Canadian Partnership Against Cancer

Evaluation of the Electronic Synoptic Pathology Reporting Initiative Implementation

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Final Report

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1 Executive Summary

In 2006, the federal government established the Canadian Partnership Against Cancer (the Partnership) as an arm's length, not-for-profit organization to implement the Canadian Strategy for Cancer Control, a 30-year vision for achieving key outcomes in cancer control. Working collaboratively with the cancer control community (cancer survivors, patients and families, cancer experts, administrators and government stakeholders) across Canada, the main goal of Partnership is to reduce the burden of cancer on our health care system and on all Canadians.

Within the Partnership's strategic plan for 2012-2017, a key priority is to advance high-quality early detection and clinical care. One of the main initiatives for this priority is the Electronic Synoptic Pathology Reporting Initiative (ESPRI). This initiative builds on the success of the National Staging Initiative that started in 2008, and implementation of pathology standards in Ontario and New Brunswick that took place in 2009-2011. The goals of ESPRI are to:

1. Support adoption and advance implementation of electronic synoptic pathology reporting for Breast, Colorectal, Lung, Prostate and Endometrial cancers;
2. Maintain and promote adoption of standards; and
3. Advance the use of standardized data through performance indicators.

ESPRI was first implemented in Ontario and New Brunswick in 2009-2011. In 2014-2017, Nova Scotia, Prince Edward Island, British Columbia, Manitoba, and one region in New Brunswick implemented the College of American Pathologists (CAP)) pathology standard protocols electronically using vendor solutions. The efforts led in these six provinces by provincial project sponsors and teams, and clinical leaders and champions have been key to the success of the ESPRI implementation and ongoing operations.

To date, ESPRI has made the following contributions to the Canadian cancer control system, and resulted in more consistent actions to support high-quality diagnosis and clinical care:

- Six provinces (Ontario, New Brunswick, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba) have the means to capture standardized and comprehensive pathology diagnosis, staging, and prognosis data, by implementing the pathology standard protocols (developed by CAP in their information systems.
- A total of 850 pathologists, which comprises 67% of Canadian pathologists, have now transitioned from narrative to electronic reporting in these provinces.
- Provincial and regional health systems, cancer agencies, pathologists and other clinicians can now access diagnosis, staging and treatment data to examine distributions of cancer cell anatomy, the extent to which cancer cell is spreading, the potential for cancer recurrence, patient prognosis, and survival; this information was not previously available before the implementation of ESPRI.

To build on the positive impact that ESPRI has made, it is important to understand the factors that support or hinder the implementation of ESPRI in these six provinces. This evaluation was commissioned to gain insights from these provinces about the key enablers and barriers on four main areas related to the ESPRI initiative (program implementation, engagement and stakeholder experience, partnership, and outcomes and data quality), and the extent to which the goals of ESPRI have been achieved. Through key informant interviews, surveys and document reviews, findings highlighted in this report can help us learn from experience, find ways to overcome barriers, provide suggestions to sustaining the operations of ESPRI, inform the Partnership's future planning, and facilitate potential adoption (i.e., scale up) of ESPRI at other interested jurisdictions.

This evaluation report draws on the detailed analysis (presented in Section 5) to state key highlights (Section 6), and conclusion and recommendations (Section 9).

Key Findings

Program Implementation:

All six provinces took a slightly different project management and clinical engagement approach to adopt the pathology standards, and implement standards in information systems. Project managers played an important role in planning, coordinating and managing the program, and seasoned project managers on large scale initiatives felt more comfortable managing various components of ESPRI implementation.

In most provinces, a formal governance structure that includes multi-disciplinary experts (clinicians, pathologists, IT experts, finance, provincial and regional cancer agencies or health services decision makers) for the ESPRI implementation helped oversee the planning, timeline, scope and resources of the project. These formal governance structures increased the buy-in of stakeholders by clearly defining their role in the ESPRI implementation, supporting ongoing engagement among these stakeholders, and making key stakeholders part of the discussion on ways to manage risks or overcome implementation barriers.

Information technology systems are an essential component for ESPRI; however all provinces reported IT system-related barriers that posed risks and delays in the implementation phase. In most provinces, securing IT resources was a challenge itself. Another challenge was the lack of compatibility between vendors' technology interfaces and the Laboratory Information System.

Another barrier to program implementation is the frequent updates made to the CAP protocols. These updates required provincial teams to connect with a group of clinical experts to review the revised CAP protocols, pay the vendors to upgrade the vendor solutions, find resources to upgrade central repository and months to roll-out the solutions. The cost associated with upgrading information systems with updated versions of CAP protocols is expensive, time consuming, resource intensive, and jeopardizes the sustainability of maintaining ESPRI.

Additional barriers identified by provinces include: misalignment between project implementation timelines and availability of vendor solutions, lagged vendor response to address implementation issues, decentralized approach to implementing ESPRI in regions with multiple decision-makers. Despite these challenges, few of the provinces reported that they were able to mitigate some of the risks (e.g., technical challenges, workflow customization) through shared learning with other provinces.

Engagement and Stakeholder Experience:

Positive stakeholder relationships are often cited as a key success factor to ESPRI implementation. All provinces reported that stakeholders understand and share common visions to achieve the goals of ESPRI. Stakeholder engagement strategies varied among each province, and were heavily influenced by the nature of their particular health service delivery model. In particular, physician engagement in early stages of implementation was a key enabler, and having a physician champion contributed to higher adoption of ESPRI.

Since IT systems are an essential component of ESPRI, provinces that included pathologists and IT specialists early on in the implementation team contributed to fewer resource challenges and project delays. In general, jurisdictions that did not engage both IT specialists and physicians in the early planning stages faced more challenges in achieving full program implementation than those that did, particularly with vendor selection.

In most provinces, change management to support ESPRI adoption was done informally. Specific examples of change management strategies such as physician led meetings, training, and specific communication activities were generally created based on local needs.

Partnerships:

The partnership section explores project sponsors' visibility and commitment, and strategic alignment with ESPRI and the Partnership. At a project level, the consistency and the degree of involvement from project sponsors to engage relevant stakeholder groups varied. Some provinces reported challenges securing participation from regional leadership, pathologists,

surgeons and oncologists. Provinces with existing provincial cancer care organizations have established leadership which facilitated engagement and buy-in. In other cases, provinces with more established sponsors within stakeholder groups (e.g., pathologist) saw more successful implementation. Often, experts work in silo and ESPRI provided an opportunity to bring diverse experts together on shared topics. Other regions struggled to identify leaders with sufficient IT knowledge. Feedback suggested that a joint sponsorship and accountability model could have helped mitigate downstream vendor-related issues such as cost and timing.

All provinces expressed appreciation and commended the leadership role taken on by the Partnership. The Partnership also organized community of practice sessions for provinces to share learnings and problem solve challenges, which was an appreciated support by the jurisdictions.

Although there was general strategic alignment with the ESPRI goals and priorities set by the Partnership between jurisdictions and the Partnership level, this level of alignment between organizations within provinces did not always exist. In general, provinces that were able to nurture strategic relationships between organizations had more positive feedback regarding ease of implementation and end-user satisfaction.

ESPRI Derivable Clinical and Data Quality Indicators for Measurement:

Most provinces are utilizing electronic synoptic reporting but are not yet reporting or measuring the pan-Canadian quality and clinical indicators that pathologists (through the Partnership) have identified for clinical quality improvement. Overall, jurisdictions are committed to use the 48 pan-Canadian indicators. Most provinces focused on performance reporting as it relates to completion of the checklist, while some provinces have begun to review selected performance metrics such as turnaround times. However, measuring clinical outcomes and impact appear to be a future goal - most stakeholders did not have a clear plan to integrate the pan-Canadian indicators to measure quality of cancer diagnosis, cancer recurrences, patient survival, and other clinical outcomes.

Although ESPRI introduces opportunities for data sharing and performance reporting, actual reporting activity is currently limited as many jurisdictions have not yet completed the ESPRI implementation. Currently, the most typical measure of reporting quality is completeness of the report. Most jurisdictions plan to use multiple data and reporting sources along with ESPRI, which will be a significant contributor to understanding the context and drivers within each province and supporting inter-provincial comparisons. Jurisdictions reported interest in using ESPRI to report in a number of different ways including integrating ESPRI results with other data elements; using ESPRI for individual provider-level reporting; and provincial benchmarking and research.

The findings of this evaluation confirm that by March 31, 2017, the provincial partners, the Canadian Association of Pathologists and the Partnership collaborated together to successfully achieve the first two goals of ESPRI (noted above).The third goal was achieved in part, primarily because over the past three years, while the provincial teams were occupied with province-wide adoption from pathologists, the implementation of vendor solutions to support synoptic reporting was associated with significant delays. Based on mitigation of risks associated with delays, there was very little room and time to advance the use of standardized pathology data through performance measurement. However, to fully achieve the third ESPRI goal, in 2017-2020 there is an opportunity for the Partnership to work with provincial partners to implement the pan-Canadian indicators in the form of feedback reports for use by pathologists, surgeons, radiation and medical oncologists, administrators of lab information systems, cancer agencies and health system decision-makers. Over time, advancing the use of evidence in practice and sharing evidence to influence clinical guidelines will contribute to reaching the 30-year Canada-wide goals of Cancer Control.

Recommendations

The recommendations presented in this report are intended to provide insights and lessons that may be helpful for:

- Increasing the use of standardized pathology in clinical practice to improve the quality of cancer diagnosis, staging and

treatment;

- Improving operational plans to support sustainability of ESPRI in six provinces;
- Implementing ESPRI in prospective provinces where ESPRI has not yet being implemented; and
- The Partnership to consider when investing in solutions to standardize care processes using information technology.

Program Implementation:

- **Program Management**: In order to implement a large scale IT solution, it is essential to have a dedicated team of seasoned project manager and specific IT resources to support the implementation of solution(s).
- **Program Governance**: Establish formal structures to convene a group of multidisciplinary experts such as clinicians, information technology experts, finance, members of the tumor board, and provincial and regional health services decision-makers when implementing large scale initiatives.
- **Resource Management**: At the outset, identify critical roles, the specific individual resource requirements and appropriate financial contingency to address likely risk areas, such as technology and exchange rates.
- **Vendor Management**: National and provincial organizations could play a role to guide the development of common vendor guidelines, and directly negotiate timelines and user fees with vendors.
- **Risk Management**: Provincial project teams to develop a risk register for identifying current or potential implementation and sustainability risks and share with their peers to facilitate an inter-provincial collaborative approach to risk management.
- **Resource Planning**: Proactively identify and secure post-implementation resources to ensure ongoing sustainability of the initiative.

Engagement and Stakeholder Experience:

- **Communicating the Local Vision**: Provincial champions are encouraged to create and communicate the strategic vision for post ESPRI implementation in their province, and plans for continuing engagement with regional/provincial health agencies, pathology, IT, oncology and other end-user groups (e.g. urology).
- **Early Engagement:** Prospective jurisdictions planning to implement the CAP checklist electronically may consider engaging physician champions early on in the project planning and implementation phases. As well, prospective jurisdictions are encouraged to develop formal stakeholder engagement and communications strategies and plans, based on an objective assessment and prioritization of all stakeholders likely to be impacted by ESPRI.
- **Managing Change**: Provide training for project team to systematically lead and manage change with key constituents such as clinicians, Lab Information System technicians, and information system administrators etc.

Sponsor Visibility and Commitment:

- **Shared Learning**: Provincial teams are encouraged to share and publish their lessons learned about the visible role of project sponsors in successfully engaging with critical stakeholder in implementing ESPRI.
- **Strategic Alignment:** In addition to their project plan deliverable, as part of future ESPRI planning, jurisdictions are encouraged to develop and regularly update a strategic plan outlining the approach to achieve and sustain their province's long-term ESPRI objectives.

ESPRI Derivable Clinical and Data Quality Indicators for Measurement

- **Integrated Performance Measurement**: The Partnership, provincial project sponsors, and clinical experts have a role in defining and implementing an integrated strategy for cancer system performance measurement, reporting, and management using the 48 indicators at local, regional, provincial and pan-Canadian levels. ESPRI provinces may consider identifying other jurisdictions as strategic partners for benchmarking to advance the use of standardized data to measure and address data quality (e.g. completeness and compliance with national standards) and clinical variation.
- Provincial project teams and clinical champions may consider building capacity for increasing the use of evidence in practice.
- Proactively plan and develop a reporting strategy early on to identify any technical requirements, such as integration of additional data sources. Most jurisdictions plan to use multiple data and reporting sources, including ESPRI. There is strong interest in integrating biomarker data with ESPRI data to guide precision medicine.

Sustainability Recommendations:

- **Coordinating Role:** There is a potential role for the provincial and/or national professional associations to provide: direction and guidance on the uptake and maintenance of CAP standards; and opportunity for leading practices to showcase and share evidence with clinical peers and address practice variation.
- **Access to Investment**: There will be an ongoing need for investment to sustain ESPRI related to upgrading technology and CAP protocols. As ESPRI is a "national" system, funding should be allocated on an ongoing basis.

2 Introduction and Objectives

The Electronic Synoptic Pathology Reporting Initiative (ESPRI) was implemented in six Canadian Provinces with the support of the Partnership, the Canadian Association of Pathologists, (CAP-ACP), the College of American Pathologists (CAP), provincial sponsors, clinical leads/ champions, associations, labs, project teams, and other key stakeholders. This report evaluates the implementation efforts led in Ontario and New Brunswick, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba. The ESPRI evaluation examines: what worked well; what were the key enablers and barriers; and what could have been done differently to implement electronic systems and pathology standards; the extent to which plans were implemented to sustain the operations of ESPRI and indicator measurement in individual jurisdictions; and if the overarching goals of the ESPRI project were achieved or not.

3 The Partnership

The Canadian Partnership Against Cancer ("the Partnership") is an independent organization funded by the federal government to accelerate action on cancer control for all Canadians. The Partnership works with cancer experts, charitable organizations, governments, cancer agencies, national health organizations, patients, survivors and others to implement Canada's cancer control strategy. The Partnership's work spans the cancer control continuum, from prevention and screening to research and supportive care.

From 2012 to 2017, the Partnership focused on five strategic priorities:

1. Developing high-impact, population-based prevention and cancer screening approach;
2. Advance high quality, early detection and clinical care;
3. Embed a person centered perspective throughout the cancer journey;
4. Enable target research to augment our knowledge and understanding of cancer and related chronic diseases; and
5. Advance cancer control with and for First Nations, Inuit, and Metis communities.

In connection with strategic priority #2, "Advance high quality, early detection and clinical care", the Partnership invested $20 million over seven years. The Partnership collaborated with and enabled national and provincial partners to adopt and implement evidence-based CAP pathology protocols to standardize the collection of breast, colorectal, prostate, lung and endometrial cancer resection pathology data in Ontario and New Brunswick, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba. Alberta withdrew their participation, although initially had planned to implement ESPRI.

