

The Power of CT · Less is More

RADIOLOGY'S GREEN INITIATIVE

Maura J Brown MD, MHA, FRCPC; Greg Stortz PhD DABR; Sean West RTR
Natasha Varabioff; Leath Strench; Bruce B Forster MD, FRCPC, FCAR



SCAN the QR code for the CAR Statement on Environmental Sustainability in Medical Imaging

Establish new standard operating procedures to reduce energy consumption of Lower Mainland CT scanners in non-operational hours by 80% in 6 months where clinically appropriate.

Project Design/Timeline

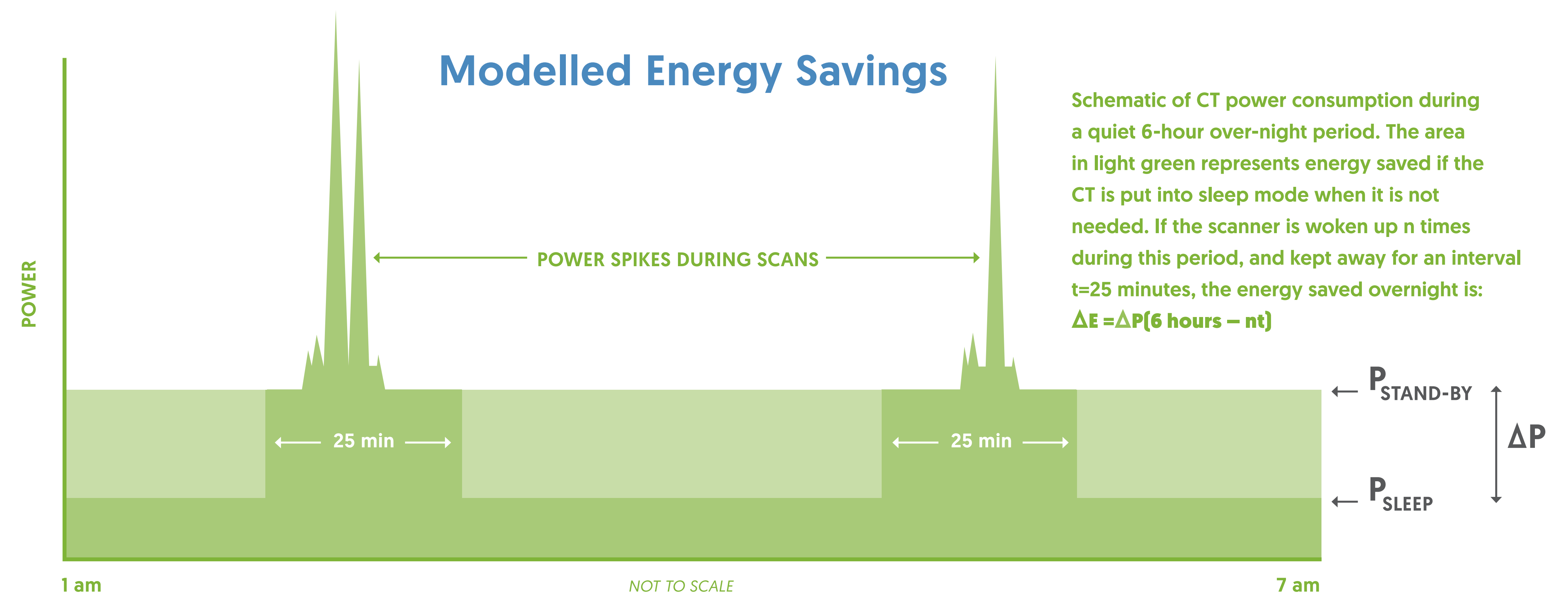
1. September 2023 – March 2024 – Lower Mainland
2. April 2024 – March 2025 – Expand to the rest of BC

Background

- Health care is energy & resource intensive, accounting for 4.6% of total national greenhouse gas (GHG) emissions in Canada.^[1]
- Medical Imaging accounts for 1% of global GHG emissions.^[2]
- Simple interventions such as powering down of medical equipment when not in use saves energy and cost.
- CT scanners: 2/3 of energy consumption in idle / nonclinical times.^[3]
- A multidisciplinary project at BC Cancer with radiologists, technologists, BC Hydro, PHSA Energy and Environmental Sustainability team documented significant power and cost savings through overnight power down of a single mid-life CT scanner.^[4]
- Although new CT scanners of the future will have lower power modes for idle state and after hours, reducing electricity consumption of our existing stock of CT scanners is a low barrier opportunity to rapidly reduce waste of electricity, save money and create space on the grid for electrification in other sectors.
- Pilot study: 1 scanner: 14,180 kWh; 41,457 km in gas car. ^[4]

Goals/Actions

Estimate potential power savings of power-down of 12 CT scanners in the lower mainland when not in use, based on vendor provided power specifications and health authority provided clinical use data.



ANNUAL SAVINGS PER SCANNER

	LIGHT	MEDIUM	HEAVY
Energy Savings per Scanner	28206 kWh	10717 kWh	0
Cost Savings per Scanner (CAD\$)	\$4840	\$1839	0
GHG Emissions Avoided per Scanner	20 Metric Tons CO ₂ e	7.6 Metric Tons CO ₂ e	0

- LIGHT USE**
- minimally used outside standard daytime hours
 - little reason to leave in standby mode over-night
- MEDIUM USE**
- fewer than 1 scan every 2 hours outside standard daytime hours
 - if put in lower power mode in non-operational hours, need to be woken up occasionally for emergency scans
- HEAVY USE**
- more than 1 scan every 2 hours at all times of the day
 - use is so frequent that they should always be in ready to scan mode

ANNUAL REGION WIDE SAVINGS

Total Energy Saved	251,024 kWh
Total Cost Saved (CAD\$)	\$47,250
Total GHG Emissions Avoided	178 Metric Tons CO ₂ e
Total Energy Saved Equivalent to km Driven	733,928 km in a Gas-powered Car
Total Energy Saved in EV equivalent	134 Electric Vehicles Driven for a Year

Take-Aways

- Large energy and cost savings from powering down light use scanners outside regular operational hours
- Less but still significant savings by powering down scanners with occasional (less than once every 2 hours) use outside regular operational hours

Actions

- Energy and cost savings were modelled across the Lower Mainland
- Sites were engaged to implement power down in non-operational hours and journal on/off times

Next Steps/Lessons Learned

Many lessons have been learned to help other Diagnostic Imaging Departments optimize their chance of success

- Engage technologists, physicists and biomedical engineering at the outset to optimize staff buy-in
- Expand the lower mainland CT project across BC
- Provide aggregate data on power savings to all radiology staff to encourage participation and sustainment of new SOP
- Educate and engage staff and learners in further planetary health initiatives in Diagnostic Imaging and in healthcare

