

An interim analysis of SCN return on investment, value and impact 2012–2019



Alberta's Strategic Clinical Networks: ROI, Value and Impact 2012–2019

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Executive summary

► **Over the past seven years, Alberta's 16 Strategic Clinical Networks (SCNs) have contributed to improved care and health outcomes for the people of Alberta.** Working with frontline teams and operational partners, SCNs have executed projects that have resulted in significant health system savings and laid the groundwork for future health system improvement. This report discusses the cumulative impact of this work and provides an interim analysis of SCN return on investment (ROI). It includes a detailed and rigorous evaluation of cumulative SCN costs, benefits and value based on projects initiated between 2012 and March 31, 2018.

► **Since 2012, Alberta's SCNs have delivered a positive return on investment while expanding their reach and impact to many areas of health.** The SCNs track and report on costs, benefits, ROI and health system savings for all projects. The 15 projects included in this analysis all contributed positive savings to Alberta's health system, with an estimated total gross savings of \$178.74M as of March 31, 2019. These reflect direct cost savings (\$16.41M) for Alberta Health Services (AHS) as well as cost avoidance through improvements in health service utilization (e.g., reduced length of stay and readmissions). To date, these improvements have freed up more than 143,800 hospital bed days (the equivalent of operating 13 inpatient units for one year) and enabled AHS to address capacity and other operational pressures (e.g., surgical uplift). Total cumulative costs of the SCNs (fiscal year 2012/13 to 2018/2019) were estimated at \$116.26M, for a net savings of \$62.47M. These results show a cumulative return on investment of 1.54; meaning that for every dollar invested to date, Alberta's SCNs have contributed a \$1.54 return in health system savings.

► **The analysis used rigorous methods and incorporated a higher degree of conservatism than previous estimates.** Results are reported cumulatively based on the number of patients impacted by an intervention. This interim evaluation includes a comprehensive analysis of SCN costs, including project costs as well as startup and operating costs, core infrastructure and administrative support. To account for uncertainty, we conducted scenario and sensitivity analyses, which consistently showed a positive return on investment (range 1.05 to 1.66).

► **SCN contributions have provided significant value to AHS and the people of Alberta beyond direct health system savings.** This work has led to significant improvements in patient outcomes, the safety and quality of care, access, and the experiences of patients, families, and care providers. The SCNs have also provided significant value to AHS through clinical pathway development and guidance that embeds evidence into care across Alberta.

Since 2012, the SCNs have either led or been a major collaborator in clinical research that has brought \$65.84M in grants to Alberta from outside the province as well as \$58.27M from agencies within Alberta (non-AHS funding). Through these grants, AHS is able to drive further health system innovation, savings and improvements and support key strategies such as enhancing care in the community, improving transitions in care and access to specialists.

Alberta's SCNs intend to build on this work and have developed an action plan for the next five years that focuses on maximizing their reach, impact and value. The SCNs will continue to track and report on costs, benefits and health system savings for all projects. An updated analysis on ROI is planned for 2020.

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2012–2019

Addiction & mental health
Bone & joint health
Cancer
Cardiovascular health & stroke
Critical care
Diabetes, obesity and nutrition
Digestive health

16
SCNs

Seniors health
Surgery

Emergency
Kidney health
Maternal, newborn, child & youth
Neurosciences, rehabilitation & vision
Population, public & Indigenous health
Primary health care integration network
Respiratory health



Serving
4.3 million
Albertans



\$116.26M cumulative SCN costs



\$178.74M gross savings

\$62.47M in net health system savings*

143,856 estimated bed days avoided*

= A \$1.54 RETURN FOR EVERY \$1 INVESTED

**Interim result based on 15 projects. Bed days avoided equate to 13 inpatient units for one year.*

Plus:

- Rapidly testing and implementing innovations proven to improve health
- Advancing knowledge • Scaling best practices

\$65.8M

in grants from outside Alberta

\$58.2M

in external (non-AHS) funding support

Improved outcomes, patient safety, experience and value

THE QUADRUPLE AIM

Significant contributions that support AHS in:

- getting evidence into care
- standardizing clinical guidance
- driving health innovation provincially