4 Electronic Synoptic Pathology Reporting Initiative

The Electronic Synoptic Pathology Reporting Initiative was established with the aim to achieve three key goals:

1. The adoption of CAP protocols for five cancer sites within the Canadian provincial context;
2. The implementation of CAP protocols using electronic solutions on a province-wide and sustainable basis; and
3. Advancing the use of standardized pathology data through performance measurement.

To achieve the first goal, the Partnership collaborated with:

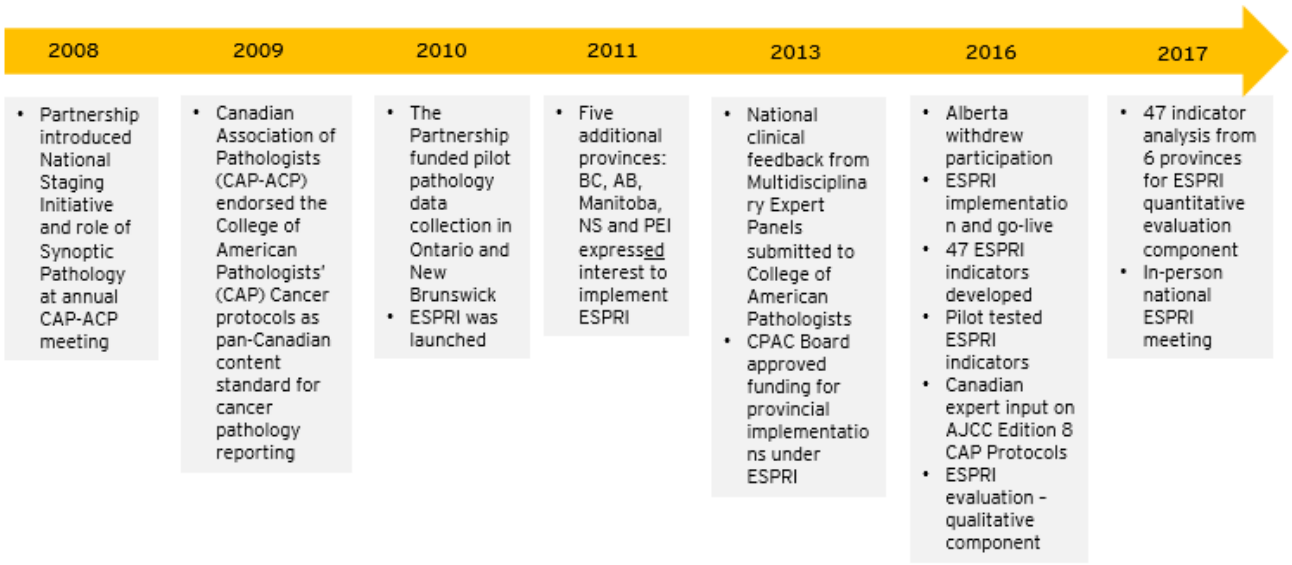
- The CAP and Canadian Association of Pathologists ("CAP-ACP") in 2014 to establish a national licensing discount to support Canadian pathologists to use the CAP pathologist standards and electronic cancer checklists (eCC);
- CAP-ACP, Cancer Care Ontario, clinical champions and other key stakeholder to organize and co-sponsor pan-Canadian education sessions related to the CAP Cancer Protocols for adult and pediatric patient population conditions, with a minimum five per year; and

- CAP and facilitated the appointment of Canadian representatives (see Appendix A for membership) to CAP working groups to provide Canadian input on:
    - The CAP Protocol Review Panels;
    - The CAP Cancer Committee, focused on the cancer protocol clinical content; and
    - The Pathology Electronic Reporting Taskforce, focused on the electronic cancer checklists.

To achieve the second goal, between 2008 and 2017, the Partnership funded six provinces based on the merit and feasibility of the business proposals (details are provided in Appendix A) to adopt and implement the CAP protocols and electronic cancer checklists in lab information systems on a province-wide basis. Ontario and New Brunswick received funding support from the Partnership in 2008-2010 to implement ESPRI, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba received funding support from the Partnership in 2013-2017 to implement ESPRI.

To implement ESPRI, in each province, project sponsors, teams, clinical champions procured vendor solutions and organized a number of working groups with pathologists, labs, information technology experts and other key stakeholders. The key milestones of the ESPRI project are summarized in Figure 1.

Figure 1. ESPRI Milestones



To achieve the third goal, the Partnership worked closely with 50 multidisciplinary group of clinicians to develop, review, refine, select, rank, and establish pan-Canadian 48 indicators. Three indicators measure processes such as compliance rate, completeness rate and turn-around time. Forty-four indicators are focused on measuring cancer diagnosis, staging, prognosis, recurrence, patient survival and other clinical outcomes. A full list of 48 indicators is listed in Appendix 11. These indicators have been pilot tested in the six provinces. Ontario, New Brunswick, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba have established the feasibility of using ESPRI data with these 48 indicators and have submitted baseline data to the Partnership. The Partnership is hosting an in-person meeting in April 2017. At this meeting, project teams and 50 multidisciplinary group of clinicians from eight provinces will review the baseline data and answer three key questions:

1. Which of the 48 indicators can be used in clinical practice to support clinical management of cancer patients with breast, colorectal, prostate, lung and endometrial cancer?
2. Which of the 48 indicators can be used to measure cancer system performance?
3. Which of the 48 indicators can be used to influence discussion about clinical guidelines?

These pan-Canadian indicators, once implemented to produce regular feedback reports for use by pathologists, surgeons, radiation and medical oncologists, administrators of lab information systems, cancer agencies, and health system decision-makers, the third goal of ESPRI will be fully achieved. Over time, advancing the use of standardized pathology data will contribute to reaching the 30-year Canada-wide goals:

- Fewer Canadians develop cancer;
- Fewer Canadians will die from cancer; and
- Canadians affected by cancer will have a better quality of life.

5 Evaluation Approach and Methodologies

5.1 Program Evaluation Approach

Figure 2 describes key components of the program evaluation that have been used to guide the development of interview and survey questions to evaluate provincial efforts and the Partnership's involvement in implementing ESPRI. Examples of the program evaluation components are:

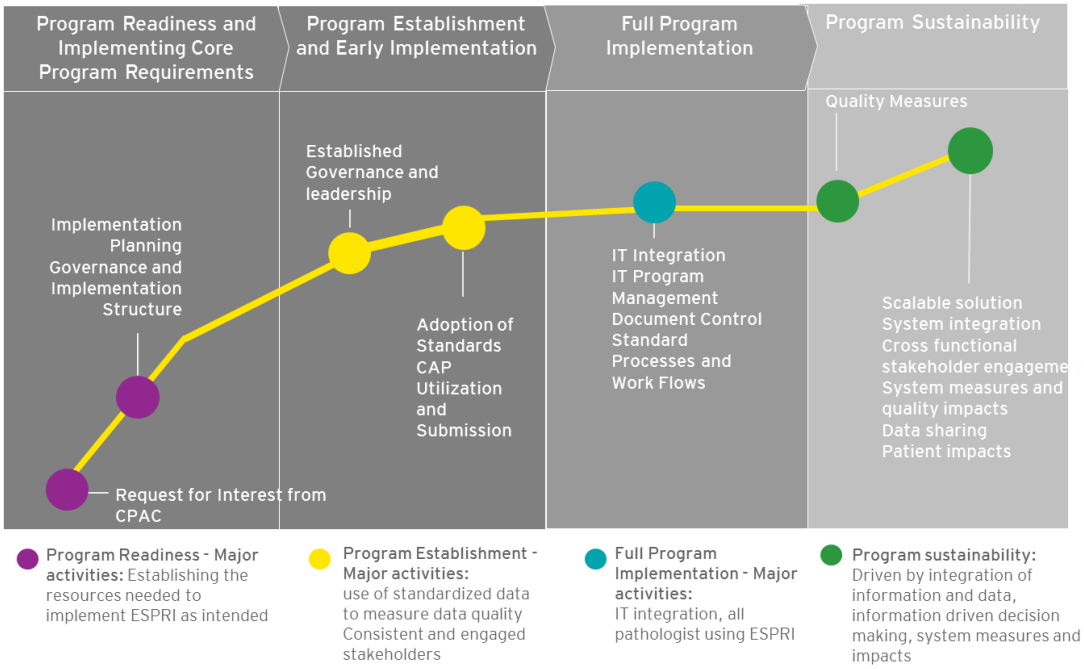
- Stakeholder engagement and partnerships;
- Program implementation; and
- Data quality and outcomes.

Figure 2: Program Evaluation Approach

Maturity Stages

To assess and evaluate the extent to which all three ESPRI goals have been achieved, Figure 3 outlines implementation stages that have been used to evaluate provincial implementation of ESPRI.

Figure 3. Maturity Stage Framework



The four stages of maturity are:

- **Program Readiness -** Establishing the resources needed in each province to implement ESPRI as intended;
- **Program Establishment** – Adoption of CAP protocols in each jurisdiction on a province-wide basis ;
- **Full Program Implementation** - IT integration, all pathologists using ESPRI; and
- **Program sustainability** – Provinces have established plans to sustain the operations of ESPRI, maintenance of CAP protocol upgrades and produce indicator reports.

5.2 Methodologies Used

The evaluation was conducted using a combination of primary and secondary data collection methods. In particular, the evaluation is mainly comprised of the stakeholder interviews and the online surveys. Primary and secondary data were then synthesized and analyzed to develop a series of hypotheses that were validated with the CPAC team, which in turn informed the final report and recommendations.

The data collection plan for primary and secondary sources is summarized in Table 1 below.

Table 1. Data Collection Plan

Areas of Interest - Implementation Categories	Alignment to ESPRI Goals	Evaluation Indicators - how the areas of interest are measured	Information Sources			
			Partnership Background Documents	Interviews and Survey	Provincial Objectives for ESPRI	Provincial Cancer Service Model
Program Implementation: Approach and Status	Advance collection of electronic synoptic pathology resection reporting	Program management Program governance Sponsor visibility and commitment Strategic alignment Risk identification and management	♦	♦	♦	
Stakeholder Engagement, Experience and Partnerships	Maintain and promote the adoption of Pan-Canadian pathology protocol standards Advance the use of standardized data to measure data indicators	Stakeholder engagement Change management	♦	♦	♦	♦
Outcomes and Data Quality Data Sharing and Collaboration	Advance the use of standardized data to measure data quality	Measuring clinical outcomes and impacts Utilizing results to inform care Reporting content, process and uses	♦	♦	♦	♦

5.3 Data Collection Process

5.3.1 Primary Data Collection

5.3.1.1 Participants

Participants from each jurisdiction were identified by the Partnership to take part in the telephone interview. Individuals who had been involved in provincial implementation were targeted to provide in depth feedback from each jurisdiction. This approach was intended to provide more in-depth qualitative information as opposed to statistical representativeness. All participants were assured of the anonymity of their feedback.

Participants (interviewees or survey respondents) included a broad representation of roles within each province's ESPRI implementation including:

- Executive sponsorship;
- Project management;
- Organizational leadership;
- Pathology;
- Oncology; and
- Information Technology.

Jurisdictional project leaders and sponsors were asked to provide an overview of the project implementation and provide insight regarding their experiences and the overall stage of implementation. In addition, provincial pathology leads were identified to provide knowledge about physician leadership and how pathology services were delivered within jurisdictions. Representatives from the Canadian Association of Pathologists (CAP) provided significant insights from a national perspective, while the Expert Review Panel Chairs identified key reporting approaches for various cancers. External vendors were also identified.

5.3.1.2 Interviews and Online Survey

Information was collected from stakeholders through two main streams: telephone interviews and the online survey. Participants were specifically engaged by the Partnership by email communication to inform them of the evaluation and invite participation. This was followed by contact with a member of the consulting team to arrange a convenient time for an interview.

Upon confirmation of an interview, participants were sent an interview guide (Appendix F) outlining the areas to be covered during the interviews. Interviews were scheduled for one hour each and took place the course of eight weeks, to allow for participant availability. Interviews were conducted either, one-on-one or in a team setting, depending on stakeholder type and preference. Although a structured interview guide was used to facilitate the interviews, participants were encouraged to offer observations and insights in addition to the specific questions posed in the interview guide. All interviews were attended by a minimum of two consultants and were recorded to enable the team to return to the source information later as required.

The objective of the online survey was to capture a larger and potentially more diverse group of stakeholders that were not able to be interviewed. The online survey was kept open for a period of six weeks and the Partnership leadership sent individual invitations for participants.

Both the interview guide and survey were structured following the high level categories of the evaluation framework, and were based on themes of interest to the Partnership. This included questions related to:

Program Implementation:

- Stage of implementation – the life cycle phase of implementation of the project, from exploration to full implementation;
- Program management – how the ESPRI objectives were met for each jurisdiction;

- Program governance – who managed the implementation and decision making;
- Risk identification and management – how risks were identified and managed; and
- Resource management – how resources to implement ESPRI were procured and managed.

Stakeholder Engagement and Experience:

- How stakeholders were involved and supported;
- How champions were identified and engaged; and
- Change management – what strategies, tools and approaches were used to support change.

Partnerships:

- Local, provincial, and national structures aligned to ESPRI and Partnership goals; and
- Identification, visibility, and role of sponsors in implementation.

Data quality and Outcomes:

- Achieving desired clinical outcomes and impacts – definition of desired outcomes and expected clinical and system results;
- Reporting – how information was shared;
- Expected benefits and impacts of ESPRI for patients, clinicians and the health system including how these are measured and utilized; and
- Plans and actions in relation to accountability and clinical governance for internal and external stakeholders to review ESPRI data and findings.

5.3.2 Secondary Data Collection

The secondary data to support the evaluation was derived from several main types of sources:

- Background materials provided by the Partnership, such as jurisdictional project plans and Provincial Information Exchange Sessions (PIES) minutes. This information was also used to help inform the interview guide and online survey (see Appendix F);
- Results of Interviews and Surveys;
- Canadian Partnership Against Cancer web site documents including ESPRI objectives; and
- Jurisdictional review of provincial cancer programs using publicly available sources. This review identified the structure of each province's cancer services including system-level enablers and key stakeholders, as well as the cancer service operating models in each jurisdiction. A summary is provided in Appendix C.

5.4 Qualitative Data Analysis

5.4.1 Results of Primary Data Collection

There was a 100% response rate for telephone interviews. Although twenty three individuals were targeted for the online survey, only and six completed surveys were received. It is hypothesized that the relative low response to the online survey was related to the nature of participants targeted by the survey, who were typically not directly accountable for ESPRI implementation, were new to the position or had changed position since the implementation. Table 3 below provides a summary of responses by stakeholder group.