We acknowledge with gratitude the participation of CT Scan Technologists & Biomedical Engineers in the Lower Mainland in this project

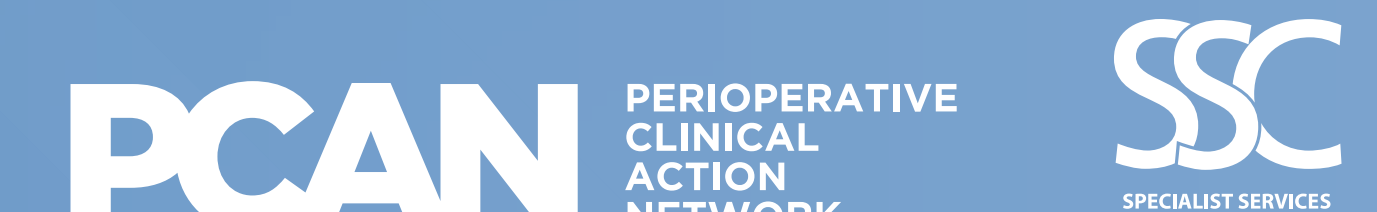
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2. Picano E, Mangia C, D'Andrea A. Climate Change, Carbon Dioxide Emissions, and Medical Imaging Contribution. J Clin. Med. 2023; 12 (1), 215 | <https://doi.org/10.3390/jcm12010215>
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4. Brown MJ, Snelling E, De Alba M, Ebrahimi G, Forster BB. Quantitative Assessment of Computed Tomography Energy Use and Cost Savings Through Overnight and Weekend Power Down in a Radiology Department. Can Assoc Rad J 023 May;74(2):298-304 | <https://doi.org/10.1177/0846537121113074>

Team

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Improving the Delivery of Joint Replacements

at Cowichan District Hospital

ENHANCING PATIENT OUTCOMES THROUGH COMPREHENSIVE CARE AND SUPPORT

Restoring Function

This is Brenda. A 58-year-old lady who over the course of a few months went from being an avid, active person who loves the outdoors to being dependent on a walker for mobilizing even short distances. Her physical and mental health greatly suffered from that deterioration.



During her consultation we discovered that she had advance collapse of her hip joint due to severe arthritis. We intervened quickly and performed a hip replacement shortly after meeting her.

Brenda is a real success story, and this is a picture she sent us from the top of a local mountain just 8 weeks after her surgery. **But not everyone is able to restore their function as well, or as quickly as Brenda did after her surgery.**

Strain on the System

In 2019, ~500 patients received a new hip or a new knee at the Cowichan District Hospital in Duncan, BC. Of those 500, **about 1 in 6 patients ended up back in the emergency department.**

The common complaints at presentation included pain, spasms, constipation, swelling, or running out of medication. Many of these patients underwent expensive investigations, many were started on antibiotics, and some were instructed to slow down, or even stop their rehabilitation. As you may imagine this often led to patients' frustration and displeasure at receiving conflicting information, and delay in their care and ultimately poorer outcomes.

RE DESIGN Process

OPTIMIZE

The patient is assigned a Navigator. The focus is on Diabetes management, Sleep apnea, smoking cessation, improved nutrition and physical exercise.

EDUCATE

A well educated and prepared patient is a happy, and less anxious patient. This leads to better patient experience and outcomes. We worked hard on expanding and creating a new patient information booklet. These booklets include more comprehensive preoperative information as well as in-depth post-operative instructions that include an integrated medication administration record.

PREPARE

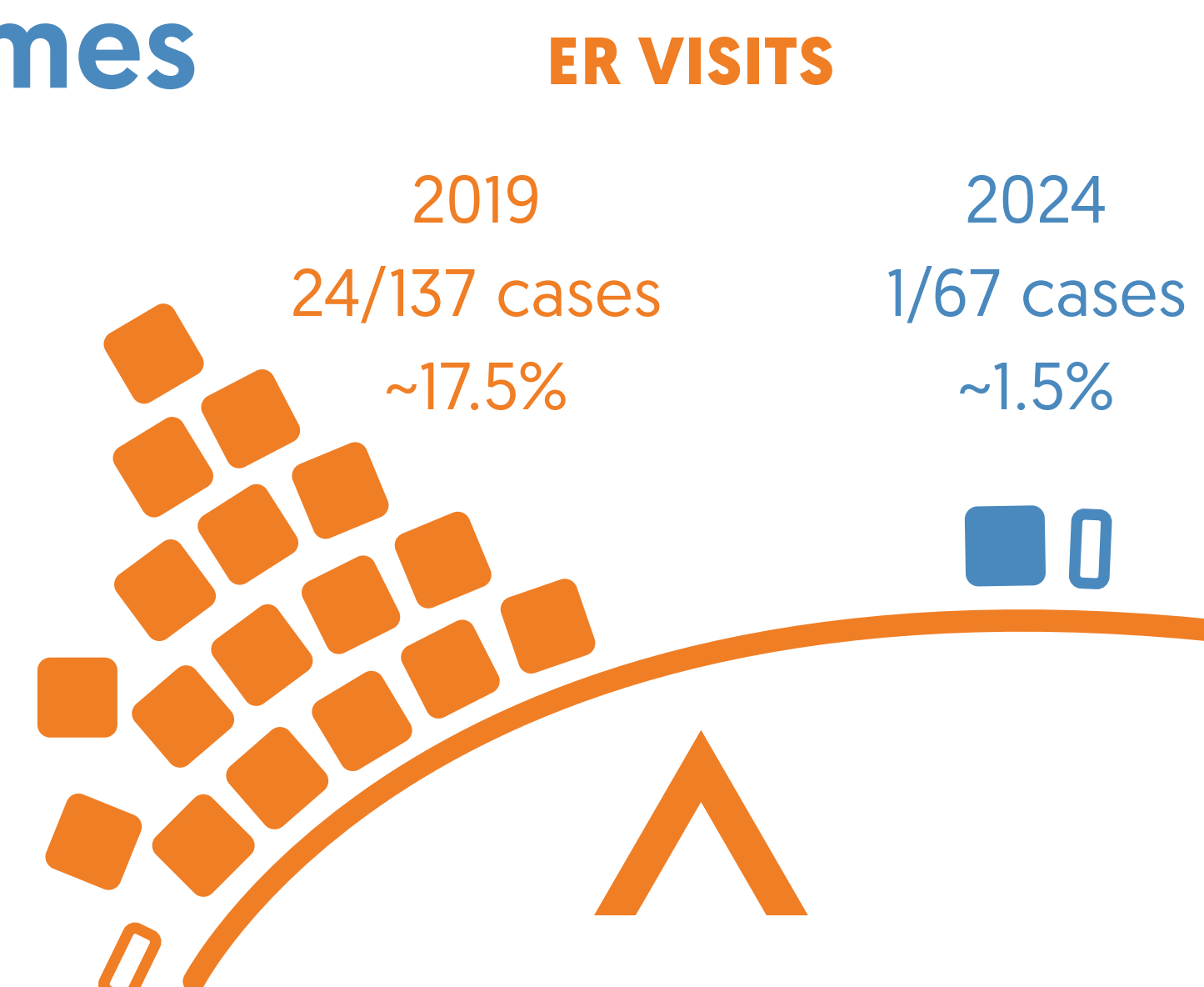
MyMobility® is an industry app that we purchased and are the first in the province to use. This app allows the patients to chart their own progress as well as receive specific education about their surgical journey. This includes rehab videos, pain score questionnaires, step and range-of-motion counts as well as a built-in secure communication tool that allows the patient to reach the navigator and the surgeon at any time. Or as one patient said: "It's like having a doctor in your pocket"