Abbreviations

AHS	Alberta Health Services	ICU	intensive care unit
AMH	Addiction and Mental Health	iNO	inhaled nitric oxide
AUA	Appropriate Use of Antipsychotics	LOS	length of stay
BBIT	Basal Bolus Insulin Therapy	LTC	long-term care
CIHR	Canadian Institutes for Health Research	M	millions (of dollars)
CMO	Chief Medical Officer	MNCY	Maternal, Newborn, Child and Youth
COEC	Clinical Operations Executive Committee (AHS)	NRV	Neurosciences, Rehabilitation and Vision
COPD	chronic obstructive pulmonary disease	NSQIP	National Surgery Quality Improvement Program
CPSM	Contracting, Procurement and Supply Management (AHS)	PD	peritoneal dialysis
CR	community rehabilitation	PHC	Primary Health Care
DIMR	Data Integration, Measurement and Reporting (AHS)	PHCIN	Primary Health Care Integration Network
DMAR	Dialysis, Measurement, Analysis and Reporting	PPIH	Population, Public and Indigenous Health
DMP	discharge management plan	PRIHS	Partnership for Research and Innovation in the Health System
DON	Diabetes, Obesity and Nutrition	QSEC	Quality and Safety Executive Committee (AHS)
DSL	designated supportive living	RLS	Reporting and Learning System
ERAS	Enhanced Recovery After Surgery	ROI	return on investment
ESD	early supported discharge	SAP	Stroke Action Plan
EVT	endovascular therapy	SCN	Strategic Clinical Network
fFN	fetal fibronectin	START	Starting dialysis on Time At home on the Right Therapy
HD	hemodialysis	SUEC	stroke unit equivalent care
HIIS	Health Innovation, Implementation and Spread	TIA	transient ischemic attack
HSU	health service utilization		
HTAI	Health Technology Assessment and Innovation (AHS)		

Introduction

Alberta Health Services (AHS) launched Strategic Clinical Networks™ (SCNs™) in 2012 to drive health system improvement and innovation across the province. SCNs function as integrated teams that are enabled by a single, integrated health system. Collectively and individually, the networks support AHS's vision, mission and values and are helping deliver on its commitment to the Quadruple Aim. Over the past seven years, the SCNs have contributed to improved care and health outcomes for the people of Alberta. The SCN Retrospective (2019) profiles some of these achievements and the partnerships that have enabled this work.

Our work has also contributed significant health system savings and laid the groundwork for future health system improvement. Rigorous evaluation and data collection, including return on investment (ROI), are part of all projects, and the SCNs continue to monitor cumulative costs and savings resulting from practice changes and their impact on health system resources, health service utilization, patients and families. This report presents an updated evaluation of the cumulative impact of this work and value for money SCNs have provided to date. It includes a detailed review of SCN project and operating costs, benefits (monetary and non-monetary) and provides an updated analysis of ROI. We have provided an interim analysis in advance of a more comprehensive report on ROI that will be released in 2020.

Objectives



This report provides an interim evaluation of interventions and health system improvements led by Alberta's SCNs and operational partners. Specifically, it:

- analyzes the cumulative SCN return on investment for high priority projects initiated between 2012 and March 31, 2018
- discusses non-monetary benefits of this work as well as other SCN contributions and value

Growth and evolution of Alberta's SCNs

Alberta's 16 SCNs provide a mechanism for clinicians, patients, operational leaders, researchers, communities and other stakeholders to work together to solve health challenges and get evidence into practice to improve health outcomes, clinical care and health system sustainability. Each SCN targets a specific area of health and focuses on priority needs (Figure 1). For details on the growth and development of SCNs, and their impact on health outcomes, see *Alberta's Strategic Clinical Networks: Past, Present, Future* (AHS 2019a) and *Improving Health Outcomes: SCN Retrospective 2012-2018* (AHS 2019b) (available at www.albertahealthservices.ca/scns/scn.aspx).

When the first SCNs launched in 2012/2013, each SCN identified a signature project based on evidence of unwarranted variation in clinical care, inequity, gaps, or areas of high impact and provincial reach. They also identified opportunities to reassess (and in some cases discontinue) clinical practices that did not provide value. A comprehensive analysis of ROI for these first nine SCN projects was completed in 2015.

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This analysis estimated cumulative savings of over 43,000 bed days (a savings of \$28M) plus \$15.2M in direct cost savings, for a total of \$43.2M in health system savings.

