial and detrimental to the safety and quality of patient care.

This project has made changes that facilitate sharing information and creating new channels of communication among health providers. Moreover, CMR establishes new forums for broader collaboration in patient care. Finally, CMR has clearly defined other healthcare provider roles that improve patient care by ensuring adequate follow-up processes. The family physician is reinforced as the nucleus of information and principal agent in providing continuity of care in patients' healthcare experiences.

In order to guide future application and implementation of this resource-intense intervention, the initiative will also design a risk-prediction model.

The concept of building a “centre of excellence” (for delivery of primary care and inter-professional learning and research) permeates our healthcare community as a result of leadership and example in the hospital (WHC) and the WPC/WPCN. By engaging other healthcare providers in all sectors, we achieve performance far surpassing normal expectation – enabling projects such as this.

Conclusion

The CMR initiative and the funded-research CMR study (RCT) will provide new information about the effectiveness of a physician-led, multi-disciplinary-team approach to improving quality and safety around medication use by patients, especially at the interface of care between hospital and community. The statistical regression model, identifying risk predictor variables for those patients most needing CMR, will allow pharmacist services to be efficiently applied in the future. Implementing this intervention should result in a net saving in health services utilization.

Efforts to measure the CMR's impact as a patient-centred integrated care system should also include measures of patient or user-defined outcomes. The CMR should demonstrate ultimate patient acceptance and satisfaction, in addition to quality of care, effective management and cost-efficiency.

This project will provide an encouraging precedent for practising physicians or other healthcare providers interested in health system research in primary care. With the spreading umbrella of infrastructure support by Primary Care Networks across Alberta, we hope to see many more projects of this type.

Acknowledgement

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Note

¹ The Institute for Safe Medication Practices Canada (ISMP Canada), in partnership with the Safer Healthcare Now! Campaign (SHN) (<http://www.saferhealthcarenow.ca>) has adopted (with modification), for promotion in Canadian hospitals, the tools and measures originally developed by the Institute for Healthcare Improvement (IHI) for a standardized quality improvement process called medication reconciliation (<http://www.ihl.org>). The WestView CMR intervention uses the following terms with direct reference to their original definitions created by IHI:

Medication reconciliation “a formal process of obtaining a complete and accurate list of each patient's current home medications – including name, dosage, frequency and route – and comparing the physician's admission, transfer and/or discharge orders to that list. Discrepancies are brought to the attention of the prescriber and, if appropriate, changes are made to the orders. Any resulting changes in orders are documented.” The goal of medication reconcili-

ation is to monitor organizational success and to eliminate undocumented intentional discrepancies and unintentional discrepancies. This WestView CMR study adopts the IHI/SHN medication reconciliation for community practice as the study *intervention*. **HQ**

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Alberta's Systems Approach to Chronic Disease Management and Prevention Utilizing the Expanded Chronic Care Model

Sandra Delon and Blair MacKinnon on behalf of the Alberta Health CDM Advisory Committee*

Abstract

Alberta's integrated approach to chronic disease management programming embraces client-centred care, supports self-management and facilitates care across the continuum. This paper presents strategies implemented through collaboration with primary care to improve care of individuals with chronic conditions, evaluation evidence supporting success and lessons learned from the Alberta perspective.

To support patient-centred care, provincial CDM education is provided to health professionals to build skills and understanding of patient-centred care and communication techniques.

Introduction

Healthcare systems around the globe are challenged to respond effectively to the burgeoning impact of chronic disease on healthcare delivery systems and the health of communities. In Alberta, a need was identified for a system-wide, integrated and coordinated approach to care, which required engagement of healthcare providers, patients and the community at large. Work began to move toward redesign the healthcare system from a "reactive, acute, episodic" model of care to a "proactive, population-based, multi-disciplinary practice" model of chronic disease management (CDM) care. Many of Alberta's CDM programs utilize clinical pathways and algorithms to ensure continuity of care across the continuum, reduce clinical variance

and improve process management. Our partnership with and integration in primary care is key to strengthening team-based care and facilitating collaboration between providers. To support patient-centred care, provincial CDM education is provided to health professionals to build skills and understanding of patient-centred care and communication techniques. Individuals living with chronic conditions are provided with the skills, tools and knowledge they require to improve management of their condition in their context. The work to expand programming throughout the province continues and is enabled by current primary care reform efforts. This paper will discuss the current strategies in place based on the chronic care model and conclude with evaluation results and lessons learned.