Table 2. Telephone and Online Participants

	Jurisdictions

Stakeholder Groups	BC	AB	MB	ON	QU	NB	NS	PEI	USA	Total
Project Lead/Sponsor	1		1			1	3	1		**7**
Project Manager	1		1					1		**3**
Provincial Pathology Lead	1	1	1			1	1	1		**6**
Chair, Expert Review Panel				4						**4**
Vendor									2	**2**
Director			1	1					1	**3**
Coordinator	1				1	1				**3**
Advisory Pathologist	1			1					1	**3**
Pathologist (Other)	1			3						**4**
CAP-ACP	1							1		**2**
Senior Business Analyst						1				**1**
Total	**7**	**1**	**4**	**9**	**1**	**4**	**4**	**4**	**4**	**38**

5.4.2 Results Analysis

The qualitative data analysis followed three key coding steps. During the initial coding phase, a review of the interview recordings was conducted to ensure there was consistency with the transcriptions. An index of all themes identified from the interviews was formulated and relevant issues were identified. Interview transcriptions and notes were reviewed for themes. The qualitative evaluation focused on the current state of implementation and lessons learned from the jurisdictions in relation to the areas of interest to the evaluation.

6 Evaluation Findings and Recommendations

Seven provinces—British Columbia, Manitoba, Ontario, Quebec, Nova Scotia, New Brunswick and Prince Edward Island—participated in the ESPRI evaluation. As noted in Section 4.0, with the exception of Quebec, six provinces have led the implementation of the CAP protocols in electronic systems on a province-wide basis. Quebec has initiated the review and translation of the CAP protocols from English to French.

Table 3 provides a quick snapshot of the areas the provincial teams included in their project plans to roll out implementation of ESPRI. From a project implementation perspective, most provincial project teams had a project manager who developed the project plan and timelines and managed resources, organized and set up a program governance structure, and worked closely with clinical champion(s) and IT experts to identify and manage risks. In addition, most provinces also partnered with key groups to lead the adoption of pathology standards. Over the last two years, provinces spent their time to get buy-in from clinicians to adopt the pathology standards, negotiate cost and timelines with vendors, and implement the vendor solution. As a result, the table below shows low uptake of pan-Canadian indicators to measure desired clinical outcomes and impact. The latter is a key area of opportunity for the provincial teams and the Partnership to work together on in the near future.

Table 3. Provincial Implementation Progress

Area of Evaluation	Framework	BC	Manitoba	Ontario	Quebec	Nova Scotia	New Brunswick	PEI
Program Implementation	Project management	●	◉	●	○	◉	◉	◉
	Program governance	●	◉	●	◉	◉	●	●
	Risk identification and management	●	○	●	○	◉	◉	◉
	Resource management	◉	◉	●	○	◉	◉	◉
Partnerships	Sponsorship visibility and commitment	●	○	●	○	●	◉	●
	Strategic alignment	◉	○	●	○	●	●	◉
Engagement and Stakeholder Experience	Stakeholder engagement	●	◉	●	○	●	●	●
	Change management	●	○	◉	○	◉	◉	●
Outcomes and Data Quality	Achieving desired clinical outcomes and impacts	◉	○	◉	○	○	○	◉
	Reporting	◉	○	●	○	◉	◉	◉

○ = Not present ◉ = Basic ● = Fully leveraged

6.1 Detailed Findings

The analysis of the ESPRI program evaluation is presented below under the following four sections:

- Program Implementation;

- Stakeholder engagement;
- Partnerships; and
- Data Quality and Outcomes

Each section provides a general context, describes key findings, and outlines recommendations.

6.1.1 Program Implementation

Each jurisdiction used different approaches to plan and implement ESPRI. The key components of the ESPRI program implementation included:

- Program management entailing components of project planning, scheduling and timing;
- Program governance: establishing the governance structure, outlining roles and responsibility for assigned resources to implement ESPRI;
- Resource management of key project people and technology; and
- Risk including technology and other risks.

Program management has many components. These include the appointment of a "most responsible" project manager, clear assignment of project accountabilities, and a "live" project plan that spans all project stages, as well as the mechanism to monitor progress and report on progress status. Each province had to develop a business proposal at the outset and submit it to the Partnership as part of the funding application process.

Different methods to design, develop and operationalize the governance structures for the ESPRI implementation were utilized. Some provinces had a formal structure while others had an informal structure. Provinces with a formal program governance structure first planned and defined and roles of key constituents, then developed and evolved the governance structures as the project matured. Provincial cancer organizations, project sponsors, clinical champions and IT experts participated in overseeing the project governance.

> "The user and the IT person should know each other's issues and know what each person is looking for."

In 2013, each jurisdiction provided an assessment of their resource needs for project implementation. However, during implementation, the actual requirements increased from the original estimates for many jurisdictions. The increases were was attributed to US currency exchange rate fluctuations, as well as an increase in overall technology-related costs. Although some provinces were able to secure resources to cover specific cost items, many provinces reported that the Partnership investment and financial support was instrumental in covering part of the shortfalls.

With a staged implementation such as ESPRI, recording and communicating risks throughout is critical to mitigating those risks. Although risks were initially identified during the planning phases of ESPRI, ongoing and consistent risk identification did not generally take place in the later stages of implementation which caused challenges for jurisdictions in terms of keeping to the project schedule. The degree to which mitigation techniques or strategies had been developed directly impacted their ability to overcome budget deficits or timeline delays

> "….. there are challenges in finding the right IT resources that understand our needs."

Many interview and survey participants reported that vendors and the technology interfaces introduced significant risk to project completion timelines. The existing Laboratory Information System (LIS) in place was often the source of these challenges given the interoperability standards and requirements. For many users, accessing two different systems added an additional step in the workflow which was not expected.

The Vendors' role as an interface between CAP and end-users at times resulted in barriers to understanding and customizing the checklist. Implementing checklist updates was also a challenge. Some provinces

leveraged the mTuitive system for checklist updates, which simplified the process but resulted in significant additional costs. There was a strong sense that vendors and the IT systems are critically linked to project completion. However, frequent expectations from CAP to upgrade checklists causes concern around sustainability of ESPRI.

Also, participants had not considered the challenges with privacy assessments that would need to be completed to accommodate multiple regional or hospital data systems where data was required to be shared between clinical sites.

There were additional, minor risks identified with respect to project delivery. All provinces established timeline buffers in their plans, and most provinces have implemented close to their delivery timeline.

Tying timelines to funding earlier in the project is likely the greatest enabler to achieving successful progress to date. In some cases, having funding linked to timelines and funding associated with hitting the target times was helpful and created a sense of urgency.

Of interest, although all of the jurisdictions faced similar challenges, few indicated that they had been able to apply learnings from others to mitigate against these risks. This may be due to the unique technical nature and customization of workflow and checklists at each site and within provinces.

Key Findings

- Project managers carried overall accountability for developing and managing project plans and timelines, and for facilitating ongoing engagement of pathologists, IT specialists, and vendors throughout the implementation. Input from clinical and other experts was gathered through formal structures such as a Steering Committee. Seasoned project managers with large scale initiatives felt more comfortable to implement ESPRI on a province-wide basis compared to non-seasoned project managers. Provincial teams leveraged the learning from one another through forums sponsored by the Partnership. Smaller provinces tended to have less formal governance structures with leadership being provided by a small number of key individuals. In these provinces, insufficient succession planning in relation to the leadership could put project delivery at risk.
- In most provinces, multi-disciplinary group of experts participated in overseeing the governance of the ESPRI implementation project timelines, scope, budget and resources and included:
    - Involving multidisciplinary group of experts facilitated to draw alignment between ESPRI goals and provincial goals; gain commitment to support the implementation of ESPRI by region.
    - Establishing a Quality Assurance committee to review and identify ways to adopt the CAP protocols in the Canadian context
    - Assigning one person to act as an interface between provincial implementation team and CAP
- Although all jurisdictions developed detailed project plans, it was often a challenge to adhere to the timelines because it took time to adopt the CAP protocol in the Canadian context, the vendor solutions were not available on time as planned, and the challenges to integrate lab information systems with the vendor solution and the central repository.
- IT systems are an essential component to successful implementation of ESPRI, all provinces reported challenges related to their IT systems and management of the required changes to implement ESPRI. Securing project support resources, in particular IT resources, was a challenge in most provinces. The most common risks reported were technology risks related to vendor or IT challenges. These often resulted in delayed implementation and/or increased resource utilization. Existing Laboratory Information Systems (LIS) within provinces were often a limiting factor to the choice of tools available to implement ESPRI given specific interoperability requirements.
- In jurisdictions that focused on adapting the checklist to meet pathologist stakeholder interests, IT stakeholders were sometimes not sufficiently engaged, resulting in difficulties making changes to the checklist.
- Post-implementation resources have not always been identified, and where these have been identified, the long-term availability of these resources has not yet been confirmed, placing long term sustainability at risk.

Program Implementation Recommendations:

- **Program Management**: In order to implement a large scale IT solutions, it is essential to have a dedicated team to support the solution including a seasoned project manager and specific IT resources.
- **Program Governance**: Establish formal structures to convene a group of multidisciplinary experts such as clinicians, information technology experts, finance, members of the tumor board, and provincial and regional health services decision-makers when implementing large scale initiatives.
- **Resource Management**: At the outset, identify critical roles, the specific individual resource requirements and appropriate financial contingency to address likely risk areas, such as technology and exchange rates.
- **Vendor Management**: National and provincial organizations could play a role to guide the development of common vendor guidelines, and directly negotiate timelines and user fees with vendors.
- **Risk Management**: Provincial project teams to develop a risk register for identifying current or potential implementation and sustainability risks and share with their peers to facilitate an inter-provincial collaborative approach to risk management.
- **Resource Planning**: Proactively identify and secure post-implementation resources to ensure ongoing sustainability of the initiative.

6.1.2 Engagement and Stakeholder Experience

Each jurisdiction took a different approach to engaging with stakeholders and undertaking change management. The following section explores the types of stakeholders engaged by each jurisdiction and the associated impacts. Implementation was also influenced the timing of stakeholder engagement and the specific change management approach.

This section provides a summary of findings in relation to:

- Stakeholder Engagement and Communications including information technology, physicians, provincial associations, and pathologists
- Change Management approaches

Engagement of stakeholders was an often cited a critical success factor by survey and interview participants. Stakeholders in each jurisdiction had various roles in their respective provinces but all shared a common commitment to achieving the goals of ESPRI (noted in Section 4). The level of engagement and the nature of the interaction with the project planning process varied based on local needs, stage of implementation and local priorities such as provincial policy implementation.

> "Oncologists, surgeons, radiation oncologists, radiologists – pathologists and radiologists have a lot of parallels – share a lot of same type of challenges in reporting workflows – radiologists have looked into synoptic reporting – synergies between these specialities. Conversations between specialties to figure out how to work."

In cases where implementation planning was almost entirely led by a cancer agency or by pathologists, engaging the IT team and integrating their feedback was particularly important, especially with respect to vendor selection. Some examples of more effective models used to engage IT specialty knowledge include:

- Identifying a leadership team with strong understanding of IM/IT; and
- Engaging individual IM/IT representatives at individual laboratory sites and using a "connector" role to work with pathologists and the IT department.

Including pathologists with a high level of comfort with technology and lab systems, and integrating IT specialists into the implementation team contributed to fewer resource challenges and project delays. In contrast. Other jurisdictions used IT in a

more transactional way, engaging them later on in the implementation to integrate and update the checklists.

From early planning stages, physician engagement was identified as a key enabler to the project. Identified physician stakeholder groups included pathologists, general practitioners, and other key physicians. Engagement by influential pathologists resulted in higher adoption.

> "Identifying champions, getting buy-in from the provincial agency, feedback for institutions, support for a deal with vendors. 5 major LIS – each has its own synoptic solution – there was some support to deal with vendors to deal with initial growing pains"

Pathologist workflow was identified as a priority in jurisdictions where the implementation was led by pathologists. Most jurisdictions engaged individual pathologists from planning stages through to implementation. Jurisdictions that did not have provincial level pathology leads all targeted hospital based or regional pathologists.

Strategies for engagement included:

- Engaging individual pathologists who had recently participated in one stage of implementation as champions for the next stage of implementation;
- Using individual pathologist feedback to revise the format of using the checklist to increase adoption post-implementation; and
- Collecting clinician satisfaction data as part of their own evaluation.

None of the jurisdictions engaged general practitioners as potential end-users of the reporting outcomes with their patients.

Jurisdictions without a formal mandate to use the CAP checklist engaged with provincial Associations (e.g. Pathology Association or Laboratory Physician Association) as part of their stakeholder engagement strategy. Engaging with the Association was integral to ensuring the Associations championed pathologists engagement post-ESPRI implementation.

> "Influential site person can have an impact…people have the ability to make choices to how they practice."

The purpose of change management during program implementation was to support impacted stakeholders through the project and maximize the adoption and benefits derived from the planned change. In most cases, change management for ESPRI appeared have been implemented informally rather than through formal change management strategies or plans.

Change management efforts focused on integrating the best laboratory information systems and the most appropriate electronic reporting vendor. Project planning shifted between clinical needs and optimizing pathologist workflow.

One province customized the checklist for the regions. As a result, there are regional variations which have resulted in different formats being received by oncologists, leading to an adoption challenge with this group. In contrast, other provinces developed specific change management strategies for each hospital site given that each site had a separate LIS.

Respondents reported that most stakeholders, including pathologists, understood the "why" of ESPRI, but required training and knowledge about the tools, including the CAP protocol format. Some education efforts focused on group project planning meetings and separate meetings for checklists to ensure that there was appropriate engagement and feedback collected, particularly because the original format was considered inadequate. Individual pathologists were also given access to training supports.

Multiple respondents noted that engaging the "next generation" of ESPRI users would facilitate adoption, as older pathologists were identified as being more resistant to using the new format. Stakeholders suggested that young pathologists would be more familiar and comfortable with e-enabled tools and as they were trained in the electronic checklist, they would likely continue using it.

Engagement of regional health authorities varied across provinces as these authorities had different roles in terms of supporting the ESPRI mandate, facilitating adoption of CAP or IT integration.

Key Findings

- Jurisdictions that did not engage both IT specialists and physicians in the early planning stages faced more challenges in achieving full program implementation than those that did, particularly with vendor selection.
- Jurisdictions' respective stakeholder engagement strategies were heavily influenced by the nature of their particular health service delivery model.
- The presence of pathologists with a high degree of comfort with technology and laboratory systems, as well as of IT specialists as part of the implementation team, appeared to contribute to fewer resource challenges and project delays, as these stakeholders were able effectively problem solve and help communicate technical and implementation requirements to the broader stakeholder community.
- Jurisdictions without a formal mandate to use the CAP checklist were more likely to also need to engage provincial associations as part of their stakeholder engagement strategy.
- Although jurisdictions engaged a broad set of stakeholders, it was not clear whether the "right" set of stakeholders was being engaged, due to limited formal stakeholder assessments or stakeholder engagement planning.
- Specific change management strategies such as physician led meetings, training, and specific communication activities were generally created based on local needs. It was most often the Project Manager who determined the pace and content of change activities.
- Targeted approaches appear to have focused on the most challenging areas of implementation including pathologist workflow, laboratory information system (LIS) challenges, and adoption

Engagement and Stakeholder Experience Recommendations:

- **Communicating the Local Vision**: Provincial champions are encouraged to create and communicate the strategic vision for post ESPRI implementation in their province, and plans for continuing engagement with regional/provincial health agencies, pathology, IT, oncology and other end-user groups (e.g. urology).
- **Early Engagement:** Prospective jurisdictions planning to implement the CAP checklist electronically may consider engaging physician champions early on in the project planning and implementation phases. As well, prospective jurisdictions are encouraged to develop formal stakeholder engagement and communications strategies and plans, based on an objective assessment and prioritization of all stakeholders likely to be impacted by ESPRI.
- **Managing Change**: Provide training for project team to systematically lead and manage change with key constituents such as clinicians, Lab Information System technicians, and information system administrators etc.