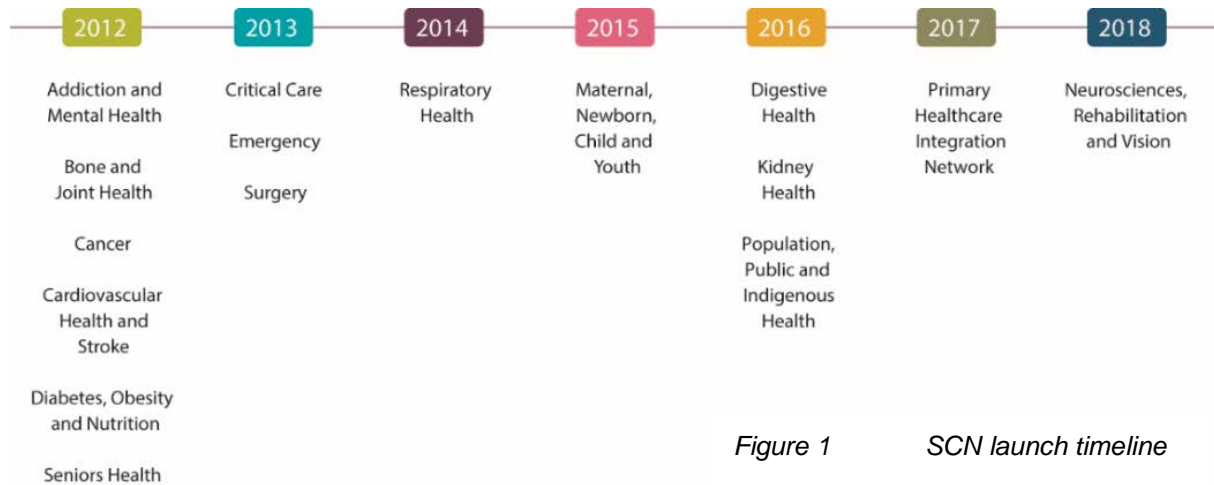


Figure 1 SCN launch timeline

Some SCNs are now in their seventh year and have developed processes and partnerships that support rapid learning, evaluation and implementation of health system improvements. We therefore assessed ROI cumulatively and collectively across SCNs.

The growth phase for Alberta's SCNs is now complete and the networks are well positioned to increase their reach and impact. All projects are evidence-based and require detailed business cases, outcome and performance measures, and rigorous review. These rigorous project approval processes support effective decision-making, planning, execution and enable us to assess ROI once a project is mature.

Methods

This analysis evaluates ROI from an AHS perspective and considers costs and benefits incurred by AHS, its patients and the people of Alberta. It estimates benefits (in terms of cost savings) to Alberta's health system generated by SCN-led work and compares these to the investment (costs) in SCNs to date.

We took a conservative approach in assessing the value and impact of SCN work by evaluating the short-term benefits of a limited number of projects, including the impacts on health service utilization (HSU) (e.g., changes in complication rates, length of stay, emergency room visits), but accounting for all SCN costs (i.e., start-up, core infrastructure and operating costs) as well as direct costs of the strategy, intervention and specific therapies. We also assessed uncertainty, where relevant, and considered multiple cost scenarios. For details, see Appendices A and C.

In most cases, the clinical and economic data used to evaluate the impact of SCN projects was obtained from AHS administrative databases. The cost of SCNs and SCN projects was from AHS Finance and Business Advisory Services. Where gaps existed, AHS costs were paired with provincial costing information and published studies from Alberta. Unit costs and data sources used in evaluating ROI are listed in Appendix B.

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Because the impact and value of SCN work extends beyond monetary benefits to AHS, this evaluation also considered non-monetary benefits, such as improvements in quality of care, patient safety, health outcomes, and the experiences of patients, families and care providers. These benefits were not monetized, and not included in the ROI analysis, but are discussed separately.

Estimating return on investment based on selected SCN projects

Project criteria and selection

ROI was analyzed based on 15 SCN-led projects that were provincial in scope and mature enough to enable a rigorous and transparent assessment on health outcomes and costs. These included signature projects funded by AHS, those focused on clinical pathways, care protocols or appropriateness, and disinvestment opportunities (including AHS priority initiatives). All projects were initiated prior to April 1, 2018, enabling at least one-year follow-up. For project descriptions and other details, see Appendix E.

ROI analysis

The time horizon for the ROI analysis is from 2012 to March 31, 2019. HSU was estimated for the population of patients managed in the year(s) before the strategy, and the years after the strategy, accounting for temporal trends in HSU prior to the intervention where possible (for details, see Appendix A). For each project, we assessed the short-term impact of each intervention on a patient's HSU over one year or less. Results are reported cumulatively. Because the analysis focused on short-term benefits, discounting was not applicable.