Chronic disease management is a collaborative, community-based approach to improve health outcomes through better care coordination across the entire spectrum. The approach is based on a framework that covers health promotion, prevention, early

detection and primary, secondary and tertiary treatment. The elements of CDM are as follows:

- The patient is involved and supported in disease management, with ongoing follow-up and education.
- Services are provided in the community before chronic disease impacts on more complex acute care services.
- Care/service delivery are organized effectively to improve health outcomes.
- Care is appropriate care: the right provider, right time, right place.
- Care is integrated across organizational boundaries.
- Specialists act as advisors, mentors, resource.
- Care is evidence-based.
- Key patient data is accessed and transferred through information systems.
- A patient registry tracks outcomes.
- Performance measurement tools track quality of care indicators.

Chronic disease management programming is at various stages of development and implementation throughout Alberta. Through funding from Alberta Health and Wellness (AH&W), Calgary leads a province-wide dissemination project to build capacity and develop new competencies through collaborative planning.

Background to the Initiative

The Expanded Chronic Care Model (Figure 1) has been adopted across the province. This model builds on the Chronic Care Model developed during the 1990s at the MacColl Institute for Healthcare Innovation and the Robert Wood Johnson Foundation by placing greater emphasis on healthy public policy and community engagement and action (Barr et al. 2003). Both models identify the essential elements of a healthcare system that encourage high quality CDM and create practical and evidence-based interactions between an informed, involved patient and a prepared, proactive healthcare team (Improving Chronic Illness Care 2009). The core elements or pillars of the Expanded Chronic Care Model inform CDM programming across Alberta Health Services.

Delivery System Redesign and Integration

Chronic disease management programming is at various stages of development and implementation throughout Alberta.

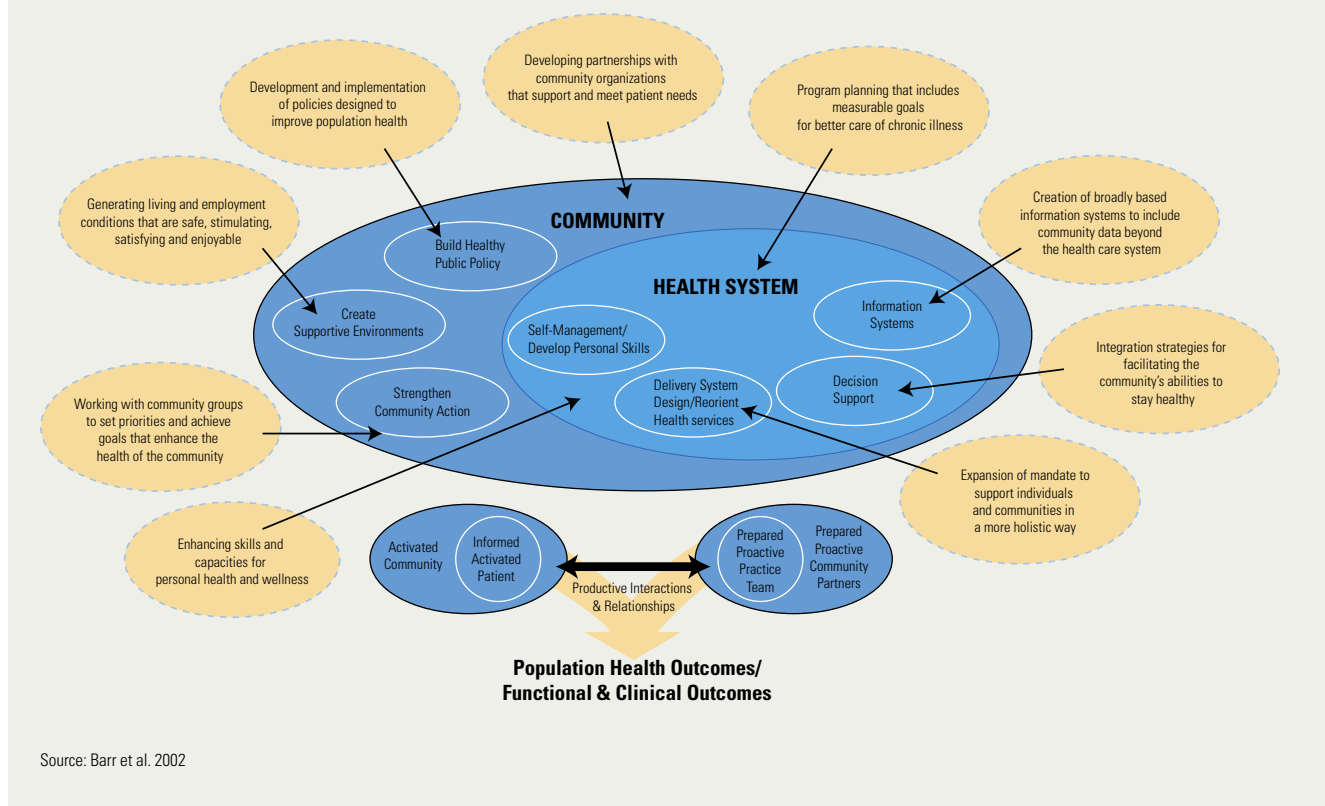
Through funding from Alberta Health and Wellness (AH&W), Calgary leads a province-wide dissemination project to build capacity and develop new competencies through collaborative planning. To support this initiative, a provincial CDM advisory committee was struck, with representation from across Alberta Health Services (AHS), CDM programs, AH&W and the Primary Care Initiative Office. The committee was charged with providing provincial strategic direction for CDM programming, including developing provincial key performance indicators, education to support disease-specific proficiencies and facilitation techniques, care planning, motivational interviewing and self-management. Members of the committee are also engaged in development of physician fee codes and online patient self-management support.