SUPPORT

Lastly, patients need to feel supported following their surgery. And In order to achieve this, we set up an after-hours on call service so patients can get help and advice when they need it.

RE DESIGN Outcomes

- Number of ER Visits
- VTE (DVT or PE)
- Readmissions
- Doppler Ultrasounds
- Surgical Site Infections
- Patient Satisfaction



Future RE DESIGN

Earlier Team Involvement

At Least 2 Navigators

Reduce Waste

Collect Data

RE DESIGN Team

Orthopaedic Surgeons | Drs. Nimrod Levy, Ricardo Velazquez, Dina Popovic and Leon van der Watt
Project Manager/Nurse Navigator/Data Collection | Samantha Levy RN
Anaesthesiologists | Drs. Christiaan Avenant, Steve Kraus and Derek Campbell
Hospital Admin | David Huntley, Hannah Francis, Brenda Stager and Dr. Maki Ikemura
Family Physicians | Drs. Jan Malherbe, Nicolette Jacobsz, Kelsey Kozoriz
Patient partners | Robert Liston and Brenda Tew
Doctors of BC | Geoff Schierbeck

Enhancing Surgical Outcomes Supporting Primary Care in Optimizing

PRE-SURGERY MENTAL HEALTH CARE FOR DEPRESSION

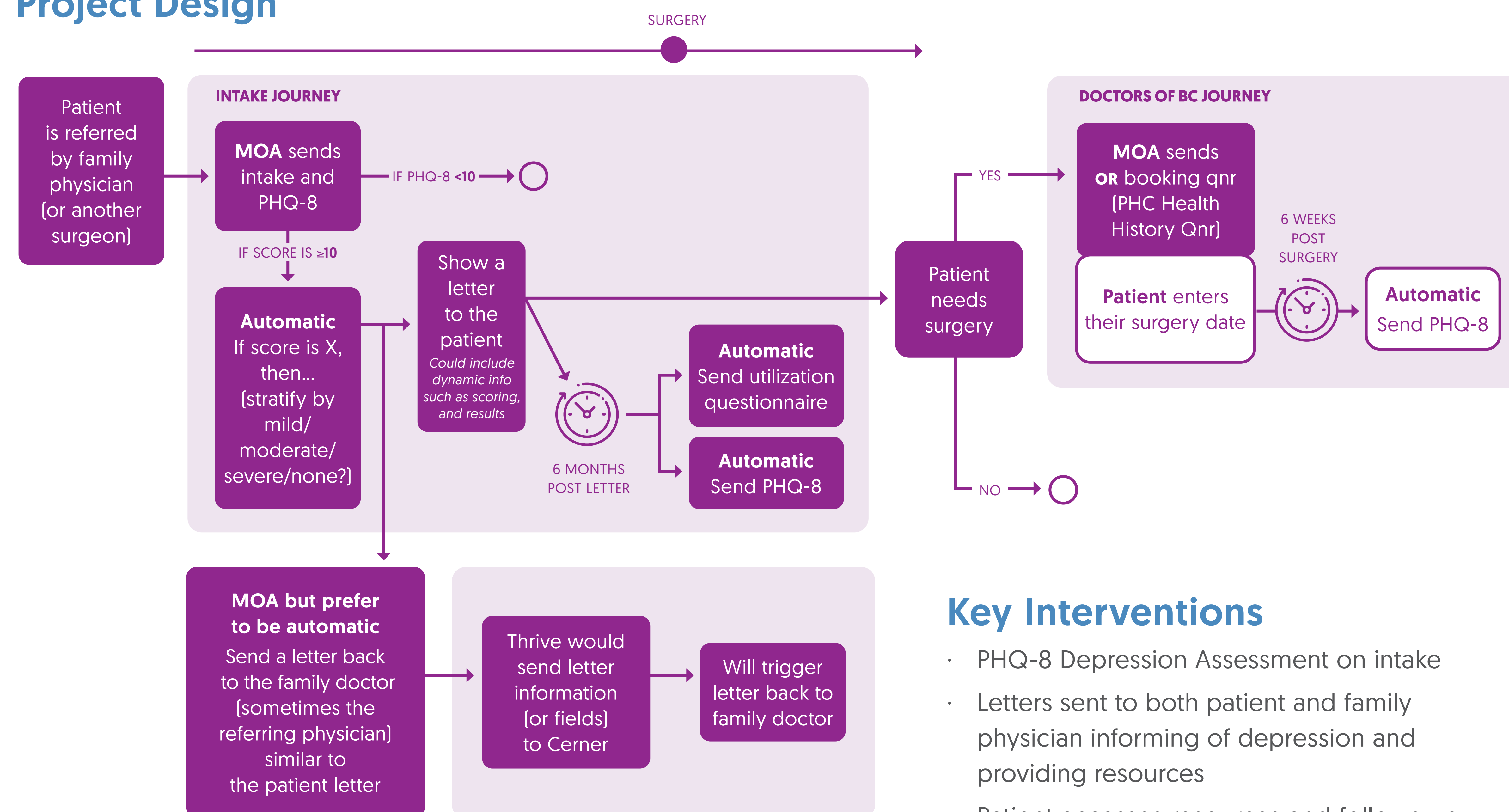
PROVIDENCE HEALTH CARE



If your surgical clinic is interested in adopting this initiative, please reach out to the project lead!

Develop a system that identifies and addresses patients' pre-surgical depression levels while minimizing the burden on healthcare providers. This will involve initial depression assessments, resource provision for patients, and notifying their family physician for ongoing support, all integrated into the Thrive platform to streamline the patient care journey.