Only monetary benefits are included in the ROI analysis. These included (i) savings resulting from changes in HSU, and (ii) savings resulting from disinvestments or discontinuation of ineffective health services and technologies. These benefits were compared to the costs of SCNs (including project and administration costs) to estimate the net monetary benefit (*benefits – costs*) and ROI (*benefits / costs*). Where possible, costs and savings per patient were taken from published reports of SCN projects. Where this information was not available, we measured the impact on HSU using Alberta data, with the changes in HSU multiplied by a respective unit cost to calculate the costs or savings. For projects relating to disinvestments of ineffective services or technologies, we estimated total cost savings by multiplying the number of people that would have used the ineffective intervention by its cost. For further detail on methods, see Appendix A. For project-specific information, see Appendix E.

Assumptions and limitations

Costs or savings per patient were assumed to continue after project initiation to March 31, 2019. Many indirect benefits and outcomes are challenging to measure, quantify or monetize, particularly if the benefit is realized over time (e.g., reductions in future bone fractures). The ROI update planned in 2020 will include further analysis of long-term savings, which are not quantified in this interim report. Because this analysis uses an AHS perspective, we have not included physician costs, which are paid by Alberta Health. As with all observational analyses, it is possible that a portion of the impact may be due to other temporal changes.

Estimating costs of SCNs and selected projects

We used data provided by AHS Finance and Business Advisory Services to estimate the cost of SCN projects and operating an SCN. This includes the cost of core infrastructure, including SCN leadership, Scientific Office and operational staff since the SCNs' inception. Additional resources required to implement or accommodate changes in practice were funded through SCN budgets and included in the total project and SCN costs.

Given limitations in differentiating core SCN costs from project costs, we estimated benefits at a project level, but aggregated project costs and core SCN costs at an SCN level. Because not all SCNs have a project included in the ROI analysis, and some SCNs have more than one project included, we compiled the total costs by SCN and by year to reflect the total investment to date (Appendix C). Net monetary benefit and ROI are determined at an overall SCN level.

The Base Case analysis of ROI includes costs of the 15 projects evaluated and the full core infrastructure, administrative and operating costs of SCNs that had those projects. It does not include costs of other SCN projects, costs of SCNs without any selected projects, and costs for support services (e.g., AHS Finance, IT, DIMR), though these costs are included in two scenario analyses (Appendix A).

Evaluating non-monetary benefits and impact

Other benefits of SCNs, including the non-monetary benefits of specific projects and interventions (e.g., improvements in health outcomes, quality of life, patient safety and the experience of patients, families and care providers) are discussed and reported in the project-specific evaluations (Appendix E).

We also report on benefits and contributions SCNs provide to AHS and the people of Alberta beyond specific projects (e.g., clinical guidance that embeds evidence into care, clinical pathway development, standardized clinical education, educational resources for patients and families). We detail grant funding SCNs have received that support local investments in health research, training and capacity building that benefits all Albertans. This includes grant funding received by SCNs or by university researchers where SCNs have led or been a major collaborator.

Results and discussion

Estimated benefits and SCN return on investment

Table 1 presents results of the Base Case analysis to March 31, 2019. Gross savings per patient, number of patients impacted, and total gross savings are reported for each project. Cumulative SCN costs, net savings and ROI are also included. All 15 projects contributed positive savings to Alberta's health system (see Appendix E for detailed results). Projects that contributed the greatest savings were the Hip and Knee Pathway (\$72.25M), ERAS (\$22.85M), NSQIP (\$19.74) and the Stroke Action Plan (\$17.02M).

Based on the 15 projects included in the Base Case, we estimated the total gross savings to be \$178.74M. Of this, \$16.41M represents direct cost savings for AHS and the remainder represents savings from cost avoidance and improvements in HSU (e.g., reduced length of stay, hospital readmissions). This

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has freed up hospital beds and enabled AHS to address capacity and other operational pressures (e.g., surgical uplift).

Total cumulative costs of SCNs that have a project included in the analysis were estimated to be \$116.26M, for a net savings of \$62.47M. Based on these results, the cumulative return on investment ratio was estimated at 1.54; meaning that for every dollar invested, Alberta's SCNs have provided a \$1.54 dollar return. These savings reflect direct cost savings for AHS and increased value for the people of Alberta through increased capacity, access and quality of health services.