It was further recognized that concurrent efforts in primary care reform provided timely and essential infrastructure to the part of the system providing the bulk of support to people living with and self-managing chronic disease. This work is focused on improving primary care system access, efficiency and clinical care, particularly in the area of chronic disease (Nixon et al. 2006).

Evidence shows that clients with chronic disease do better when they see their own doctor and when the work of the physician is supported by interdisciplinary teams with clearly defined roles and responsibilities providing organized, integrated, planned and proactive care (Improving Chronic Illness Care n.d.). To improve organization of care, in the Calgary and Chinook areas, interdisciplinary CDM services were reorganized to deliver services in partnership with primary care physicians and teams. Linkages were facilitated through establishment of service agreements and development of care algorithms to define how work flows between team members, thus reducing clinical variance and improving process management. The Chinook area also aligned home care caseloads with primary care physician panels, connecting these important system partners to expand the support, education and monitoring of chronic conditions for clients in the home setting. Calgary's Chronic Disease Nursing support is integrated into primary care through co-location directly in family physician practices. Through collaborative care, the aim is to improve the management of people with chronic conditions and optimize their health and well-being, recognizing that individuals have a central role in managing their health. Providing patient-centred care, working with the individual to identify real and potential risks at the bio-psycho-social-cultural-spiritual levels, the nurse supports the individual in health behaviour change, providing the knowledge, tools and skills, and facilitating referrals to the multi-disciplinary team, services and programs. This type of system integration allows for the efficient use of existing resources and for capacity-building in primary care teams and other community-based providers, around CDM best practices.

Coordinated care plans that specifically recognize and

Figure 1. Expanded chronic care model



support the patient's goals are a key to robust chronic disease care service delivery systems. The Flinders Model, developed at Flinders University, Australia, provides physicians and health-care providers with skills and tools to support their patient in self-management through the collaborative development of care plans. In early 2007, Edmonton sponsored two training workshops for providers in the Flinders Care Model. Since that time, the CDM Advisory Committee has facilitated a provincial rollout to health professionals in Alberta.

In Edmonton, evidenced-based criteria with pan-Canadian applicability have been established and implemented in the development of a community network focusing on weight management.

Strengthening Community Action

The work under this element has focused on integrating community organizations as part of the healthcare continuum to support chronic disease patients in managing their conditions as close to

home as possible. In Edmonton, evidenced-based criteria with pan-Canadian applicability have been established and implemented in the development of a community network focusing on weight management. The network comprises 27 organizations from for-profit and not-for-profit healthy-eating and active-living service/programs and mental health supports that extend the ability to link patients to weight management and activity programs. This work is being leveraged to include programs and services for individuals with various chronic conditions.