6.1.3 Partnerships

Provincial sponsorship and ongoing sponsor involvement played a pivotal role in successful implementation and sustainability.

This section includes findings related to:

- Provincial and project level sponsorship; and
- Strategic alignment with the Partnership

Project sponsors played a pivotal role during meetings and information sessions with stakeholders by communicating support and building coalition with key stakeholders. All provincial teams expressed appreciation and commended the leadership role taken on by the Partnership as well as their ongoing commitment to support the implementation of ESPRI.

Some respondents reported that this project highlights the Partnership's role and function in the cancer system, and could help secure buy-in for future cancer care initiatives. Respondents support a pan-Canadian leadership role for the Partnership with respect to prioritizing which of the 48 indicators should be regularly measured and monitored for quality at the point of care. Respondents also look to the Partnership to potentially steer lab information systems and/or third party vendors to effectively support ESPRI goals.

> "All of us felt disoriented in the first year or two. It wasn't until a year and a half in that we knew what we were doing."

At a project level, the consistency and effectiveness of project sponsorship varied for relevant stakeholder groups such as pathologists. Some provinces reported challenges securing representative and broad stakeholder participation from regional leadership for pathologists, surgeons and oncologists, who had not traditionally come together on shared topics. Other regions struggled to identify leaders with sufficient IT knowledge. Feedback suggested that a joint sponsorship model could have helped mitigate downstream vendor-related issues such as cost and timing.

The Partnership enabled provinces to learn from each other and share experiences by offering communities of practice forums. These were seen to be useful forums to raise and solve project implementation challenges, and propose ideas to achieve ESPRI goals. Most provinces reported that the shared information sessions were helpful for learning from other jurisdictions. CAP also acted in a strategic role from the onset, acting as advisors to the Partnership and strategically including select updates over others and being a key driver in the implementation of ESPRI.

> "The IT component cannot be underestimated - there needs to be buy-in from IT to accept extensive changes to the CAP checklists"

At the provincial level, ESPRI project managers and individuals from provincial agencies and laboratories who supported the ESPRI work engaged in discussions about how to work together to plan the implementation and gain buy-in from the leadership of these groups. These discussions shaped who was involved during the planning phases and how the overall project journey was described.

In general, clinical, technological, and operational stakeholders had varying priorities. In small provinces with closer working relationships between stakeholder groups reported fewer challenges in collecting input and maintaining relationships.

Key Findings

- Jurisdictions see an opportunity for the Partnership to support and promote ESPRI by raising its profile, supporting expansion to other provinces, aiding in securing post-implementation commitment from stakeholders within their own provinces.
- Given the importance of information technology in the implementation and the reported gaps in consistent skills to both manage vendors and technology integration, respondents suggested that additional leadership to help manage this component was desirable. It was suggested that the Partnership, or another central group, could take on the role of recommending laboratory information systems and/or third party vendors that could best support ESPRI.
- Provinces with existing provincial cancer care organizations have established leadership which facilitated engagement and buy-in.
- The effectiveness of internal project sponsors within stakeholder groups varied by province. Provinces with more established sponsors within each stakeholder group e.g. pathologists saw more successful implementations.
- Although there was general strategic alignment with the ESPRI goals and priorities set by the Partnership between jurisdictions and the Partnership level, this level of alignment between organizations within provinces did not always exist.
- Provinces that were able to identify and nurture strategic relationships with organizations, such as that between provincial cancer agencies and different stakeholder groups, generally had more positive feedback regarding ease of implementation and end-user satisfaction.

- Smaller provinces with closer relationships between stakeholder groups reported fewer challenges with decision making and maintain alignment between groups

Sponsor Visibility and Commitment Recommendations:

- **Shared Learning**: Provincial teams are encouraged to share and publish their lessons learned about the visible role of project sponsors in successfully engaging with critical stakeholder in implementing ESPRI.
- **Strategic Alignment:** In addition to their project plan deliverable, as part of future ESPRI planning, jurisdictions are encouraged to develop and regularly update a strategic plan outlining the approach to achieve and sustain their province's long-term ESPRI objectives.

6.1.4 Outcomes and Data Quality

Most provinces are utilizing electronic synoptic reporting but are not yet reporting or measuring the pan-Canadian quality and clinical indicators that pathologists (through the Partnership) have identified for clinical quality improvement.

This section summarizes findings in relation to:

- Achieving ESPRI's desired clinical outcomes; and
- Reporting effectiveness.

"Overall people are very much advocates of synoptic reporting. Can see how it can improve the practice. Clinicians like the reports."

Of all of the dimensions of the review, clinical outcomes and patent impacts appears to have been the least considered by the jurisdictions although mentioned as a longer term and valuable goal. With any health program implementation, this should be an area of particular interest as it acts as a driver for sustainability and ultimately determines the level of benefit of the investment. For a few provinces, planning for a data integration plan was expected to utilize pan-Canadian indicators to form a profile of quality of care.

Many provinces plan to look closely at clinical outcomes using 48 pan-Canadian indicators. In addition, many provinces indicated an interest in leveraging results for benchmarking to address adoption rates and identify abnormal cases. Some provinces are beginning to facilitate regional comparisons. For instance, for checklists where all data elements are required (e.g. lung) the completion rate, a critical quality dimension, appears better than others.

"Standards from the US make it hard. Americans could make it hard to do and go in a different direction. Pathologists at WHO – who will maybe one day have the golden rule."

Although ESPRI clearly introduces significant opportunities for data sharing and performance reporting, actual reporting activity is currently limited as many jurisdictions have not yet completed implementation. Goals for comparative reporting using the pan-Canadian pathology indicators identified by ESPRI stakeholders are an important to define, form consensus around and implement. Reporting Sources

"Turnaround times are further delayed if the pathologist is dictating."

Most jurisdictions plan to use multiple data and reporting sources along with ESPRI, which will be a significant contributor to understanding the context and drivers within each province and supporting inter-provincial comparisons. There is also strong interest in integrating biomarker data, along with precision medicine, into reporting.

There is noted interest in using electronic standardized reporting to better understand and assess individual provider practices, improve accountability and support better practice through constant feedback, both for pathologists and other providers.

Currently, the most typical measure of reporting quality is completeness of the report. However there are provincial differences. For example, some provinces are informally measuring completeness, while others have introduced specific measures for variability in completeness. These provinces are also defining expected norms, measuring turnaround time, and sharing results. Some jurisdictions expect that the IT systems will derive completion rates and turnaround times, however this may be a risk to inter-provincial or even inter-regional comparisons for turnaround times. To better support this opportunity, a few areas to improve the checklist were identified, including an indicator of complexity.

Key Findings

- While significant progress has been made in implementing the CAP checklists, there is work to be done with respect to integrating ESPRI data to inform clinical decision-making.
- Of all of the dimensions of the review, clinical outcomes and impacts appears to have been the least considered by the jurisdictions.
- Measuring clinical outcomes and impacts appear to be a future goal – most stakeholders did not have a short-term vision of integrating the pan-Canadian indicators to measure quality of cancer diagnosis, cancer recurrences, patient survival, and other clinical outcomes.
- Although review of the original objectives revealed well-defined objectives, not all will be achieved by the deadline. None of the jurisdictions reported using any structured project-level reporting mechanisms, other than the updates with the Partnership to report the shift in objectives (See Appendix A for details of provincial objectives)
- Most provinces are focused on performance reporting as it relates to completion of the checklist. Some provinces have begun to review selected performance metrics such as turnaround times.
- Jurisdictions reported interest in using ESPRI to report in a number of different ways including integrating ESPRI results with other data elements; using ESPRI for individual provider-level reporting; and provincial benchmarking and research.
- While jurisdictions are expecting IT systems to generate completion rates and turnaround times, not all systems are capable of this level of reporting. With respect to the specific project objectives, only a few of the jurisdictions have achieved their reporting goals. There will likely be gaps in achieving the reporting objectives. For instance the extent to which synoptic reports are complete will vary because not all cases will be appropriate. None of the jurisdictions reported having a mechanism to assess gaps in reporting

Clinical Outcomes and Impacts Recommendations:

- **Integrated Performance Measurement**: The Partnership, provincial project sponsors, and clinical experts have a role in defining and implementing an integrated strategy for cancer system performance measurement, reporting, and management using the 48 indicators at local, regional, provincial and pan-Canadian levels. ESPRI provinces may consider identifying other jurisdictions as strategic partners for benchmarking to advance the use of standardized data to measure and address data quality (e.g. completeness and compliance with national standards) and clinical variation.
- Provincial project teams and clinical champions may consider building capacity for increasing the use of evidence in practice.
- Proactively plan and develop a reporting strategy early on to identify any technical requirements, such as integration of additional data sources. Most jurisdictions plan to use multiple data and reporting sources, including ESPRI. There is strong interest in integrating biomarker data with ESPRI data to guide precision medicine.

7 Program Sustainability

The framework used through the previous sections of report was used to perform a structured qualitative assessment of all of the key elements of the ESPRI implementation projects to date. While that assessment is helpful for understanding how well the

provincial implementation projects are progressing towards meeting the ESPRI goals, the long-term success of the ESPRI also depends on the sustainability of the provincial projects over the long term.

This section identifies key findings from the detailed assessment that play a critical factor in ensuring that ESPRI is sustainable over time and can continue to meet the Partnership's long-term objectives for the initiative. It also highlights key findings that play a factor in EPSRI's scalability, or its ability to support further cancer control mechanisms in the future.

The provinces are also given an overall "maturity" score to describe how much progress they have made towards achieving a fully implemented, sustainable process for achieving the EPSRI vision and objectives.

7.1 Maturity Stages

Figure 4 shows that most provinces have reached the full ESPRI program implementation stage. However, there are a number of concerns with respect to sustaining the operations of ESPRI. Key concerns include cost associated with ongoing requirements to upgrade information systems with revised CAP protocols, licensing fees, and clinical adoption to revised CAP protocols.

In most provinces, regular reporting of 48 pathology indicators has not been operationalized to produce regular feedback reports to clinicians. This is an area where a pan-Canadian direction would be most helpful.

Figure 4. Maturity Stage Evaluation

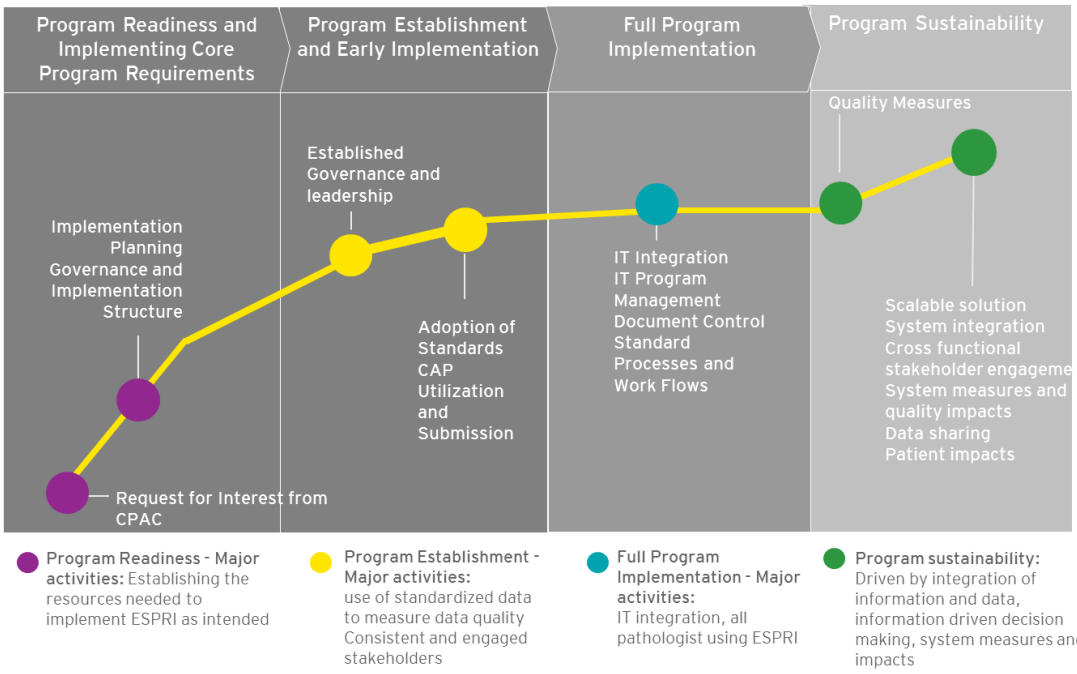


Figure 5 summarizes the overall maturity of each province's ESPRI initiative. This assessment is based on a review of the current state findings from the review against the element of the maturity stage evaluation.

Figure 5. Overall Maturity by Province

	BC	Manitoba	Ontario	Nova Scotia	New Brunswick	PEI	Quebec	Alberta
Current State Assessment								NA

Early Adoption Program Establishment Full Implementation Sustainability

The sections below provide additional insights on potential specific areas of focus for the Partnership to work with jurisdictions to encourage movement along the path to program sustainability and scalability.

7.1.1 Coordinating efforts across the country

For many jurisdictions, the Partnership has been the key to setting the foundation to coordinate efforts across the six provinces to standardize and improve high quality diagnosis, staging and treatment. The Partnership also provided forums for provincial teams to share knowledge, lessons and best practices to implement various components of the ESPRI project.

All provinces have a firm understanding of the need to commit resources for operational support. However, some are still identifying the leadership teams who will be responsible for overseeing maintenance of ESPRI. The key risk to sustaining ESPRI in provinces is the ongoing commitment to continuously update the checklists over time and the associated cost and resource requirements. IT vendors play a major role in both the ESPRI implementation timing, maintenance, and cost. Each province has been required to undertake its own due diligence in determining a vendor of choice for ESPRI and others are locked into a vendor based on their existing laboratory systems. The lack of flexibility on the part of vendors and increased costs as a result of exchange rate fluctuations poses risk to sustainability. Resolving some of the vendor-related challenges may significantly reduce the resource challenges and delivery delays faced by other jurisdictions.