Table 1 Net benefit and SCN return on investment to March 31, 2019 – Base Case

SCN	Projects ^(a)	Gross savings per patient (\$)	# of patients impacted	Total gross savings (\$M) ^(b)
Bone & Joint	Hip and knee pathway	\$ 858	84,200	\$ 72.25
Cancer	Head and neck cancer pathway	\$ 8,773	791	\$ 6.94
	Same-day mastectomy pathway	\$ 125	2,887	\$ 0.36
Cardiovascular Health & Stroke	Stroke Action Plan (SAP)	\$ 2,480	6,864	\$ 17.02
	Increased use of endovascular therapy (EVT)	\$ 42,287	174	\$ 7.36
Critical Care	Replacement of iNO with Epoprostanol (Flolan®)	-	-	\$ 0.49
	Provincial ICU delirium initiative	\$ 7,618	684	\$ 5.21
DON	Basal bolus insulin therapy	\$ 1,148	11,106	\$ 12.74
Kidney Health	START project	\$ 2,670	1,565	\$ 4.18
MNCY	Disinvestment in fFN testing	\$ 319	6,186	\$ 1.97
Respiratory Health	Disinvestment in water bottle humidification of O ₂	-	-	\$ 0.67
	COPD standardized order set and discharge bundle	\$ 958	1,661	\$ 1.59
Seniors Health	Appropriate use of antipsychotics in LTC and DSL facilities	\$ 417	12,840	\$ 5.35
Surgery	National Surgery Quality Improvement Program (NSQIP)	\$ 495	39,854	\$ 19.74
	Enhanced Recovery After Surgery (ERAS)	\$ 2,305	9,913	\$ 22.85
Total gross savings (all projects)				\$ 178.74
Total cumulative SCN costs				\$ 116.26
Net savings				\$ 62.47
Return on investment ratio				1.54

Notes:

(a) For project descriptions and evaluations, see Appendix E.

(b) Gross savings are reported in millions of dollars (\$M).

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Estimated SCN and project costs

Table 2 shows costs by fiscal year for SCNs with projects included in the Base Case. Since 2012, the total cumulative investment in SCNs is \$116.26M, including all core infrastructure, project, administrative and operating costs and pan-SCN support. When all SCNs and projects (Scenario 1), and AHS support services and resources (Scenario 2) are included, the total adjusted costs are \$164.07M and \$169.84M, respectively (see Appendix C).

Table 2 SCN project and operational costs by year – Base Case

SCN	2012/13 ^(a)	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Cumulative Total ^(d)
Bone & Joint	\$ 0.89	\$ 1.96	\$ 2.06	\$ 2.14	\$ 2.05	\$ 2.31	\$ 2.66	\$ 14.07
Cancer	\$ 0.95	\$ 0.97	\$ 1.04	\$ 1.46	\$ 1.27	\$ 1.80	\$ 1.15	\$ 8.65
Cardiovascular Health & Stroke	\$ 0.98	\$ 2.24	\$ 5.33	\$ 5.15	\$ 1.25	\$ 1.47	\$ 1.59	\$ 18.01
Critical Care	\$ 0.52	\$ 0.85	\$ 1.08	\$ 1.00	\$ 0.94	\$ 1.28	\$ 1.28	\$ 6.96
DON	\$ 0.71	\$ 0.94	\$ 1.17	\$ 1.24	\$ 1.28	\$ 1.63	\$ 1.71	\$ 8.68
Kidney Health ^(b)	\$ -	\$ -	\$ 0.08	\$ 0.56	\$ 1.10	\$ 1.72	\$ 1.59	\$ 5.04
MNCY ^(b)	\$ -	\$ -	\$ 0.76	\$ 0.85	\$ 0.80	\$ 0.94	\$ 1.09	\$ 4.44
Respiratory Health	\$ 0.55	\$ 0.63	\$ 0.84	\$ 0.97	\$ 0.82	\$ 1.08	\$ 1.12	\$ 6.01
Seniors Health	\$ 0.73	\$ 1.40	\$ 1.56	\$ 1.26	\$ 1.23	\$ 1.49	\$ 1.41	\$ 9.09
Surgery	\$ 0.40	\$ 1.02	\$ 2.07	\$ 3.22	\$ 4.17	\$ 4.83	\$ 6.92	\$ 22.63
Pan-SCN ^(c)	\$ 3.14	\$ 1.12	\$ 1.25	\$ 0.88	\$ 1.56	\$ 2.51	\$ 2.22	\$ 12.68
Total^(d, e)	\$ 8.86	\$ 11.14	\$ 17.23	\$ 18.74	\$ 16.48	\$ 21.06	\$ 22.74	\$ 116.26