To further develop the community arm of the Chronic Care Model, strengthening community action and capacity, the Aspen area worked on developing The Aspen Rural and Aboriginal Community Engagement – Framework for Wellness, which shifts decision making to more adequately reflect community input, needs and capacity. The framework was completed in late 2008 and serves as a guide for decision makers working with rural and Aboriginal communities.

In many regions, it has been recognized that those most in need of CDM services are in marginalized communities consisting of people who do not necessarily present for care. This has been a consistent theme in the Lethbridge area, and, consequently, the Building Healthy Lifestyles (BHL) CDM

program has committed to a philosophy of “getting out there,” taking services to places and people in a more proactive manner. Process improvement work in the Primary Care Initiative in Chinook created opportunities for the program to maximize efficiencies and leverage expert chronic disease resources for this greater benefit. For example, the program has built on its established diabetes initiatives with the Aboriginal population and initiated partnerships with Aboriginal community care partners in the Blood and Peigan communities around improving local capacity to provide care for heart failure clients through a “Heart Failure Network.”

Create Supportive Environments and Healthy Public Policy

Sustainable and positive change in the health of communities, families and individuals is created in partnership with sectors beyond healthcare and in environments supported by healthy policy. In the Lethbridge area, the BHL CDM program is participating in the creation of healthier communities by taking a leadership role in the Lethbridge Healthy Communities Steering Committee. This group has representation from local businesses and the non-profit sector as well as municipal government, all working together with healthcare and population health professionals to develop a strategic vision to promote health in the region.

Self-Management Support

This pillar focuses on supporting patients to gain the knowledge and skills required to manage their chronic condition to the best of their ability. This can be accomplished through strategies targeting both self-management skills and disease-specific education for patients as well as by supporting self-management and coaching skills for health providers.

Alberta Health and Wellness provided funding to support communities across the province in establishing trainers to deliver the Stanford Chronic Disease Self-Management Program (SCDSP) to individuals with chronic conditions. The support includes advanced training of key individuals across the province in order to secure ongoing training and provincial capacity. In addition to the generic program, AH&W has supported cross-training key leaders in the diabetes-specific version. Currently the Stanford self-management workshops are available in many regions such as Aspen, Calgary and Edmonton. Edmonton secured training in the new chronic pain version of the Stanford program, of which AH&W is supporting further offerings across the province.

The prevalence of chronic illness in teens and young adults is on the rise in Alberta. The period of transition from pediatric to adult care is a particularly vulnerable time, and young patients often manage their illnesses poorly during that phase. In the summer of 2007, Edmonton formed a development team of

staff from the Chronic Disease Program, and the Primary Care Division along with a group of youth “champions” created the world’s first derivative of the SCDSP. The program is designed to support youth and young adults in transitioning from the pediatric healthcare system to the adult system, from adolescence to adulthood, and from wellness to a new life with a chronic condition. The work of the team included training youth as lay leaders, revising workshop materials and participant workbooks, developing concurrent parent workshops so parents can mirror their adolescents’ learning, and developing a train-the-trainer manual, a training agenda and evaluation framework. Edmonton, Calgary and Winnipeg are currently engaged in pilots of the “Be Your Own Boss” program. This work has been completed with the assistance of the Stanford University Patient Education Centre which, in turn, has endorsed this derivative of their own model of care for adults, and will licence it for use worldwide under their banner.

In Calgary, the Living Well with a Chronic Condition Program provides disease-specific education for diabetes, hypertension, dyslipidemia, chronic pain, COPD (chronic obstructive pulmonary disease), arthritis, osteoporosis, breast health and cognitive impairment, as well as generic education in physical activity, healthy nutrition, weight management and smoking cessation.

Patient Education

Education sessions for individuals with chronic conditions have been developed and implemented across the province. As indicated earlier, many of the education sessions are offered in community settings. Examples of patient education in Alberta are outlined below.

In Edmonton, classes are available for patients to support healthy eating, active living and positive mental health approaches for healthy weight management, as well as a series of education classes for patients with diabetes.

In Calgary, the Living Well with a Chronic Condition Program provides disease-specific education for diabetes, hypertension, dyslipidemia, chronic pain, COPD (chronic obstructive pulmonary disease), arthritis, osteoporosis, breast health and cognitive impairment, as well as generic education in physical activity, healthy nutrition, weight management and smoking cessation. Through partnerships with numerous specialty clinics and community organizations, Living Well delivers over 500

education sessions per year at more than 25 urban and rural sites. The program continues to expand, with plans to bring on partners working with other chronic conditions such as Parkinson's disease. These partnerships allow the specialty clinics to disseminate their programs broadly and triage their low-risk clients to group education, increasing the availability of one-on-one resources for higher-risk clients.