Project Design



6-Month Follow-up Questionnaire

Key Interventions

- PHQ-8 Depression Assessment on intake
- Letters sent to both patient and family physician informing of depression and providing resources
- Patient accesses resources and follows-up with family physician to reduce pre-surgical depression
- 6-week post-op PHQ-8 depression assessment
- 6-month post-intake PHQ-8 depression assessment and follow-up questionnaire to assess accessing resources and their impact

Completed Milestones

- Approved SSC funding for project
- Determined capabilities within Thrive platform to send out assessments & letter
- Approved to use amended PHQ-8
- Developed and approved use of 6-month follow-up questionnaire
- Ongoing engagement with colorectal surgeons re: expansion to additional surgical subspecialties

Background

- Depressive disorders consistently rank among the top three global causes of nonfatal disease burden, with the World Health Organization recognizing them as a priority (Geoffrion et al. 2021). Unfortunately, mental health optimization is rarely prioritized before major surgical procedures.
- Many surgeons overlook their patients' depressive symptoms when planning surgeries, even though psychological distress is a significant predictor of postoperative pain in various surgical fields (Shoar et al. 2016). Psychological disorders not only contribute to difficulties in coping with the distress of hospitalization but also have a strong correlation with adverse events and unsatisfactory outcomes (Gasse, Laursen, Baune, 2014). Additionally, depression has been linked to increased analgesic use, longer hospital stays, early readmission, and higher complication rates in different surgical disciplines (Abatem, Chekol, & Basu, 2020).

References

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- Gasse, C., Laursen, T. M., & Baune, B. T. (2014). Major depression and first-time hospitalization with ischemic heart disease, cardiac procedures and mortality in the general population: a retrospective Danish population-based cohort study. *European journal of preventive cardiology*, 21(5), 532-540.
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- Shoar, S., Naderan, M., Aghajani, M., Sahimi-izadian, E., Hossaini-Araghi, N., & Khorgami, Z. (2016). Prevalence and determinants of depression and anxiety symptoms in surgical patients. *Oman medical journal*, 31(3), 176.

Team

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Margot Wilson | Corporate Director,
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Dr. Nardia Strydom | Family Physician
- Dr. Bonnie Law** | Family Physician
Farhaan Khan | Project Leader,
 Virtual Health & Shared Care



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Choose to Move: Replacement Ready



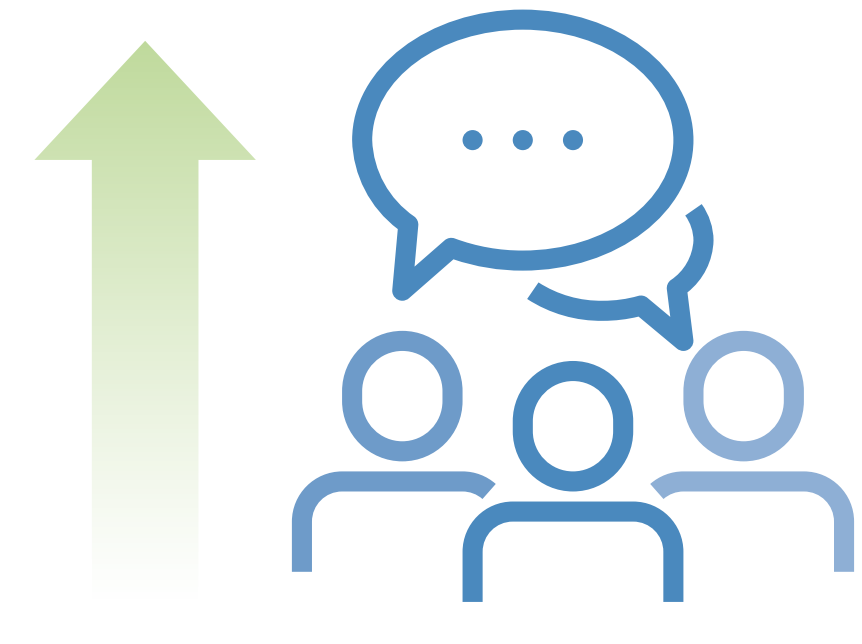
SCAN for a 1-page patient referral resource!

What is Choose to Move?

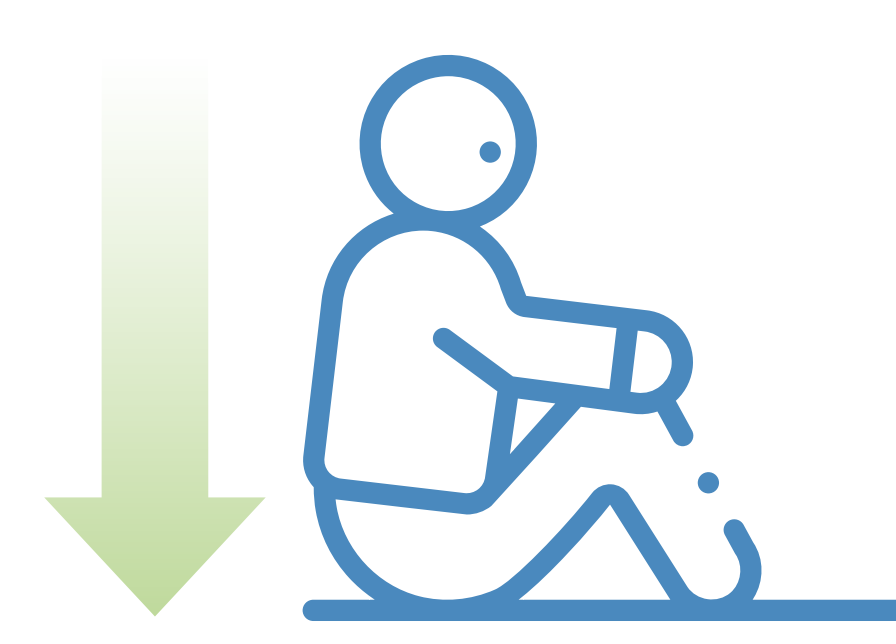
Free, flexible, choice-based program co-designed with older adults and community partners. Through online or in-person group meetings and 1-on-1 coaching, activity coaches guide people 55 and older to set physical activity goals, address barriers, and choose physical and social activities in their communities that suit their preferences, abilities, and resources.



INCREASED PHYSICAL ACTIVITY



INCREASED SOCIAL CONNECTEDNESS



DECREASED FEELINGS OF LONELINESS



Choose to Move is a free program for low-active people 55 and older across BC. Choose to Move effectively enhances health, mobility, and social connectedness in participants. It was incorporated as a **key physical activity patient resource for surgical prehabilitation in BC.**



Patients can be referred to Choose to Move as an **option for physical activity support and coaching in preparation for surgery.**



Some pre-surgical populations, such as patients undergoing total hip and knee replacement (TKR/THR), face unique challenges and barriers to physical activity and **may benefit from education, support and resources specific to their condition/surgery.**



To improve program fit and effectiveness for pre-surgical populations, **we are adapting Choose to Move, starting with patients on surgical waitlists for TKR/THR.**

Objectives

- to: 1) Adapt,
2) Implement, and
3) Evaluate Choose to Move for patients on surgical waitlists for TKR/THR in British Columbia

I think for everybody who has osteoarthritis, whether you choose to have surgery or not, you can optimize your life by following some of these principles of being active.