Notes:

- (a) Costs accrued in 2011/12 (approximately \$0.6M for startup, administration and research) were added to 2012/13.
- (b) Blank cells indicate years prior to the SCN launch in which no costs were accrued.
- (c) Pan-SCN costs include centralized leadership and support apportioned to the 10 SCNs with projects included in the Base Case.
- (d) Total (annual and cumulative) includes core infrastructure, operating, administrative and project costs for SCNs with projects evaluated in the Base Case.
- (e) Adjusted totals, based on assessment scenarios 1 and 2, are included in Appendix C.

Uncertainty analysis

As indicated, the Base Case analysis did not include the cost of all SCNs or SCN-led projects. To address uncertainty, we conducted scenario analyses to account for these costs. Scenario 1 incorporates the cumulative costs for *all* SCNs, and Scenario 2 includes these costs *plus* the costs of AHS support services and resources (for details, see Appendix A). The results show that the net savings were greater than 0 and ROI ratios were greater than 1 in both scenarios (Table 3).

To further add to the rigour of the analysis, we conducted a one-way sensitivity analysis (one variable varied at a time) to account for variations in input parameters. This analysis showed that the net savings varied from \$48.02M to \$76.92M and ROI from 1.41 to 1.66. Finally, we conducted a probabilistic sensitivity analysis (all variables varied at the same time), which showed that the probability of SCNs being cost saving was 100%. For details, see Appendix A.

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Table 3 Scenario analyses showing impact on net benefit and SCN return on investment to March 31, 2019

Scenario ^(a)	Total costs (\$M)	Total gross savings (\$M)	Net savings (\$M)	ROI ratio
0 Base Case (selected projects & SCNs)	\$ 116.26	\$ 178.74	\$ 62.47	1.54
1 All SCNs and all projects ^(b)	\$ 164.07	\$ 178.74	\$ 14.66	1.09
2 Scenario 1 + cost of AHS support services and resources ^(b)	\$ 169.84	\$ 176.74	\$ 8.89	1.05

Notes:

- (a) For scenario descriptions and detailed results, see Appendix A.
- (b) Estimated costs by SCN and by year are provided in Appendix C.

Other benefits and impact of this work

In addition to their contributions to health system savings, the SCNs are also contributing to quality improvements and health research, innovation and patient care, impacting health outcomes across Alberta. Although these contributions have not been monetized and included in analyzing ROI, they provide significant value to AHS and the people of Alberta.

Attracting investment by securing grant funding from outside Alberta

Since 2012, a total of \$65.84M in grant funding has been invested in SCN projects and clinical research by organizations outside Alberta (e.g., the Canadian Institutes of Health Research [CIHR], industry partners such as Merck Canada Inc., and health foundations). The number of grants SCNs have secured, or partnered in a significant way on, and their dollar value, varies by year and SCN (Table 4). An additional \$58.27M in funding support has also been received from external (non-AHS) sources within Alberta (Appendix D) for health system research and innovation in which SCNs have contributed in a leading, collaborating or supporting role. This includes charitable foundations, industry and non-AHS contributions to health innovation grants from Alberta Innovates and Alberta Health (e.g., PRIHS and HIIS). All funds support Alberta health system priorities.

Each SCN's Scientific Office is instrumental in preparing funding proposals, building health research capacity and developing and facilitating partnerships with universities and research institutes across the province. This capacity has continued to grow over time as evidenced by the cumulative total and number of SCNs securing grants from outside Alberta (at least 50% of SCNs every year since 2015/16, and 73% of SCNs in 2017/18). This trend reflects the growth and development of the SCNs over time, increased clinical research capacity and success in securing external grant funding. Through these grants, AHS is able to deliver on a number of key strategies such as enhancing care in the community, supporting transitions along the patient journey, and improving access to specialists. Since 2012, the SCNs have obtained grant funding from non-AHS sources that has supported 56 health research and improvement initiatives in Alberta (Appendix D).