...partnerships allow the specialty clinics to disseminate their programs broadly and triage their low-risk clients to group education, increasing the availability of one-on-one resources for higher-risk clients.

Living Well's supervised exercise programs for individuals with a chronic condition is offered at 16 community-based recreation facilities and community centres (5 rural and 11 urban). Classes are led in partnership with community fitness leaders and an AHS inter-professional team. Over 1200 clients per year take part in the exercise programs, and participants have the option to continue in maintenance programs independently administered by the community partners. In addition to supervised exercise programs, the Living Well program also offers dietitian and social work counselling services in primary care health centres and community-based sites. Ease of access is an underlying principal for the entire Living Well program, and over 30% of participants self-refer.

The Calgary COPD and Asthma program is a comprehensive program to improve care and teach self-management to adults with asthma, COPD or chronic cough, and smokers at risk. Education is provided by Certified Respiratory Educators and offered one-on-one or in a group setting in primary care offices, ambulatory care clinics, workplaces and community-based sites. Over 2500 clients per year receive services that may include spirometry testing, self-management education and smoking-cessation counselling.

In the Lethbridge area, a wide array of classes are offered by the BHL CDM program, including healthy lifestyle and condition-specific and integrated vascular protection programming around heart failure, heart attack, diabetes, hypertension, respiratory disease and obesity. All educational offerings are open to well people, those with chronic-disease risk factors, or those living with chronic disease seeking specific information. The program also works in collaboration with primary care to deliver education and support in a variety of ways including classes, group clinical visits alongside the physician, or one-on-one counselling with clients.

The Aspen area provides the Living Well Prevention and

Management Program, closely aligned with the Calgary Living Well program with modifications to adapt to rural population. The Living Well programs are intended to support healthy lifestyles, improve the health of people living with chronic conditions and reduce the financial impact on the health system. The program consists of exercise, self-management and education to support participants in developing knowledge, skills and confidence to better manage their daily health challenges.

Programs are designed for adults 18 years and older living with a chronic condition, as well as family members or caregivers. The exercise program provides support for participants to incorporate safe and effective physical activity into their daily life and is currently offered in cooperation with community partners at community sites in Hinton, Westlock, Slave Lake and Bonnyville. There is no cost to participants to attend the programs.

Decision Support

Significant work has occurred across the province to create and provide a variety of training supports for CDM providers. The Provincial CDM Advisory Committee, as part of their mandate, has developed education to support providers. Three education components are currently available, developed from work that already existed within Alberta. Introduction to Chronic Disease Management, an online education module, and two experiential skill development workshops, Chronic Care Skill Development and Flinders Care Planning, are available free to health providers in Alberta. Further work is under way to offer online disease-specific provider education and a single access point for tools and resources.

Lethbridge researched and developed clinical care guides around common chronic conditions (diabetes, hypertension, chronic disease risk factors, asthma, COPD and dyslipidemia). These concise and consistently formatted decision supports for healthcare providers guide interdisciplinary work with chronic disease clients and are reviewed and revised as needed, based on the release of updated Canadian guidelines.

In Edmonton, the Diabetes Program supports primary care physicians and other healthcare professionals in their management of patients with diabetes through access to real time advice in patient management via the Diabetes Information and Advice Line (DIAL), which is also accessed by service providers across the province.

Clinical Information

To support the management of patients with chronic conditions, service providers identified the need for a chronic-disease management registry. Calgary and Edmonton collaboratively developed a proposal and successfully secured funding from Canada Health Infoway to advance the development of the CDM registry, a patient summary for the Alberta Netcare

Portal (electronic health record) and dashboard reporting. This initiative incorporated the initial registry work with web-based summary tools to assist service providers to proactively manage their population of patients with chronic diseases. These dashboards help providers easily identify patient care needs, develop effective care plans, assist providers in monitoring care quality against clinical best practices, and improve communication between family practice and the multi-disciplinary team. These tools were successfully launched in a limited rollout in July 2008. Current users of the system report they have the tools needed to identify at-risk or highest-risk patients – information to guide proactive management and information on management of their patient population. Plans are under way to expand the registry and reporting tools to other disease conditions and to other users across the province.