PAST PARTICIPANT WITH OSTEOARTHRITIS

Implementation

When will the adapted program launch?

- Choose to Move: Replacement Ready will pilot in January/February 2025 with 4-6 online programs (10 participants each).

Who should be referred to the adapted program?

- Patients who are:**
- Scheduled for a primary hip or knee replacement for osteoarthritis
 - Not having surgery within the next 6 months
 - Interested in becoming more physically active
 - Able to join online via Zoom

How can I refer a patient to the adapted program?

- Program start dates and recruitment details will be emailed to participating Surgical Patient Optimization Collaborative (SPOC) hospital sites.
- A 1-page referral flyer with registration steps will be available on choosetomove.ca and mysurgerybc.ca.

Evaluation Measures

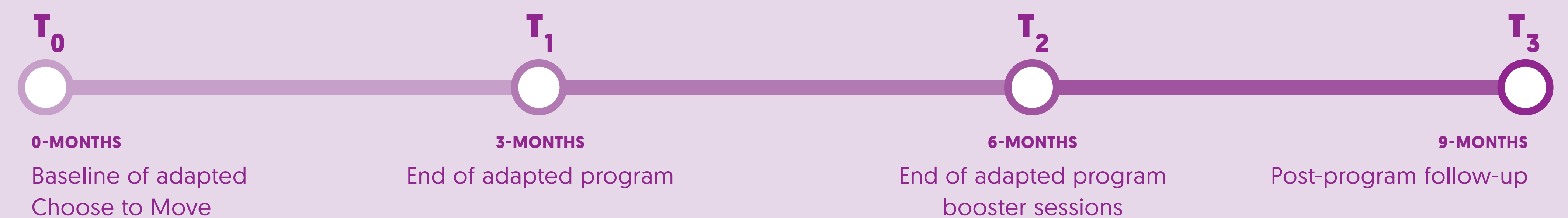
Program delivery

- Implementation determinants and outcomes e.g. acceptability and reach

Program effectiveness

- General health e.g. physical activity levels
- Disease-specific e.g. pain, symptoms, function
- Psychosocial e.g. depression, anxiety

Evaluation Timeline



Timeline

- September - December 2024**
Finalize adapted program
- January - August 2025**
Implement & evaluate adapted program
- September 2025 - 2028**
Scale & evaluate adapted program

Outcomes



INCREASED PRE-SURGICAL PHYSICAL ACTIVITY



IMPROVED PATIENT HEALTH



IMPROVED PATIENT EXPERIENCE

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Burnaby Hospital · Prehab & ERAS

By March 2025, reduce the incidence and impact of same-day cancellations by 40% to improve patient care and optimize resource utilization at Burnaby Hospital.

Background

The Pre-Admission Improvement Committee at Burnaby Hospital was formed to review resources and processes in current state. The committee identified that there are inconsistencies in process and practice that are impacting patient care and operating room efficiency, resulting in same day surgical cancellations.

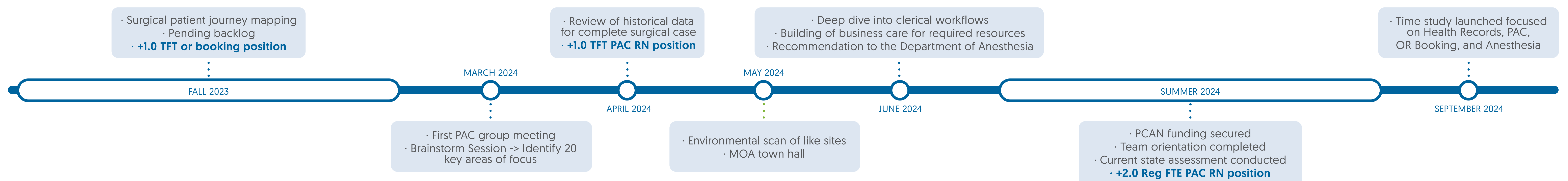
Building on the success of optimizing joint replacement patients through the Hip and Knee Arthroplasty Clinic, Burnaby Hospital secured PCAN funding to expand and enhance its prehabilitation pathways for general surgery.

This initiative aims to fully prepare and optimize patients for better surgical outcomes and experiences while identifying and addressing current inefficiencies in PAC processes. This work will also focus on advancing patient education, strengthening interdepartmental communication, and addressing process gaps and building on existing strengths to ensure the patient journey is streamlined.