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Training, collaboration and knowledge transfer

In addition to specific projects that improve value and health service delivery, SCNs work with university partners and provide training opportunities that support current and future needs and directly benefit the people of Alberta. Since 2012, the SCNs have worked with 249 post-secondary students. The collaboration between SCNs and university researchers has generated new knowledge about how to get evidence into care, as reflected in peer-reviewed publications. From 2012 to 2019, the SCNs published (or were major contributors) to more than 700 articles. The SCNs participate in provincial, national and international collaborations with health, and academic partners. For example, the Surgery SCN has been developing guidelines that influence surgical care by collaborating nationally (e.g., ERAS Canada and the Canadian Patient Safety Institute) and internationally, and is sharing its learnings with other countries through the ERAS® International Society.

Table 4 Grants awarded to SCNs from outside Alberta, 2012 to 2019 (\$ Million)

SCN	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	Cumulative Total
AMH	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1.32	\$ -	\$ 1.32
Bone & Joint Health	\$ -	\$ 1.04	\$ 1.50	\$ -	\$ -	\$ 3.00	\$ 0.02	\$ 5.56
Cancer	\$ -	\$ -	\$ 0.05	\$ 0.77	\$ 0.73	\$ 1.00	\$ -	\$ 2.55
Cardiovascular Health & Stroke	\$ -	\$ 0.46	\$ -	\$ 7.08	\$ 1.20	\$ 2.62	\$ 1.15	\$ 12.52
Critical Care		\$ 0.59	\$ 0.10	\$ 3.92	\$ 0.64	\$ 0.75	\$ 0.10	\$ 6.08
DON	\$ -	\$ -	\$ -	\$ 1.22	\$ 0.06	\$ -	\$ 0.02	\$ 1.29
Digestive Health				\$ 0.30	\$ 0.10	\$ 0.08	\$ 0.85	\$ 1.32
Emergency			\$ -	\$ 0.05	\$ -	\$ 0.55	\$ 0.27	\$ 0.87
Kidney Health				\$ 3.11		\$ 0.94	\$ 4.80	\$ 8.85
MNCY			\$ 5.60	\$ 1.70	\$ 1.10	\$ 0.55	\$ -	\$ 8.95
NRV								\$ -
PPIH							\$ -	\$ -
PHCIN					\$ 1.00	\$ 0.11	\$ 6.46	\$ 7.58
Respiratory Health		\$ 0.03		\$ -	\$ 0.27	\$ -	\$ -	\$ 0.29
Seniors Health	\$ 0.63	\$ 1.09	\$ 5.50	\$ 0.01	\$ -	\$ 0.07	\$ 1.34	\$ 8.65
Surgery			\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 0.63	\$ 3.21	\$ 12.75	\$ 18.15	\$ 5.09	\$ 11.00	\$ 15.01	\$ 65.84

Note: Blank (grey) cells indicate years prior to the SCN launch.

Improving patient outcomes, safety and experience

AHS is committed to the Quadruple Aim and improving patient outcomes and experiences; quality of care; and value to drive health system sustainability. SCNs support these objectives, and the projects evaluated in this report have not only produced a positive ROI but have also significantly improved outcomes, patients' and families' experiences, satisfaction and quality of life. Although these benefits

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have not been monetized and included in estimating ROI, for individual Albertans and families, they are the most important and impactful outcomes of this work.

The SCN Retrospective (AHS 2019b) describes how SCNs, operational partners and other stakeholders are working together to improve health outcomes and profiles ten projects that clearly demonstrate the impact and value of this work on patients and families. For example:

- **Albertans are spending less time in hospital after surgery and experience fewer complications.** Projects such as ERAS, NSQIP, the Safe Surgery Checklist and the Hip and Knee Pathway have improved quality of care for surgery patients across Alberta by including safeguards and processes that reduce surgical errors and complications and improve mobility and outcomes after surgery.
- **SCNs have helped expedite breast cancer diagnosis and improve the experience of cancer patients.** The time between a concerning mammogram and a cancer diagnosis and referral to a breast program is now 6 days – less than a third of what it was three years ago.
- **The use of standard order sets, referral processes and clinical pathways has reduced unwarranted variation and improved transitions in care.** The provincial ICU delirium project is helping reduce risks to patient safety by more closely monitoring patient agitation sedation, and symptoms of ICU delirium.