Summary

Alberta's CDM strategy recognizes the individual's cultural traditions, personal preferences, beliefs and lifestyles in care. Patients and their families are integral to the care team and actively involved in shared-care planning and decision making that is in keeping with their preferences. Collaboration, communication and care transitions are improved with algorithms and clinical pathways that map processes and define care roles across the continuum. Alberta's Chronic Disease Management programs are well established and showing significant results. Evaluation is a core component of the Calgary CDM program and has demonstrated improved clinical outcomes and increased access to services, as well as decreased acute care utilization and length-of-stay costs (Briggs 2009). Examples include:

- A 17% increase in the percentage of diabetic patients with A1_c control (from 40% to 56%) between baseline and one-year follow-up
- A 13% increase in the percentage of dyslipidemia patients with triglyceride control (from 34% to 47%) between baseline and one-year follow-up
- A 19% decrease in patients with a COPD-related exacerbation resulting in an inpatient hospitalization (from 320 to 260 per 1000 patients) between baseline and one-year follow-up
- A 41% decrease in inpatient hospital admissions across all patients (from 380 to 224 per 1000 patients) between baseline and one-year follow-up
- A 34% decrease in emergency department visits across all patients (from 755 to 495 per 1000 patients) between baseline and one-year follow-up (Briggs 2009)

The CDM evaluation framework serves to inform program development and improvement. Provincially work is under way to develop indicators to allow for system-wide clinical and

process effectiveness and efficiency evaluation. As evidenced by the outcome measures, a multifaceted CDM approach that engages individuals, families, communities and health systems is effective. Alberta's key lessons learned have been to clearly identify program admission criteria and the roles and responsibilities of providers. It is essential to establish structured processes for organizing care, communicating, supporting transitions and informing clinical decision making to reduce clinical variance. To successfully engage and support patients in self-management, a patient-centred coaching approach throughout the health system is needed. Work to disseminate knowledge, skill development and to support CDM programming across Alberta will continue under the guidance of the Provincial CDM Advisory Committee. While the focus has been on management of conditions, future efforts will be placed on strengthening prevention and screening in the Province. **HQ**

Author's note

The above case study was completed prior to the centralization of Alberta's nine geographically based health regions and three provincial entities working in the areas of mental health, addictions and cancer.

Note

Alberta Health CDM Advisory Committee

Dr. Sandra Delon, Alberta Health Services, Calgary; **Allison P. Taylor**, Alberta Health Services, Calgary; **Dawn Estay**, Alberta Health Services, Capital; **Stephanie Kelly-Donaldson**, Alberta Health Services, Capital; **Louise Morrin**, Alberta Health Services, Calgary; **Cindy Colbourne**, Alberta Health Services, Aspen; **Shannon Spenceley**, Alberta Health Services, Chinook; **Dr. Tom Briggs**, Alberta Health Services, Calgary; **Madge Applin**, Alberta Health Services, Northern Lights; **Celina Dolan**, Alberta Health Services, Calgary; **Elaine Finseth**, Alberta Health Services, East Central; **Jill Forsyth**, Alberta Health Services, Palliser; **Angela Fulton**, Alberta Health Services, David Thompson; **Brad Jones**, Alberta Health Services, East Central; **Donna Koch**, Alberta Health Services, Peace Country; **Dr. Richard Lewanczuk**, Alberta Health Services, Capital; **Barb Lockhart**, Alberta Health Services, Chinook; **Blair MacKinnon**, Alberta Health & Wellness; **Chris Malo**, Alberta Health Services, David Thompson; **Amarjit Mann**, PCI Program Office, Edmonton; **Ruth Marr**, Alberta Health Services, David Thompson; **Wendy McLean**, Alberta Health Services, Aspen; **Lori Mitchell**, Red Deer Primary Care Network; **Trina Noskey**, Alberta Health Services, Peace Country; **Aimee Poole**, Alberta Health Services, Northern Lights; **Dr. Peter Sargious**, Alberta Health Services, Calgary; **Yong Shi**, Alberta Health Services, Peace Country; **Elly Webster**, Alberta Health Services, Chinook; **Christine Witt**, Alberta Health Services, East Central.

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