Time Study

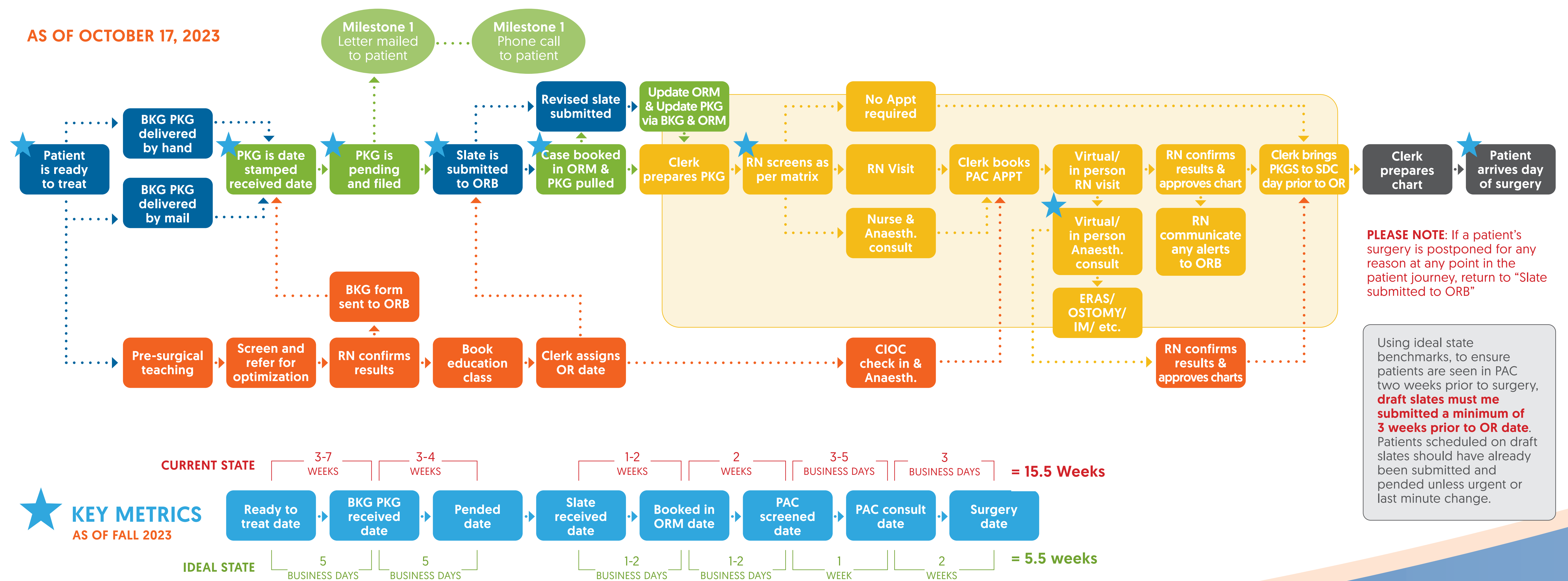
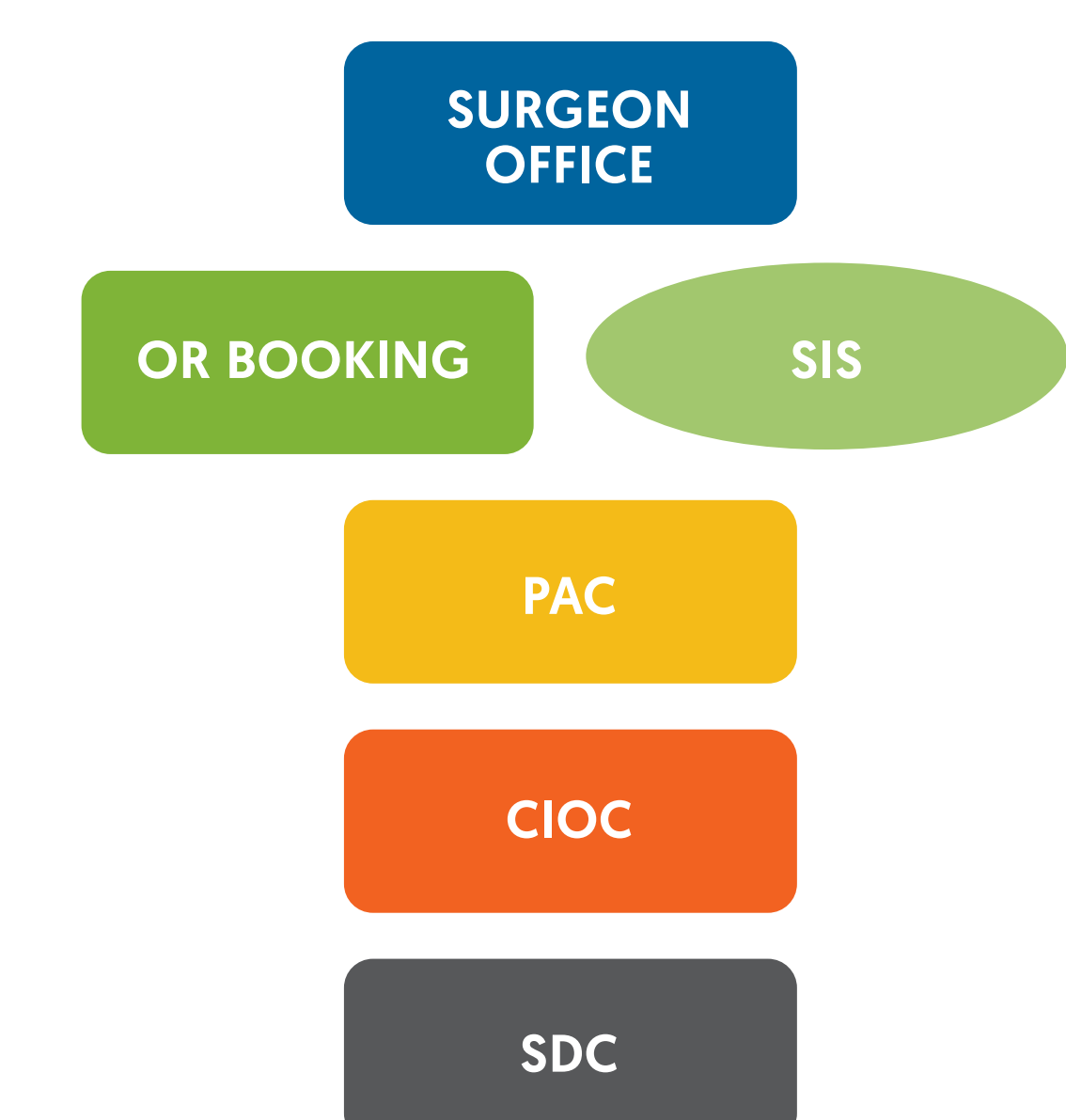
Conducting a time study and gathering baseline data in the pre-admission process are critical first steps. These actions provide objective insights into inefficiencies, enabling data-driven decisions and fostering team collaboration. This fall, our team will conduct time studies to set realistic goals and pinpoint areas for targeted interventions. The results will be shared at upcoming working group meetings to guide our improvement efforts and change ideas.

Pre-Admission Improvement Committee Work to Date



BH - Surgical Patient Journey

This map illustrates the stages and interactions a patient experiences at Burnaby Hospital, from surgical approval to the day of surgery. It highlights key multidisciplinary touchpoints and shows opportunities for improvement to support a streamlined, integrated patient and provider experience.



Team

Corrie Irwin | Director
Dr Andy Lo | Anesthesia
Dr Yotis Tsaparas | Surgery

Kelly Anne Karse | Program Manager
Gracy Sudharshan | PAC PCC
Michele Montgomery | CIOC PCC

Sam Charlesworth | Coordinator/Analyst
Harneet Bains | Project Coordinator
Sooky Moore | Project Manager

Optimizing Outcomes

A Four-Week Prehabilitation Program

FOR COLORECTAL SURGERY AT LANGLEY MEMORIAL HOSPITAL



SCAN the QR code to see the full study

Dr. Michael Goodwin [Physician Lead], Harneet Bains [Project Coordinator]

To reduce severe and medical complications in patients receiving colorectal surgery by 50% by March 2025 at Langley Memorial Hospital.