> "Pathologists and other clinicians are interested in getting provider-level feedback reports in a private sensitive way."

7.1.2 Consistent measuring and monitoring

The Partnership in collaboration with 50 multidisciplinary clinicians across the 10 provinces have established 48 pathology indicators.

Six provinces have implemented the 48 indicators to demonstrate the feasibility of using ESPRI data. In the six provinces, however, mechanisms have not been established to regularly generate feedback report for dissemination to pathologists, surgeons, radiation and medical oncologists, and other key stakeholders.

Sustainability Recommendations:

- **Coordinating Role:** There is a potential role for the provincial and/or national professional associations to provide: direction and guidance on the uptake and maintenance of CAP standards; and opportunity for leading practices to showcase and share evidence with clinical peers and address practice variation.

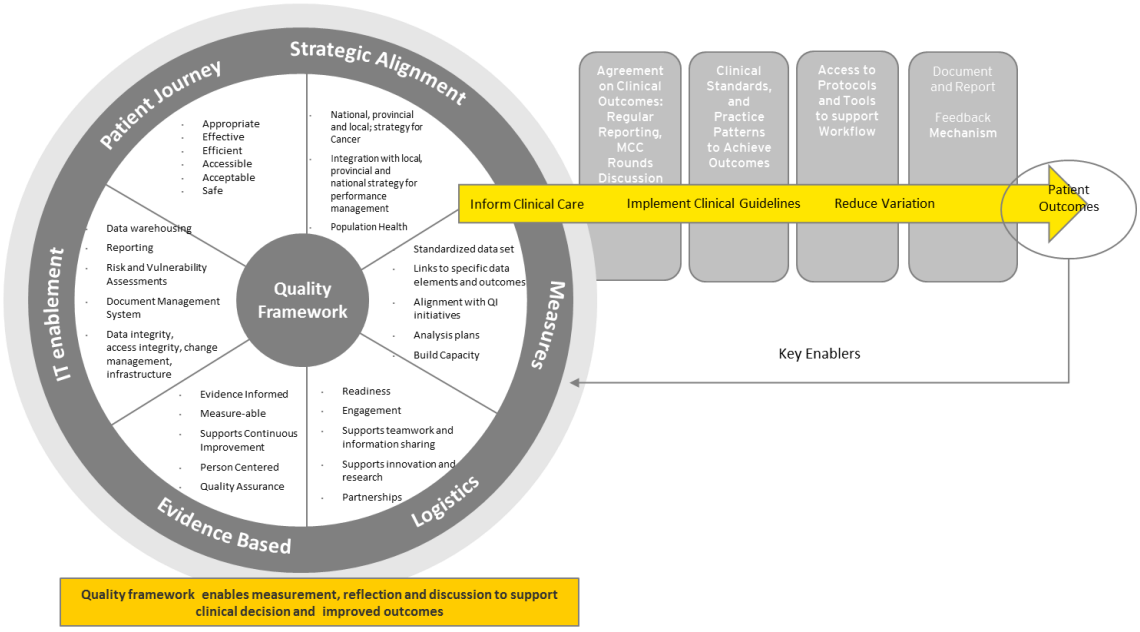
- **Access to Investment**: There will be an ongoing need for investment to sustain ESPRI related to upgrading technology and CAP protocols. As ESPRI is a "national" system, funding should be allocated on an ongoing basis.

8 Integrating with Quality Improvement

The framework in Figure 6 below has been developed to illustrate an example of proposed objectives of using the 48 pan-Canadian indicators derived from ESPRI data. In April 2017, the provincial project teams, clinical leads and sponsors in collaboration with the Partnership will embark on discussion to:

- Confirm which of the indicators are important for measurement in clinical practice vs. of cancer system performance;
- Understand level of resources required to implement mechanism to generate regular feedback reports that can be used by multi-disciplinary teams in the hospitals;
- Identify how indicators can be used as a tool to organize conversation: 1) at multidisciplinary cancer conference, ground rounds; 2) with hospital executives; and 3) within clinical circles; and
- Discuss direct vs. indirect approaches to disseminate ESPRI data evidence to inform clinical guidelines.

Figure 6. Example Quality Implementation Model



9 Conclusion

A key priority within the Partnership's strategic plan for 2012-2017 has been to advance high-quality early detection and clinical care. The Electronic Synoptic Pathology Reporting Initiative (ESPRI) is one of the main initiatives for this priority. ESPRI was built on the success of the National Staging Initiative that started in 2008, and has been implemented to date in six provinces: Ontario, New Brunswick, Nova Scotia, Prince Edward Island, British Columbia, and Manitoba. Efforts in these six provinces by provincial project sponsors and teams, and clinical leaders and champions have been key to the success of the ESPRI implementation and ongoing operations.

To date, ESPRI has made the following contributions to the Canadian cancer control system, resulting in more consistent actions to support high-quality diagnosis and clinical care:

- The six provinces have the means to capture standardized and comprehensive pathology diagnosis, staging, and prognosis data, by implementing the pathology standard protocols (developed by CAP in their information systems.
- A total of 850 pathologists, which comprises 67% of Canadian pathologists, have now transitioned from narrative to electronic reporting in these provinces.
- Provincial and regional health systems, cancer agencies, pathologists and other clinicians can now access diagnosis, staging and treatment data to examine distributions of cancer cell anatomy, the extent to which cancer cell is spreading, the potential for cancer recurrence, patient prognosis, and survival; this information was not previously available before the implementation of ESPRI.

To help reinforce and build on the positive impact that ESPRI has made, this review has explored factors that have either supported or hindered the implementation of ESPRI in these six provinces, through stakeholder survey and interviews across a broad range of participants. Insights have been obtained on key enablers and barriers across four main areas related to the ESPRI initiative (program implementation, engagement and stakeholder experience, partnership, and outcomes/data quality), and the extent to which the original goals of ESPRI have been achieved.

The value of ESPRI to facilitate standardized reporting and to eventually contribute to informing practice and clinical outcomes was a widely shared perspective from all review participants. In line with each province's current state in terms of provincial vs. local laboratory systems, information technology integration, and governance structures for cancer care, ESPRI implementation looked quite different across the country. For the most part, provinces leveraged their established governance structures, clinical leadership and associated project management resources as a key element of successful implementation.

Although this review found that there was not a "one size fits all" approach", provinces encountered similar challenges which were most often related to technology integration, technology project management as well as aligning clinical champions with technology decision making. Those provinces that engaged clinical champions who were already involved in local or regional forums were able to build on this level of established engagement to support ESPRI. Throughout this review, we found that broad engagement of a diverse set of stakeholders in implementation typically led to better overall program experiences.

Specific findings were developed along four major themes:

- Program Implementation: All six provinces took a slightly different project management and clinical engagement approach to adopt the pathology standards, and implement standards in information systems. Project managers played an important role in planning, coordinating and managing the program, and seasoned project managers on large scale initiatives felt more comfortable managing various components of ESPRI implementation. In general, the role and experience level of project managers were found to be critical success factors.
- Although information technology systems are an essential component of ESPRI, all provinces reported IT system-related barriers that posed risks and delays in the implementation phase. In most provinces, securing appropriate IT resources was a challenge itself. Another challenge was the lack of compatibility between vendors' technology interfaces and the Laboratory Information System. To some extent, the third goal of ESRI was achieved in part, as the provincial teams were occupied with province-wide adoption from pathologists and the implementation of vendor

solutions to support synoptic reporting was associated with significant delays. The role of competent and sufficient IT resources in effective implementation should not be discounted for future implementations.

- Engagement and Stakeholder Experience: Positive stakeholder relationships were often cited as a key success factor to ESPRI implementation. All provinces reported that stakeholders understand and share common visions to achieve the goals of ESPRI. Stakeholder engagement strategies varied among each province, and were heavily influenced by the nature of their particular health service delivery model. In particular, physician engagement in early stages of implementation was a key enabler, and having a physician champion contributed to higher adoption of ESPRI. As ESPRI evolves, it will be important that physicians remain involved as key stakeholders to help ensure ongoing sustainability of ESPRI.
- ESPRI Derivable Clinical and Data Quality Indicators for Measurement: Most provinces are utilizing electronic synoptic reporting but are not yet reporting or measuring the pan-Canadian quality and clinical indicators that pathologists (through the Partnership) have identified for clinical quality improvement. Overall, jurisdictions are committed to use the 48 pan-Canadian indicators. Most provinces focused on performance reporting as it relates to completion of the checklist, while some provinces have begun to review selected performance metrics such as turnaround times. However, measuring clinical outcomes and impact appear to be a future goal. While most stakeholders did not have a clear plan to integrate the pan-Canadian indicators to measure quality of cancer diagnosis, cancer recurrences, patient survival, and other clinical outcomes, this is a logical next step for jurisdictions to consider.

Sustainability of ESPRI as a foundation element of the national Cancer Care Strategy is an important consideration moving forward. Based on our findings, sustainability of ESPRI will require ongoing pan Canadian collaboration in the form of knowledge sharing as well as funding support to assist provinces to stay current with the CAP protocols and continue to implement integrated technology solutions. In addition, the ability to continue to measure and report results as well as integrate within a broader quality improvement framework will support the longer term value of ESPRI.

In summary, a strong foundation has been established with the provincial partners, the Canadian Association of Pathologists and the Partnership to successfully achieve the first two goals of ESPRI. However, to fully achieve the third ESPRI goal in 2017-2020 and beyond, there is an opportunity for the Partnership to continue to foster knowledge sharing and results dissemination as well as support for integration of ESPRI into a broader quality improvement system where the link between clinical practice and patient outcomes can be demonstrated and adopted.

Over time, advancing the use of evidence in practice and sharing evidence to influence clinical guidelines will contribute to reaching the 30-year Canada-wide goals of Cancer Control.

10 Appendices

10.1 Appendix A: Provincial Objectives

Category	Prince Edward Island	Nova Scotia	New Brunswick	Manitoba	Ontario	British Columbia - LM
Project Plan						
Objectives						
1	Provide quality Cancer Pathology electronic reporting based on the electronic Cancer Checklist (eCC) for Breast, Colorectal, Lung, Prostate and Endometrial cancers; provincially and nationally considering timeliness, accuracy, completeness, and usability. **Measures of Success:** The measure of success will be 100%adoption of the five protocols and the remaining protocols that have been implemented by Cerner	Facilitate the adoption of the electronic CAP checklist (eCC) for pathology reporting in Nova Scotia. **Measures of Success:**Percentage of pathology reports in a synoptic format at level 5 or 6.	To improve the data quality of Pathology Reporting and CS data capture in NB for new cases of breast, colorectal, prostate & lung cancer **Measures of Success:**Improved completeness of pathology data	Implement a new, provincial state-of-the-art Pathology Laboratory Information System (Pathology LIS) with built-in quality and synoptic reporting functionalities among other new features. • Automated quality assurance processes and electronic generation of quality metrics; **Measures of Success:**Improved specimen and slide tracking from point of entry to reporting across a multi-site pathology environment; Improved case assignment processes through the use of Pathology Complexity Units (PCUs) to redirect work and reduce wait times; Improved search capabilities will allow front line staff to conduct their own searches; Improved integration with clinical and business partners to streamline data sharing.	Increase synoptic pathology reports received at CCO in discrete data field format **Measures of Success:** 90%synoptic surgical pathology reporting rate for resections as of March 2012.	To implement synoptic reporting in the Lower Mainland **Measures of Success:** 90%pathologists compliance with the use of synoptic reporting for the big 5 checklists(breast, lung, colon, endometrial and prostate)
2	Maintain and promote adoption and standardization of format and content of pathology; **Measures of Success:** The eCC's with cKeys will become the sources of truth for the Pathology Reporting on PEI	Facilitate the sustainability of electronic synoptic reporting in NS by setting up a governance structure to coordinate and review the use of the eCC templates in NS **Measures of Success:** eCC templates approved for use in NS.	Achieve population based CS data collection for colorectal, breast, lung and prostate cancer sites by 2010 coding year **Measures of Success:** Inclusion of population based CS data for top 4 sites in 2012 CCR Call for Data submission	Implement standardized electronic CAP Cancer Checklists (eCCs) through a Synoptic Reporting Module in the Pathology LIS in support of pan-Canadian standards that embed evidence into best practice • Level 6 Synoptic Pathology Reporting; **Measures of Success:** Transmission of reports via discrete, data formats (DDF); Synoptic Pathology Indicators	Increase population based stage capture rate **Measures of Success:** 90%CS stage capture rate for 2010 cases at end of March 2012 for the 4 most common disease sites.	To use CAP checklists that have been standardized across BC by the Steering Committee designated experts **Measures of Success:** 65 CAP checklists are standardized in BC by the end of 2014.
3	Improve clinical information for research and diagnostics and quality of care and treatment through the use of cKey discrete standardized data through the system to report on key performance indicators **Measures of Success:** The discrete data becomes available in a Data Mart for studies to be done on the Cancers discovered on Island	Deploy the Cerner LIS Synoptic Module at the Capital District Health Authority and enable templates for the reporting of resections of Breast, Colorectal, Lung, Prostate, and Endometrial cancers. **Measures of Success:** Synoptic Module deployed		Promote the adoption of electronic synoptic pathology reporting by all DSM pathologists for all new cases of Breast, Colorectal, Prostate, Lung and Endometrial cancer resections as a high priority in Manitoba. • Easily accessible eCCs through the Pathology LIS used for cancer resections for the top five disease sites as the first priority; **Measures of Success:** %Capture rate for top five disease sites using the eCC's; Educational and knowledge transfer activities for Pathologists promoting synoptic reporting and indicator development for quality improvement		To upload synoptic reports from the Lower Mainland, VIHA, NHA and IHA into a data repository from which the reports will be uploaded to the BCCR Oncolog system through an interface that is to be built. **Measures of Success:** One year after synoptic reporting is implemented at an HA, 90%of reports are submitted to the BC Cancer Registry via the interface to Oncolog
4	Reduce the flow of information among the labs and administration that contributes to the hybrid chart. **Measures of Success:** There is very few paper documents as the exception related to the chart and the pathologies being reported.	Integrate the Cerner LIS with the NS Cancer Registry to automate collection of pathology reports. **Measures of Success:** Receipt of electronic synoptic reports in the Cancer Registry		Develop an integrated network to support the electronic transmission of synoptic pathology reports into the provincial ehealth infrastructure including the Manitoba Cancer Registry, eChart Manitoba (provincial electronic health record), Hospital and Clinical Electronic Medical Record Systems **Measures of Success:** Future system architecture design and system interfaces mapped		Engagement of pathologists in the use of synoptic reporting **Measures of Success:** 90%pathologists compliance with the use of synoptic reporting for the big 5 checklists(breast, lung, colon, endometrial and prostate)
5		Procure and deploy a 3rd Party solution for electronic synoptic pathology reporting at the remaining health authorities, and IWK, and enable templates for the reporting of resections of Breast, Colorectal, Lung, Prostate, and Endometrial cancers. **Measures of Success:** Synoptic Module deployed		Develop quality and synoptic pathology reporting indicators to monitor, evaluate and continually improve quality assurance and synoptic pathology reporting **Measures of Success:** Identify indicators for quality, synoptic and clinical reporting with pathologist input;		Accuracy and Completeness of reports **Measures of Success:** 90%of reports do not require addenda 90%of the reports have all mandatory fields completed
6		Integrate the 3rd Party solution with Meditech to enable the distribution of electronic pathology reports to existing eHealth infrastructure. **Measures of Success:** Receipt of electronic synoptic reports in both Meditech solution in NS		Data mine the synoptic pathology data using proposed eMaRC Plus and an electronic outcomes reporting tool and report on quality indicators on a regular basis per hospital, or by region or by pathologist **Measures of Success:** Determine %Compliance and %Completeness for synoptic pathology data; Report quality, synoptic and clinical indicators within weeks of pathological assessment		
7		Integrate the 3rd Party solution with the NS Cancer Registry to automate collection of pathology reports. **Measures of Success:** Receipt of electronic synoptic reports in the Cancer Registry				
8		Develop and integrate an HSU reporting tool to facilitate the reporting of operation and clinical indicators for pathology reporting in NS. **Measures of Success:** Electronic generation of provincial indicators to measure compliance and completeness				
9		Facilitate the phased rollout of the remaining eCC templates in NS **Measures of Success:** Percentage of pathology reports in a synoptic format at level 5 or 6.				
Description	The future vision of electronic synoptic pathology reporting is to use standard nomenclature that supports the eCC using discrete c-keys that are cross mapped for all elements that flow through the systems electronically from initial case reported by the pathologists to the Provincial report provided by the cancer registry.	• Deployment of provincial solutions for electronic synoptic pathology reporting in discrete field formats (level 5-6) to achieve a capture rate of 90%in NS; • Governance structure for the coordination and review of the eCC; • Support for business process alignment and change management; • Solution for all cancers with a focus on Breast, Colorectal, Lung, Prostate and Endometrial cancers in the initial deployment; • Integration with current health systems and the NS Cancer Registry; and • Development of reporting capability to track operational and clinical indicators.	The intent of this initiative is to accelerate quality improvement of patient care by enabling the adoption of best practices in pathology and to optimize the complete and consistent reporting of diagnostic and stage information that is required for cancer treatment and surveillance for colorectal, breast, lung and prostate (the four most frequently occurring cancers in NB). These cancers account for approximately 57%of new cases and 54%of deaths in 2002-2006. To facilitate stage data collection, the primary goal of the project is to implement the College of American Pathology (CAP) cancer checklists throughout the province in electronic synoptic format in the remaining four zones.	Diagnostic Services Manitoba (DSM) will be implementing an electronic synoptic pathology reporting initiative at a compliance of Level 6 as part of the rollout of a new, provincial Pathology Laboratory Information System. Activities included in this project include infrastructure deployment, application installation and configuration, interface development and development of a production environment. Through this initiative, the CAP Cancer Checklists, representing the pan-Canadian standard for cancer pathology reporting, will be utilized for reporting cancer resections from Breast, Colorectal, Lung, Prostate and Endometrial disease sites. The electronic synoptic reporting module of the Pathology LIS will be implemented at all six sites	Phase 1 of the pathology hospital implementation has been completed and has enabled synoptic pathology reporting in discrete data fields from a majority of the pathology reporting hospitals in Ontario, using a CCO version of the 2005 checklists for the five most common disease sites. Phase 2B will expand the reporting to 63 eCCs and move all reporting from the current to the new ePath solution. Phase 2B will also include any remaining hospitals that require the implementation of discrete data field reporting. The long-term e-Path solution will be deployed to all e-Path hospitals (as part of Phase 2B)	Standardization of CAP checklists for BC is underway. The Lower Mainland will participate in the standardization of the CAP checklists in BC with some of their pathologists being part of the experts in some of the tumour groups.These standardized checklists will be used in mTuitive. It is expected that the standardization of the checklists will take place between October 2013 and August 2014. The mTuitive Synoptic reporting solution will be interfaced with Sunquest Copath (PHSA/VCH) and Meditech (FH). For Information Technology, this implementation is relatively straightforward, involving a new desktop application that is integrated with the laboratory information system. The implementation is to be phased in in 2014 with an implementation of the big 5 checklists starting after the CPAC contract is effective. The 223 staff who will be using the system will be trained partly by the vendor, partly by super users