Improving the experience and safety of AHS staff

Another important benefit of this work is its impact on the safety, experience and satisfaction of care for providers. For example, support has been strong from hospitals and urgent care centers across Alberta for the SCN's work initiating bup-nal treatment in emergency rooms for patients with opioid use disorder (for details, see AHS 2019b). This work is enabling care providers to better support patients with opioid use disorder by helping treat the underlying problem and providing rapid access to community services and supports. Having consistent tools, standards and resources also helps care providers identify and use the most appropriate treatment alternatives and ensure all patients receive high quality care.

Getting evidence into care

The SCNs also create value for AHS through their contributions to clinical guidance, support to the AHS clinical policy unit (e.g., AHS Safe Surgery Checklist, AHS Living Organ Donor Wage Replacement Policy), harmonization and implementation across Alberta. These contributions add significant organizational value by enabling and advancing work that would otherwise not progress without additional investment and resources. Table 5 lists some recent examples of such work and its significance.

Table 5 Examples of SCN contributions to clinical guidance and implementation

Deliverable ^(a)	Description	Implementation
Alberta Pain Strategy	SCNs have helped develop a province-wide pain strategy to better coordinate pain management and research (acute pain, chronic pain, use of opioids).	Extensive engagement with patients and stakeholders; strategy released in 2019
Alberta Surgery Plan	This plan aims to improve access to surgical care across the province and implementation of programs that improve the safety and quality of surgical care.	The Alberta Surgery Plan has been submitted to government for review (September 2019)
AHS Living Organ Donor Wage Replacement Policy	AHS now provides a paid leave of absence to eligible employees who become a living organ or surgical bone marrow donor. This policy helps address financial barriers donors may face in becoming a donor.	January 21, 2019 Note: AHS is the first health authority in Canada to have such a policy.

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Deliverable ^(a)	Description	Implementation
Cardiac Cath Lab Report	In 2014, the Cardiovascular Health and Stroke SCN and Zone leadership developed recommendations to advance cardiac catheterization services in central Alberta.	In 2017 AHS accepted the recommendations and launched a provincial review of cardiac services
Provincial Insulin Pump Therapy Program	Provides an insulin pump and supplies to adults and children with Type 1 Diabetes who meet eligibility criteria. The program standardized care for insulin pump therapy and ensured effective, safe and appropriate use for Albertans who will benefit most from this type of therapy.	June 2013

Note:

(a) These deliverables provide only a small snapshot of the many contributions SCNs are making to support AHS operations.

Conclusions

This report presents an updated evaluation of the cumulative impact and value SCNs provide AHS and the people of Alberta. The results show that SCNs continue to be an important resource for AHS as a driver of health system savings and improvement. All 15 projects included in the Base Case analysis contributed positive savings to Alberta's health system, with an estimated total gross savings of \$178.74M. Total costs of SCNs were estimated at \$116.26M, for a net savings of \$62.47M. These results, which were robust to sensitivity analysis, demonstrate a cumulative return on investment of 1.54; meaning that for every dollar invested to date, Alberta's SCNs have contributed a \$1.54 return in health system savings.

The ROI analysis reflects an AHS perspective (it does not take into account savings or costs of physician care) and does not account for the many non-monetary benefits this work has provided to the people of Alberta and stakeholders beyond AHS. Over the past seven years, the SCNs have contributed significant value and impact beyond direct cost savings. Improvements in patient outcomes, the safety and quality of care, access, and the experiences of patients, families, and care providers are arguably the most significant and important achievements to date, and are the product of successful collaboration and partnerships with frontline teams, operational partners and stakeholders provincially, nationally and internationally. Together, we have executed projects that have resulted in significant savings and that support ongoing health system improvement.

Moreover, since 2012, a total of \$65.84M has been invested in SCN projects and clinical research by organizations outside the province, and SCN staff are increasingly sharing knowledge and experience with other provinces and organizations nationally and internationally through health research collaboratives, strategic partnerships and publications.

Next steps

As part of our commitment to value and to operating as part of a learning health system, the SCNs continue to refine and optimize their processes for priority setting, project implementation and rigorous evaluation. Going forward, all SCNs will continue to track costs and evaluate and report on cumulative savings and impact. An updated and comprehensive report on ROI is planned for 2020 that will include additional projects and an estimate of long-term savings.

References

Alberta Health Services. 2019a. *Alberta's Strategic Clinical Networks: Past, Present, Future*. June 2019. Available: <https://www.albertahealthservices.ca/assets/about/scn/ahs-scn-reports-past-future-present.pdf> (accessed 2019 August 19).

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