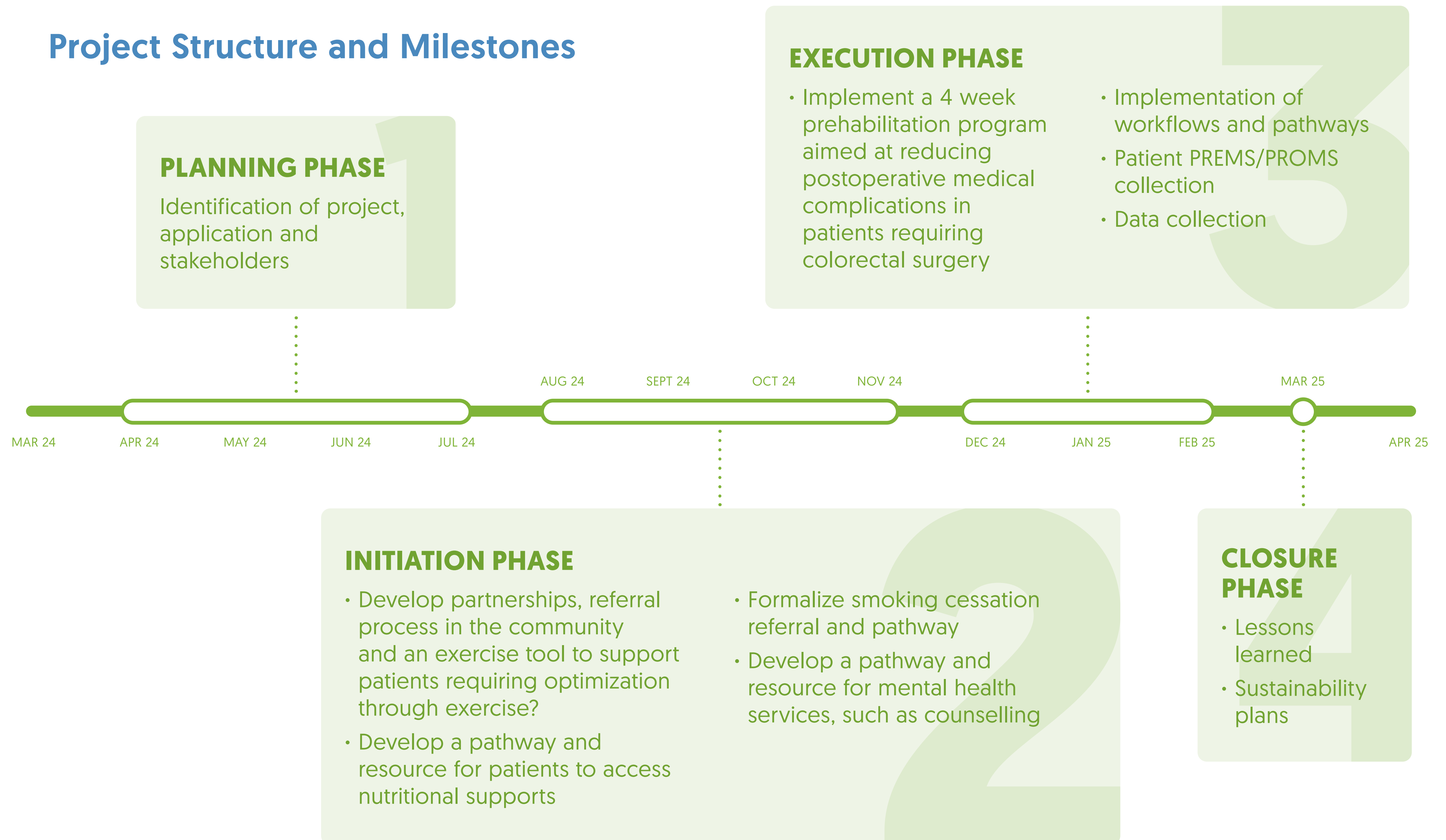
Project Summary

A prehabilitation program will be introduced at Langley Memorial Hospital for patients undergoing colorectal surgery. This evidence-based, four-week multimodal prehabilitation initiative aims to enhance patients' functional capacity prior to surgery. According to the study "Effect of Multimodal Prehabilitation on Reducing Postoperative Complications and Enhancing Functional Capacity Following Colorectal Cancer Surgery," this approach has been shown to shorten recovery times and facilitate a quicker return to preoperative conditions. In this randomized controlled trial, the prehabilitation group experienced significantly fewer severe and medical complications compared to those receiving standard care.

Background

Colorectal cancer (CRC) is the second most prevalent type of cancer in the world. The only curative treatment is surgical removal of the tumor. However, postoperative complications occur in up to 50% of patients and are associated with a higher mortality and return of cancer rate and increased hospital costs. The number and severity of complications is closely related to preoperative functional capacity, nutritional state and smoking behavior. Traditional approaches have targeted the postoperative period for rehabilitation and lifestyle changes. However, recent evidence shows that the preoperative period is an optimal time frame for intervention.

Project Structure and Milestones



Measures

- 1 Severe and medical complications post-operatively
- 2 Number of patients screened
- 3 Number of patients requiring prehabilitation
- 4 Number of patients who received the prehabilitation
- 5 Patient satisfaction (PREMS/PROMS)
- 6 Provider satisfaction Survey

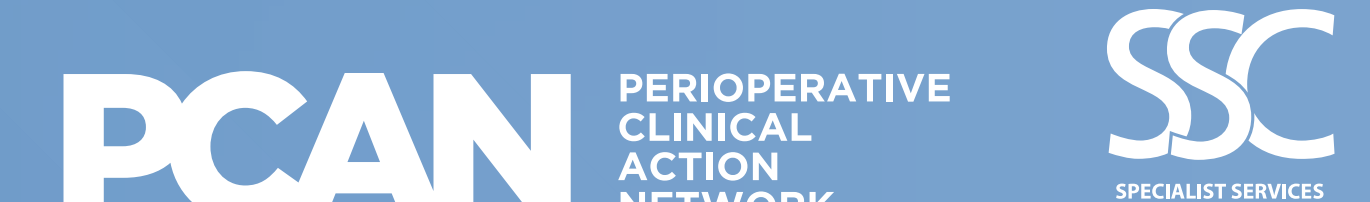
Achieved to Date (Nov 2024)

- Designing an exercise referral process with a Kinesiologist
- Creation of smoking cessation referral process using a provincial tool
- Exploration of nutritional pathway and early creation of nutritional resource for patients
- Creation of prehabilitation information booklet for patients

GO LIVE! - DEC 2024

Team

Dr. Michael Goodwin | Nicole McKague | Dr. Kevin McDermid | Dr. Jason Archambault | Mary Cao | Treeva Elliot | Sooky Moore | Cameron Prentice | Dawn Charlesbois | Harneet Bains



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Implementation of a Surgical Prehabilitation Education Program