10.2 Appendix B: Key Themes by Stakeholder Type

A comparison of interviewed Project Sponsors (4), Provincial Pathology Leads (5), Project Managers (2), Project Leads (4) and Expert Chairs (4) against key themes are found in Table 2.

Table 2. Interview Findings by Project Role

		Roles				
Dimension	**Finding**	**Project Sponsor (4)**	**Provincial Pathology Lead (5)**	**Project Manager (2)**	**Project Lead (4)**	**Chair, Expert Review Panel (4)**
Strategic Alignment	Provincial size aided in implementation					
	Value identified for cross-provincial collaboration regarding challenges					
Governance	Strong multi-regional/disciplinary leadership for support					
	Partnership with provincial cancer network/ agency was helpful					
Stakeholder Engagement	Positive vendor relationship					
Change Management	Initial pushback from pathologists					
	Influential/ leadership pathologists supported and led adoption					
	Adoption rate is currently increasing among pathologists					
Sponsor Visibility & Commitment	Formal approval process for CAP updates identified					
	Positive and essential CPAC relationship experience					
Risk Identification & Management	IT challenges and barriers identified					
	Challenges linking IT and clinical areas identified					
	Sustainability challenges identified					
	Linguistic issues identified					
Project Management	Project manager was crucial for success					
	Organizaed implementation plan was crucial for success					
Resource Management	Funding was a big challenge					
	Provincial body provided resources (funding or admin)					
	Additional budget was requested from CPAC					
Performance Reporting	Provincial evaluations are reported (completeness rates/reporting rates)					
	Positive End-User satisfaction (oncologists, surgeons, etc.)					
	Discussion/ identification of adopting surgical synoptic reporting					
	Dissatisfaction with CAP Electronic Checklists					
Desired Clinical Outcomes	Quality indicators not currently assessed, to be assessed in next steps					

High number of responses	
Medium number of responses	
Few responses	
No responses	

Common findings between selected participants in similar project roles are illustrated through the heat map above. The dark blue boxes on the heat map illustrates a high frequency of individuals reporting specific findings, compared to a light blue box that illustrates only one or two responses. White boxes illustrate no reports for a specific finding by a certain type of project role. This response was common for the Expert Chair group as they were engaged as an advisory body during implementation and did not have the same experiences as other project participants.

The findings were assessed to identify what dimensions provided more challenges during implementation. Between participant roles, there was heavy correlation in findings for the following:

- Influential pathologists;

- IT challenges and barriers;
- Role of The Partnership;
- Multi-disciplinary leadership; and
- Current assessment of clinical outcomes.

These project roles were selected from the interview participant pool due to their comparability across multiple jurisdictions as individuals had similar responsibilities. It is important to note that although these selected participants have reported specific findings, there are more jurisdiction-specific findings that were not common to all similar roles.

10.3 Appendix C: Provincial Health Service Operating Models

Brief descriptions of the six in-scope jurisdictions for the ESPRI evaluation are provided below, with particular focus on their cancer care system's governance/leadership models, funding models, IT infrastructure, and oncology/pathology service delivery models as applicable.

10.3.1 British Columbia

The Ministry of Health oversees the management of BC's healthcare system. There are five health authorities that are responsible for the delivery of health services based on their regional scopes. A sixth health authority, called the Provincial Health Services Authority's (PHSA), is mandated to manage the coordination between the five health authorities, as well as the quality and patient access to vital health programs across the province (IPAC, 2013). British Columbia Cancer Agency (BCCA) is one of the PHSA agencies that is responsible for all aspects of cancer control over the six BC regional cancer centres. The Agency is funded by the PHSA and BC Cancer Foundation.

To carry out its mandate, the Agency closely collaborates with the other five health authorities to achieve a high level of service/program integration for the BC patients. BC's cancer care services operate in a highly standardized and integrated clinical, operations, and network system allowing for full information integration within the province (Carlow, 2000). Oncology services are delivered through the cancer centres and clinics, where the clinics act as extensions of the centres. Infrastructures were created to promote and maintain both system integration and standardization – A couple of examples include Tumour Groups that establish practice standard provincially and Networks that have developed standardized processes for each service delivery.

Pathology services are also run by the Agency and synoptic medical reporting guidelines have already been approved and implemented, although some customizations were done for select oncology clinicians and tumour groups (PHSA, 2016).

10.3.2 Manitoba

There are two provincial departments governing the Manitoba's healthcare services: (1) Manitoba Health and (2) Manitoba Healthy Living, Seniors and Consumer Affairs (IPAC, 2013). Delivery of health care services across the province is done by the Regional Health Authorities (RHAs). Cancer Care Manitoba (CCMB) is the provincially mandated agency tasked with providing end-to-end cancer care services in Manitoba.

As an agency, CCMB is funded by the provincial government and the Cancer Care Manitoba Foundation. It operates under a legislative mandate: Cancer Care Manitoba Act and works closely with the RHAs in providing cancer services to Manitobans. Specifically to its services, CCMB provides Direct Clinical Services at two tertiary sites that include chemotherapy, radiation treatments, and patient support services (CCMB, 2016). It has a research institute that specializes in oncology and hematology, and contribute to the development of best practices in the field. Diagnostic services are managed by Diagnostic Services Manitoba (DSM), whose services are consolidated in the regional and provincial level.

Looking at the health IT infrastructure, Manitoba uses a centralized referral and intake system for cancer patients, allowing them to maintain a single point of entry to the cancer care referral system. They are also in the process of implementing a Pathology Laboratory Information System and a Pathology Synoptic Reporting System that will improve workflow, patient safety, and pathology report standardization and completeness (DSM, 2015).

10.3.3 Ontario

Cancer Care Ontario (CCO) is the organization responsible for the coordination, planning, and funding of cancer programs/services in Ontario. CCO's service deliveries are carried out by the Regional Cancer Programs (RCPs) that are aligned with the Local Health Integration Networks (LHINs), such that there is one RCP in every LHIN, totaling to 14 RCPs (CCO, 2015). Each RCP is led by a Regional Vice-President (RVP), who manages the fulfillment of cancer care needs in their associated regions and reports to CCO in terms of performance and allocation of funding based on population needs.

Within the 14 RCPs, there are 77 cancer facilities that provide varying levels systemic treatments; meaning that a patient may need to go to multiple facilities depending on their cancer needs and proximities to the facilities (CCO, 2015). CCO receives quality-linked funding through the Ministry of Health and also directs cancer funds into the 14 RCPs' based on their performance and population needs (CCO, 2015).

Looking at their IT infrastructure, CCO is currently in the process of building one that can support a complete integration of the cancer system. However, they had implemented electronic synoptic pathology reporting in 2010 (CCO, 2011). To help patients take ownership of their care, CCO utilizes the Interactive Symptom Assessment and Collection (ISAAC) that allows patients to monitor, assess, and update the care teams on their cancer symptoms online (CCO, 2011). As the cancer system funding is tied to its performance, CCO monitors the cancer system performance, including wait time, which is accessible through the iPort™ & iPort™Access applications for planning and analytics purposes (CCO, 2011).

10.3.4 Prince Edward Island

The cancer care system in PEI is managed by Health PEI, a Crown Corporation responsible for all public-funded health services. Health PEI is headed by a CEO and governed by the Board of Directors that ensure program alignment to the Department of Health and Wellness's goals and objectives (IPAC, 2013). Since it is a Crown Corporation entity, Health PEI receives its funding from the provincial government. Some of the funding has been invested to enhance its health IT infrastructure through implementation of the EHR system that will provide patients with access to their health records across the cancer care continuum. Health PEI has also implemented the Electronic synoptic pathology reporting in 2013/2014 (THE PARTNERSHIP, 2013).

Health PEI runs a Systemic Cancer Treatment Program with dedicated Action Groups that work on the different types of cancers (i.e. breast, lung, prostate, etc.) and Working Groups that work on provincial information management and policies/legislations (Health PEI, 2016). Under Health PEI's supervision, this program is coordinated by the Provincial Care Coordination Steering Committee consisting of clinician and management leaders. Health PEI focuses its cancer services on aggressive screening, provision of medical (i.e. chemotherapy, hormonal, targeted) and radiation treatments, as well as supportive services (i.e. Patient navigation program that provides information and psychological support throughout the patient journey).

10.3.5 Nova Scotia

Healthcare services in Nova Scotia are centralized within the Department of Health and Wellness (DHW) (IPAC, 2013). Delivery of healthcare services are done through Nova Scotia's 9 District Health Authorities (DHA), which are accountable and report to the DHW. Cancer Care Nova Scotia (CCNS) is a program of the Nova Scotia Health Authority that is mandated to coordinate, enhance, and evaluate cancer care services in Nova Scotia. As part of the Nova Scotia Health Authority, CCNS receives funding from and reports to Nova Scotia's provincial government.

Nova Scotia is quite progressive with regard to its healthcare IT infrastructure as many of Nova Scotia's health organizations have adopted the use of EMR toward further provincial integration. Similarly, Nova Scotia has also worked with THE PARTNERSHIP to implement an electronic synoptic pathology reporting system provincially. Cancer Patient Navigators is a vital part of the CCNS' oncology service delivery model as they support patients with psychological and physical distress (CCNS, 2016). Palliative and Hospice Care services are available for those living with advanced cancer.

10.3.6 New Brunswick

New Brunswick have 2 Regional Health Authorities (RHAs) that are responsible for health care service delivery in their associated regions: Vitalité Health Network and Horizon Health Network. Both RHAs are governed by the Board of Directors, which report to the Ministry of Health. The New Brunswick Cancer Network (NBCN) is a government-funded branch of the Department of Health, which is responsible for all elements of cancer control in the province.

NBCN works closely with the 2 RHAs in providing and coordinating cancer care services in New Brunswick. Integrated cancer screening and prevention are important elements of Nova Scotia's cancer service delivery model, targeted mostly for breast, cervical, and colon cancers (NBCN, 2016). With regard to pathology practices, NBCN collaborated with THE PARTNERSHIP to adopt the CAP protocols and implement Synoptic Pathology Reporting across the province in collaboration with THE PARTNERSHIP (Srigley, 2010).

10.4 Appendix D: Project Background

The Partnership required each jurisdiction to develop a concrete project plan. Provinces did not receive funding until detailed project plans were submitted and approved by The Partnership. Each project plan provided specific objectives and outputs to be achieved by the jurisdiction. Examples of output objectives included analytic reporting, evaluation and knowledge sharing or data quality monitoring and measurement. Project objectives were supplemented with key measures of success, such as reporting rate or stage capture rate targets, which helped provinces set goals for implementation. Provinces identified what elements were in or out of scope for the project to ensure resources would be allocated sufficiently. Project deliverables were documented and assigned start and end dates to illustrate timelines and targets for completion. Key stakeholders, internal and external, were identified within project plans with associated roles to create a structured governance.

Constraints, assumptions and readiness requirements were evaluated and documented within project plans to assure all aspects of implementation was covered. Known risks were identified and assessed against impact and probability to determine if any significant barriers would impose challenges during implementation. Finally, budgets were created with projected expenses and funding to determine the feasibility of the initiative.

The Partnership provided additional resources to jurisdictions on an as-needed basis, to jurisdictions who faced additional risks and issues that challenged implementation. The process for additional funding was through a formal business case outlining the need for additional funding, as well as the root cause of the challenges that caused it.

The Partnership identified both system and population impact timelines for implementing provinces to target for. The current state of implementation across the jurisdictions are at various levels, although no provinces have currently been able to implement the clinical and quality indicators as targeted.

The target for completed implementation of ESPRI is set for March 2017. By then, the immediate forecasted system impacts include:

- Consistent approach to enhance quality of diagnosis and clinical care
- Improved access to evidence-based prevention strategies
- Improved capacity to respond to patient needs
- Enhanced coordination of cancer research
- Improved and efficient cancer control
- Improved analysis and reporting on cancer system performance
- Enhanced access to high-quality information, tools and resources
- Enhanced public and patient awareness

Furthermore, The Partnership has set out targets for system impacts from 2018-2027 that include:

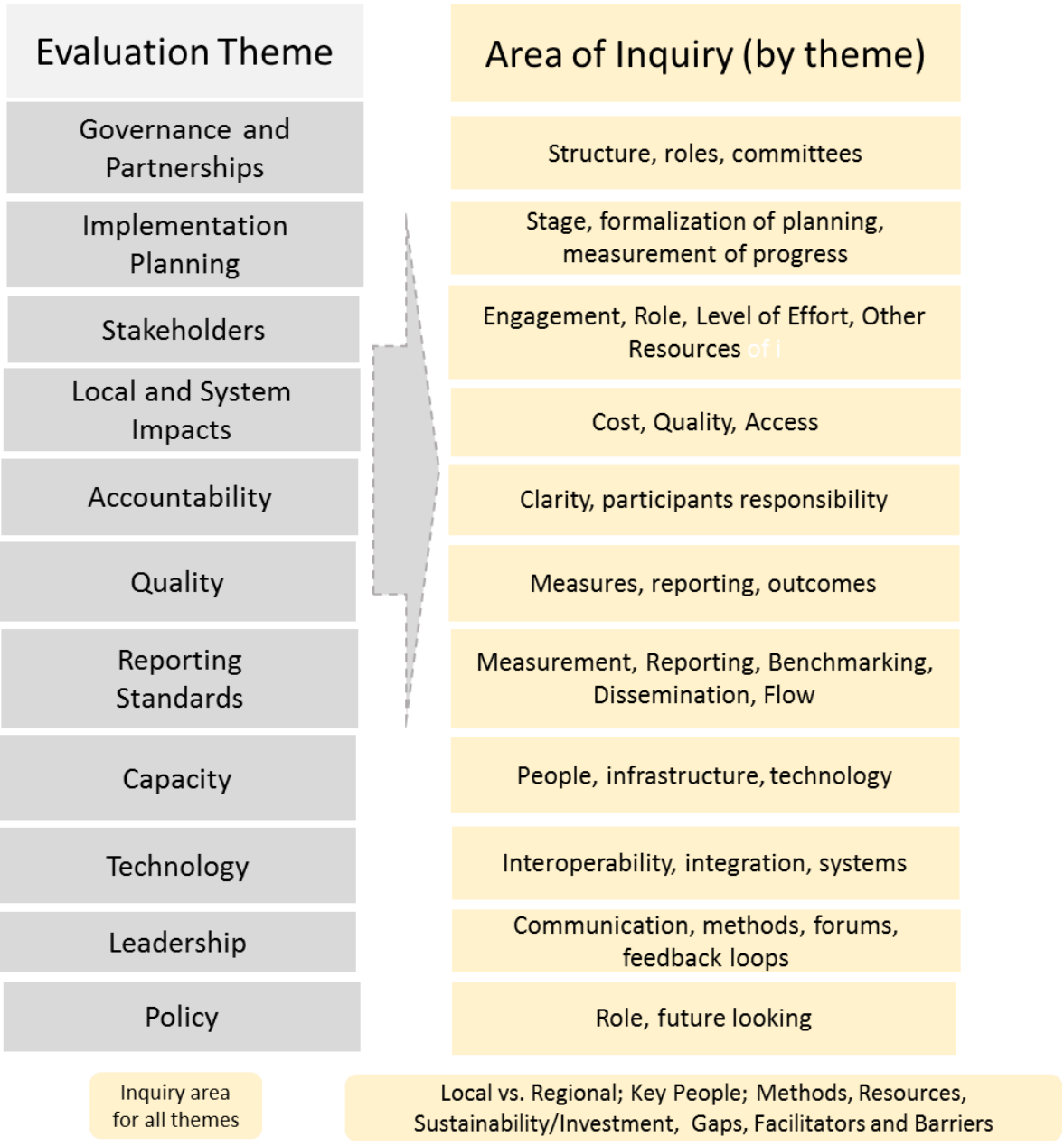
- Enhanced population-based prevention and screening
- Enhanced quality of diagnosis and clinical care
- Improved cancer experiences for all Canadians
- Synergies between cancer control system and broader provincial and national health systems

The ESPRI project is only the first step for the long term vision of The Partnership. The immediate and intermediate project outcomes will help lead to a successful long-term population outcome where the overall goals are to reduce the likelihood of Canadians dying from cancer and enhance the quality of life for those affected by cancer.

10.5 Appendix E: Interview Approach

Figure 5 sets out the themes of interest which in turn informed the questions which were developed for telephone interviews and e surveys using the interview guide in Appendix D.

Figure 5: Evaluation Themes



10.6 Appendix F: Interview Guide

Canadian Partnership Against Cancer
Evaluation of the Electronic Synoptic Pathology Report Initiative

Interview Guide 2016

Introduction

The Canadian Partnership Against Cancer has engaged Ernst & Young LLP (EY) to assist with an Evaluation of the Electronic Synoptic Pathology Reporting Initiative (ESPRI) implementation.

About this Survey

The goal of this survey is to gather stakeholder perspectives on the implementation of ESPRI initiatives in each jurisdiction. These results will be aggregated and used to inform the qualitative evaluation report of ESPRI for stakeholders including Health Canada.

All responses are confidential and will be aggregated in such a way that no individual responses will be identifiable.

Thank you!

Thank you for your participation!

Background

1. To begin, can you please tell me a little bit about your role with the ESPRI project and how long you have been involved?
Role:
Organization:
Length of time involved: (months)
2. What is the stage overall of your province's implementation: e.g. exploration, initial, full? 1) Exploration – Identifying the need for change, learning about possible interventions that may provide solutions, learning about what it takes to implement ESPRI effectively, developing stakeholders and champions, assessing and creating readiness for change, and deciding to proceed (or not) 2) Installation – establishing the resources needed to implement ESPRI as intended 3) Initial Implementation – the first use of a ESPRI by clinicians and others and designing new ways of work/work flow 4) Full Implementation – the skillful use of ESPRI that is well-integrated into the workflow and routinely and effectively supported by majority of clinicians who have access
a. Exploration b. Installation c. Initial Implementation d. Full Implementation

Section 2: Governance and Partnerships

3. *Was a provincial lead and/or a lead organization identified to facilitate adoption and implementation of synoptic reporting?*
a. *Yes* b. *No*
If yes, who?
a. Lead Pathologist *b. Lead Surgeon* *c. Committee* *d. Hospital, please specify* *e. Agency, please specify* *f. Other, please specify*
4. *If you are the provincial lead/ champion, what were some challenges you came across? And how did you solve these challenges?*

Challenges	How were these resolved?

What have been your main achievements to date?
1.
2.
3.

5. *What enabled you to achieve the ESPRI goals and clinical uptake so far? (please indicate all that apply)*
   a. *Provincial leadership*
   b. *Local leadership (hospital or agency)*
   c. *Clinician leadership, please specify*
   d. *Implementation plan*
   e. *Implementation team*
   f. *THE PARTNERSHIP support*
   g. *Financial support*
   h. *Technology*
   i. *Other, please specify*

6. *What was the role of the local champions, opinion leaders, early adopters and other experts? How effective was this role to support ESPRI objectives?*

Champion (e.g. opinion leader, clinician, early adopter)	Role/Contribution	How Effective (1,2,3 with 1 being highest and 3 lowest)	Specific Outcomes
1.			
2.			
3.			
4.			

Other comments

7. *Please identify any other groups you worked with to implement ESPRI and describe how they fit within the project governance structure (e.g. partnerships, advisory groups, et al.)*	
Group to implement ESPRI	***Role in project governance***
1.	
2.	
3.	
4.	

Section 3: Approach to Implementation

8. *Did you use a specific implementation plan?*
a. Yes b. No
Why, was an implementation plan used?
a. *Requirement, please specify* b. *Personal preference* c. *Other, please specify*
Why was an implementation plan not used?
a. *Stage of implementation* b. *Not a requirement* c. *Other, please specify*

9. *Describe the key components of your ESPRI implementation. What, if any, were the key considerations you contemplated when considering your implementation?*	
Key components/stages of implementation	**Key considerations at this stage** 1. Communication and engagement 2. Timing 3. Resources – people 4. Resources-financial 5. Resources – technology 6. Reporting, information sharing 7. Quality 8. other
Project/program initiation and planning (feasibility, partners, expected results, scope)	
Project/program definition (requirements for ESPRI, results and expectations)	

Project/program design and development (how the program will work – who, roles, what, where, when, how)	
Implementation (management of the project results)	
Follow up and sustainability	
Other	

10. Were these components the same across the ESPRI participating provinces?
a. Yes b. No c. Unknown
If these implementation components were different in other provinces, please describe
11. *Did you identify any specific requirements for the program implementation **planning**? If so, please describe.*
a. Yes b. No

If yes, please describe the resourcing (by type and level of effort) that was identified for the implementation planning?		
Resourcing identified	**Type of resource**	**Amount/level of support required**

12. *Please describe the resourcing (by type and level of effort) that was actually utilized for the implementation?*		
Resourcing used	**Type of resource**	**Amount/level of support**

13. *In retrospect, what changes (if any) would you make to this resourcing plan?*

1. *Yes, would have made changes*
2. *No changes*

If you would have made changes to the implementation, what would they have been? (Please indicate all that apply)

a. *People engaged*
b. *Specific communication*
c. *Timing of planning or implementation*
d. *Specific people involved*
e. *Financial resources*
f. *Technology*
g. *Reporting, information sharing*
h. *Other, please specify*

14. *Please describe some of the key enablers and barriers you have encountered in implementing and operationalizing ESPRI?*

Enablers	**Barriers**
a. *Local champions (please specific who)* b. *Provincial champions (please specify who)* c. *Thought leaders* d. *Clinicians* e. *Other individuals or group (please specify)* f. *Specific communication about the program* g. *Program planning* h. *Program resources - people* i. *Timing of the implementation* j. *Financial resources or support* k. *Technology used* l. *Standards terminology* m. *Reporting, information sharing* n. *Anticipated impact of care quality and outcomes* o. *Existing clinical processes* p. *Political will*	a. *Local champions (please specific who)* b. *Provincial champions (please specify who)* c. *Thought leaders* d. *Clinicians* e. *Other individuals or groups (please specify)* f. *Specific communication about the program* g. *Program planning* h. *Program resources - people* i. *Timing of the implementation* j. *Financial resources or support* k. *Technology used* l. *Standards terminology* m. *Reporting, information sharing* n. *Anticipated impact of care quality and outcomes* o. *Existing clinical processes* p. *Political will*
Other, please specify	*Other, please specify*

15. *What are some of the key barriers you are still solving or have not been able to solve? What additional barriers do you foresee emerging in the near future?*

Barriers remaining	**Required solutions**	**Future barriers**
1.		
2.		
3.		

4.		

16. *Please describe any landmark events that occurred during your implementation that facilitated or were barriers to the implementation.*
17. *Please describe any evaluation that was built into your implementation planning.*
a. *Yes, an evaluation was built in to implementation* b. *No evaluation*
If yes, please describe

Section 4: Stakeholder engagement

18. Which groups/key partners did you consult with or engage at the planning or implementation stages?	
Group/individuals consulted for planning or implementation ESPRI	**Expectation or role of that group or individual**
1.	
2.	
3.	
4.	
How were they engaged?	

Partner	How engaged
1.	
2.	
3.	
4.	

19. Please describe how ESPRI has impacted relationships between and with or had any unintended consequences with stakeholders or groups such as Regional Cancer Centres, Academic Centres, Professional associations, Funders/ provincial funding agencies, or any other provincial associations or organizations.

Organization	How impacted
Regional Cancer Centre	
Academic Centre	
Professional Associations	
Funders	
Specific surgeons	
Specific pathologists	
Other clinicians	
Specific hospitals	
Patients or families	
Other, please specify	

20. *Please describe any specific organization and location enablers or barriers to stakeholder engagement.*

1.
2.
3.
4.

Section 5: Local and System Impacts

21. *What have been the specific **system impacts** of the ESPRI implementation in your region so far?*

a. Increased information exchange
b. Cross organization or provider collaboration
c. Quality of specific reporting
d. Grand-round sessions in your hospitals
e. Other, please specify

22. *Have there been any measureable **quality impacts** in relation to the following noted to date? If so what has been the quantitative impact on:*

a. *Overall access to care*
b. *Time to diagnosis*
c. *Time to treatment*
d. *Quality of diagnosis*
e. *Quality of surgery*
f. *Patient prognosis*
g. *Patient outcome*
h. *Other, please specify*

If there have been no measureable quality impacts, why not?

a. Stage of implementation
b. Availability of metrics and measures
c. Data gathering tools
d. Standardization of measures
e. Reporting mechanisms
f. Access to appropriate technology
g. Other, please specify

23. *Have you measured any other specific impacts from ESPRI related to the patient journey? E.g. patient satisfaction, integration of care pathways or cross-organizational collaboration?*

a. Yes
b. No

If yes, what patient specific impacts have been measured?

a. Satisfaction
b. Care outcomes
c. Care coordination
d. Time to diagnosis
e. Time to treatment
f. Other, please specify

24. Do you see an opportunity for or do you have any examples of ESPRI supporting enhanced interprovincial collaboration (including information sharing and/or benchmarks)?
a. Yes b. No
If yes, please specify example(s)

Section 6: Accountability

25. *How was ESPRI program accountability distributed throughout the project implementation team?*
a. By role – clinical b. By role – administrative c. By role – reporting and results reporting d. By organization e. Other, please specify
26. *What measures facilitated ESPRI program accountability?*
a. Clarity of role - clinical b. Clarity of role – administrative c. Clarify of role – reporting and results reporting d. Program design and definition e. Local decision making f. Ability to influence program changes g. Other, please specify
27. How are individuals expected to be held accountable based on their role?

Section 7: Quality

28. *Are the ESPRI data being used to measure and make improvements to any quality of care indicators in your region?*
a. *Yes* b. *No*
If yes, which indicators?
a. *Overall access to care* b. *Time to diagnosis* c. *Time to treatment* d. *Quality of diagnosis* e. *Quality of surgery* f. *Patient prognosis* g. *Patient outcome* h. *Patient satisfaction* i. *System coordination* j. *System collaboration* k. *Cost*

l. *Other, please specify*

What is expected to be measured with ESPRI data?

a. *Overall access to care*
b. *Time to diagnosis*
c. *Time to treatment*
d. *Quality of diagnosis*
e. *Quality of surgery*
f. *Patient prognosis*
g. *Patient outcome*
h. *Patient satisfaction*
i. *System coordination*
j. *System collaboration*
k. *Cost*
l. *Other, please specify*

29. *Are ESPRI data being used to provide feedback (including patient outcomes) to clinicians such as pathologists and surgeons?*

a. Yes
b. No

If yes, what specific data is being used?

a. *Overall access to care*
b. *Time to diagnosis*
c. *Time to treatment*
d. *Quality of diagnosis*
e. *Quality of surgery*
f. *Patient prognosis*
g. *Patient outcome*
h. *Patient satisfaction*
i. *System coordination*
j. *System collaboration*
k. *Cost*
l. *Other, please specify*

How is this data being used by clinicians such as pathologists and surgeons?

30. *Are ESPRI data integrated into broader provincial quality programs or being used to support decision making for clinical, cancer control, system planning or Provincial Quality Indicator Reporting?*

a. *Yes*
b. *No*

If yes, which indicators?

Indicator	*Reporting system* 1. Local clinical quality 2. Cancer control 3. Local quality reporting 4. Provincial reporting	*Expected impact/value*

If not, is there value to integrate this data into provincial reporting?

a. *Yes*
b. *No*

31. *Are you aware of the Quality Initiative in Interpretative Pathology (QIIP)?*

a. *Yes*
b. *No*

If yes, how do you see this information integrated into local or provincial reporting?

32. *How do you foresee ESPRI data be used in relation to quality initiative in Interpretative Pathology?*

Section 8: Reporting Standards

33. Please describe any approaches taken to ensure that ongoing updates or revisions made to the pathology standards by College of American Pathologists (CAP) are incorporated into information systems.

34. Do you foresee any challenges in the future upgrading your system to align with the CAP update releases?

a. Yes
b. No

If yes, what will these challenges be?

a. Data quality
b. Data access
c. Data standards
d. Upgrade cost
e. Upgrade resource requirements

f. Other, please specify

35. Please describe the approach and methods used to record and disseminate any changes to the pathology reporting standards.

Changes to pathology reporting standards	Method to record	Method to disseminate

36. What is the level of commitment from provincial oversight groups to integrate and/or maintain pathology reporting standards?

Provincial oversight group	Level of Commitment 1. High 2. Medium 3. Low 4. Unknown
1.	
2.	
3.	
4.	

Who in your province will be responsible to oversee this?

37. How will the measurement of pathology indicators influence the following:	
Indicators Influenced	**Result**
Clinical practice	
Clinical guidelines	
Clinical level accountability	
National level accountability	

Section 9: Capacity

38. What are the professional capacity and capability building requirements to support implementation e.g. results interpretation, and what are the priorities to support more sustainable implementation?	
Professional capacity and capability requirements to support implementation	**Priority** 1. Immediate 2. Next 6 months 3. 6 months to 1 year 4. Greater than 1 year
Education, please specify	
Technology use	
Results interpretation	
Other, please specify	
1.	
2.	

39. Are there any inter-professional impacts and requirements? e.g. roles for nursing, technology	
Professional Group	**Impacts and requirements**

40. What are the infrastructure requirements? e.g. IT systems

Section 10: Technology

41. What systems are you using for data capture?
42. Are these integrated systems? e.g. part of the organization's EHR
a. Yes b. No
43. Are there any manual data capture processes in place?
a. Yes b. No
44. What other methods are used to capture data?
45. What level of pathology reporting is complete? Who are the main data users?
46. Do you have any audit or review processes in place for data capture and reporting? If so, please describe.
a. Yes b. No
If yes, please describe

47. Do you have plans to support data capture and pathology reporting over the long-term? If so, please describe.
a. Yes b. No
If yes, please describe
48. How do you see new technologies being integrated into this system?

Section 11: Leadership

49. Please describe any key gaps in support for your ESPRI implementation including funding, capacity, infrastructure, technology.	
Key Gap	**Describe**
Funding	
Clinical capacity	
Infrastructure	
Leadership	
50. Please describe how THE PARTNERSHIP worked with you through the ESPRI implementation?	
Support from the Partnership	**Benefit** 1. Essential 2. Helpful but not essential 3. Neutral
Providing forum for information sharing	
Information dissemination	
Advocacy	
Technology review	
Other, please specify	
1.	
2.	
3.	

51. What other role could the Partnership have played during any phase of implementation?

Section 12: Policy

52. Please describe any political barriers or issues you faced during implementation provincially? Nationally? Internationally?

Section 13: Final Thoughts

53. If you could change one thing about this experience what would it be?
54. What are some key considerations that you think should be shared with provinces who have not yet implemented ESPRI?
55. Please describe how ESPRI has changed the pathology reporting environment?
56. Are there any other current or foreseeable pathology issues you believe should be addressed?
a. Yes b. No
If yes, please specify
57. Is there anything else you would like to share today?

Thank you

10.7 References

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10.8 Forty-Eight Indicators

Disease Site	Indicator Title	Definition
Breast	Histologic Type Distribution	Distribution of histologic type in primary invasive breast cancer cases in synoptic pathology reports
	Histologic Grade Distribution	Distribution of histologic grade in cases of primary invasive breast cancer cases in synoptic pathology reports
	Lymph Node Involvement	Distribution of axillary lymph node involvement and classification of tumor burden into macro metastases and micro metastases in all primary invasive breast cancer cases in synoptic pathology reports
	Lymph Node Involvement (without neoadjuvant therapy)	Distribution of axillary lymph node involvement and classification of tumor burden into macro metastases and micro metastases in all primary invasive breast cancer cases without presurgical (neoadjuvant) therapy in synoptic pathology reports
	Lymph Node Involvement (with neoadjuvant therapy)	Distribution of axillary lymph node involvement and classification of tumor burden into macro metastases and micro metastases in all primary invasive breast cancer patients with presurgical (neoadjuvant) therapy in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution	Distribution of tumor size in cases of primary invasive breast cancer in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution (without neoadjuvant therapy)	Distribution of tumor size in cases of primary invasive breast cancer without presurgical (neoadjuvant) therapy in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution (with neoadjuvant therapy)	Distribution of tumor size in cases of primary invasive breast cancer with presurgical (neoadjuvant) therapy in synoptic pathology reports
	Margin Status Distribution	Distribution of margin status in primary invasive and DCIS breast cancer cases in synoptic pathology reports
	Margin Status Distribution (without neoadjuvant therapy)	Distribution of margin status in cases of primary invasive and DCIS breast cancer without presurgical (neoadjuvant) therapy in synoptic pathology reports
	Margin Status Distribution (with neoadjuvant therapy)	Distribution of margin status in cases of primary invasive and DCIS breast cancer cases with presurgical (neoadjuvant) therapy in synoptic pathology reports
Colorectal	Adequate (≥12) Number of Lymph Nodes Examined	Proportion of colorectal cancer cases with at least 12 lymph nodes examined in synoptic pathology reports
	Microsatellite Instability (MSI) Status	Proportion of cases in which immunohistochemistry (IHC) for mismatch repair (MMR) proteins or PCR (polymerase chain reaction) for MSI has been done for colorectal and rectal cancer patients **aged 70 or younger** in synoptic pathology reports.
	Macroscopic Intactness of Mesorectum	Proportion of rectal cancer cases that report on macroscopic intactness of mesorectum in synoptic pathology reports
	Macroscopic Intactness of Mesorectum and Quality of TME	Proportion of rectal cancer cases where TME is complete in synoptic pathology reports
	Circumferential (Radial) or Mesenteric Margin Status	Proportion of colorectal cancer resection cases that report Circumferential (Radial) or Mesenteric Margin status in synoptic pathology reports
	Circumferential (Radial) or Mesenteric Margin Status with ≤1mm radial margin status	Proportion of colorectal cancer resection cases that report circumferential (radial) or mesenteric margin status of ≤1mm in synoptic pathology reports
	Primary Tumor (pT) and Regional Lymph Nodes (pN) Stage Distribution	Distribution of the pathologic stage of colorectal cancer cases by T and by N (using the TNM system) in synoptic pathology reports
	Serosal Penetration	Proportion of colorectal cancer resection cases in which there is penetration of the serosa (pT4a and pT4b) documented in synoptic pathology reports
	Lymphovascular Invasion	Proportion of colorectal cancer cases that have lymphovascular invasion present in synoptic pathology reports

Disease Site	Indicator Title	Definition
Endometrial	Histologic Type Distribution	Distribution of histologic type in endometrial cancer cases in synoptic pathology reports
	Histologic Grade Distribution	Distribution of histologic grade in cases of endometrioid adenocarcinoma that are FIGO grade 1, FIGO grade 2 or FIGO grade 3 in synoptic pathology reports
	Lymphovascular Invasion (LVI) Status	Proportion of endometrial cancer cases that have lymphovascular invasion reported in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution	Distribution of primary tumor stage in cases of endometrial cancer in synoptic pathology reports
	Lymph Node Sampling	Distribution of endometrial cancer cases where lymph node sampling was performed or not performed for pelvic and para-aortic lymph nodes and recorded in synoptic pathology reports
	Lymph Node Involvement	Proportion of endometrial cancer cases of with positive regional lymph node involvement in synoptic pathology reports
	Pelvic Lymph Nodes Examined	Number of endometrial cancer cases with pelvic lymph nodes examined and documented in synoptic pathology reports
	Para-aortic Lymph Nodes Examined	Number of cases of endometrial cancer with para-aortic lymph nodes examined and documented in synoptic pathology reports
	MMR Immunohistochemistry	Proportion of endometrial cancer cases with mismatch repair (MMR) protein expression documented or assessed in synoptic pathology reports.
Lung	Histologic Type Distribution	Distribution of histologic type in small cell lung cancer (SCLC) and major subtypes of non-small cell lung cancer (NSCLC) in synoptic pathology reports
	Margin Positivity Rate	Proportion of NSCLC lung cancer cases that had a resection surgery and reported a margin status of either (1) "involved by invasive carcinoma"; or (2) "cannot be assessed" in synoptic pathology reports
	Number of Lymph Nodes Examined	Distribution of the number of lymph nodes examined for Segmentectomy, Lobectomy, Bilobectomy and Pneumonectomy in lung cancer patients without presurgical (neoadjuvant) therapy in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution (with neoadjuvant therapy)	Distribution of primary tumor stage in lung cancer cases with presurgical (neoadjuvant) therapy for NSCLC and recorded in synoptic pathology reports
	Primary Tumor (pT) Stage Distribution (without neoadjuvant therapy)	Distribution of primary tumor stage of lung cancer cases without presurgical (neoadjuvant) therapy recorded in synoptic pathology reports
	Regional Lymph Nodes (pN) Stage Distribution (with neoadjuvant therapy)	Distribution of regional lymph nodes stage in cases of lung cancer with presurgical (neoadjuvant) therapy in synoptic pathology reports
	Regional Lymph Nodes (pN) Stage Distribution (without neoadjuvant therapy)	Distribution of regional lymph nodes stage in cases of lung cancer without presurgical (neoadjuvant) therapy in synoptic pathology reports
Prostate	Primary Tumor (pT) and Regional Lymph Nodes (pN) Stage Distribution (with neoadjuvant therapy)	Distribution of primary tumor and regional lymph nodes stage in radical prostatectomy cases with presurgical (neoadjuvant) therapy documented in synoptic pathology reports
	Primary Tumor (pT) and Regional Lymph Nodes (pN) Stage Distribution (without neoadjuvant therapy)	Distribution of primary tumor and regional lymph nodes stage in radical prostatectomy cases without presurgical (neoadjuvant) therapy documented in synoptic pathology reports
	Gleason Grade Distribution	Distribution of radical prostatectomy cases assessed using Gleason Grade: primary pattern, secondary pattern and tertiary pattern in synoptic pathology reports
	Total Gleason Score Distribution (ISUP)	Total Gleason Score distribution for radical prostatectomy cases in synoptic pathology reports, using ISUP classification
	Margin Status Distribution	Proportion of prostate cancer cases treated with radical prostatectomy that report presence of positive or negative surgical margin status in synoptic pathology reports

Disease Site	Indicator Title	Definition
	Organ Confined (pT2) Margin Status	Proportion of organ confined radical prostatectomy cases where the margin was reported as positive (R1 margin status) in synoptic pathology reports
	Extraprostatic (pT3) Margin Positivity Rate	Proportion of extraprostatic extension radical prostatectomy cases where the margin was reported as positive (R1 margin status) in synoptic pathology reports
	Number of Regional Lymph Nodes Examined	Proportion of cancer cases treated with radical prostatectomy with regional lymph nodes examined and recorded in synoptic pathology reports
	Number of Regional Lymph Nodes Involved	Proportion of prostate cancer cases treated with radical prostatectomy with positive regional lymph nodes involved and recorded in synoptic pathology reports
Data Quality	Compliance Rate	The synoptic reporting compliance rate measures adherence to the standardized reporting protocol
	Completeness Rate	The pathology report completeness rate, which in itself is a quality indicator for pathology practice
	Turnaround Time	Turnaround time is measured by the percentage of resection reports for breast complete excisions, colon and rectum resections, hysterectomy specimens, lung resections and radical prostatectomies received electronically by an agency within 14 calendar days of the date of surgery

10.9 Definitions, Acronyms and Abbreviations

Term	Definition
CAP	College of American Pathologists
CAP-ACP	Canadian Association of Pathologists
CCR	Canadian Cancer Registry
CoP	Community of Practice which brings together representatives from the province, vendor and standards bodies to discuss best practices and lessons learned
ESPRI	Electronic Synoptic Pathology Reporting Initiative, the national initiative aiming to further adoption of standards through implementation of electronic synoptic pathology reporting tools across Canada
NAACCR	North American Association of Central Cancer Registries
Partnership	Canadian Partnership Against Cancer
QIIP	Quality Initiative in Interpretive Pathology
Synoptic Pathology Reporting	The electronic capture of Pathology data as per the College of American Pathologists cancer checklists and protocols