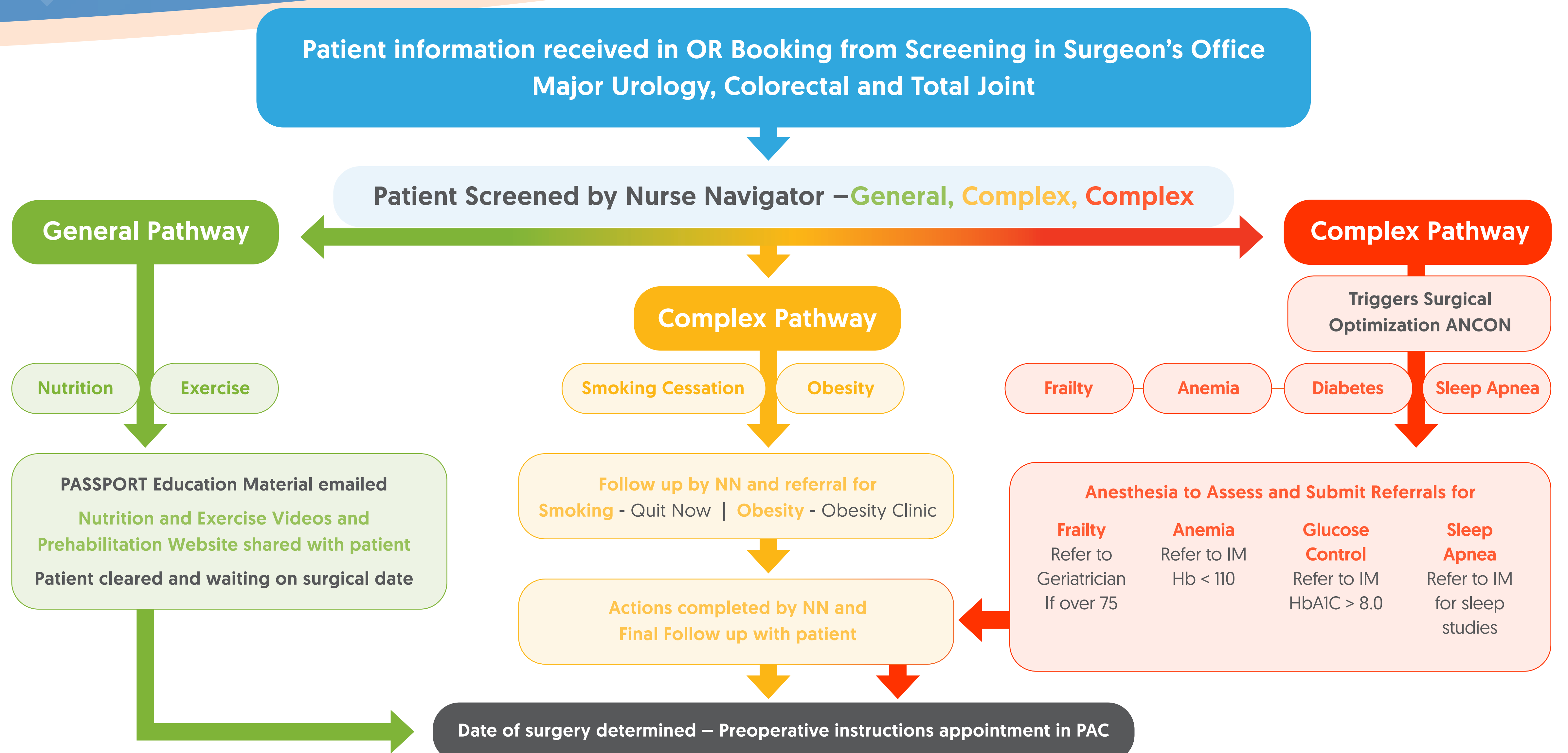
at Abbotsford Regional Hospital

At Abbotsford Regional Hospital, Total Joint patients are screened by our Prehabilitation Nurse Navigator (PNN) using the Nursing Triaging Tool at the time of surgery decision.

Low-risk (Green Pathway) patients receive written materials but aren't seen in person until a month before surgery, leading to a gap in timely education. To address this, we are collaborating with Nutritional and Physiotherapy Services to create Prehabilitation videos for proactive patient engagement. These videos align with the Doctors of BC Optimization components, enhancing education, satisfaction, and post-operative outcomes in our Prehabilitation program.

Educational Components

- Education is multidisciplinary and involves Physiotherapy, Nutrition, Nursing, Surgeons and Anesthesia.
- Content reinforces the need for patients to see their Family Practice physician for follow up and completion of current bloodwork.
- Topics addressed are Anemia, Frailty, Glucose Control, Nutrition, Obesity, Physical Activity, Sleep Apnea, Smoking Cessation, Social Supports and Pain Management.
- Local resources in the community are highlighted for patients to seek out further information including links to Pathways BC.



Prehabilitation Patient Data

156

Total Joint Patients
Triaged since April 2024

60_{min}

Average time
of PNN Appointment

OUTCOMES FROM PNN TRIAGING

- 3 pts. new OSA diagnosis
- 4 pts. new Diabetes diagnosis
- 3 pts. new HTN diagnosis
- Multiple pts treated for Iron deficiency
- Multiple pts reduced BMI

Lessons Learned

- Opting for digital media over in-person or online classes will ensure long-term sustainability and cost savings.
- Optimizing patients early will prevent last-minute cancellations, improved outcomes (PROMs), and enhanced experiences (PREMs), with lasting post-surgery benefits.
- Auditing and tracking patient video engagement will help overcome barriers to compliance.
- Video use will significantly improved the efficiency of PNN appointments.
- PNN feedback highlighted the importance of adding content to support patients with new co-morbidities.
- Involving patient partners is essential for successful program rollout.
- Keeping the Prehabilitation Website flexible will allow for future expansion to all surgical specialties.
- Starting with General Pathway patients in PDSA cycles will provided a solid foundation for future inclusion of more Complex cases.

Conclusion

At ARH, Surgical Prehabilitation continues to be integrated into our Pre-Assessment Clinic redesign, improving patient pathways and education. To overcome engagement barriers, we will offer educational materials in various accessible formats, alongside the printed Patient Passport. This program will enhance the efficiency of PNN appointments by providing timely information. Additionally, we are launching a Prehabilitation Website and customized videos to empower patients to improve their health and reduce post-operative complications.

Team

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Harneet Bains | Sooky Moore

ACKNOWLEDGEMENTS

Pre-Operative Assessment Clinic Leadership
Helga Imbenzi | Elizabeth Jolley | Lisa Almos | Amanjot Minhas

Investigating Venous Thromboembolism (VTE) Trends at Royal Inland Hospital: A Retrospective Five-Year Review

Dr. Tyler MacGregor MD, B.Sc. FRCSC
Dr. Jonathan Bourget-Murray MD, CM, FRCSC

To conduct a five-year retrospective review of post-arthroplasty Deep Vein Thrombosis (DVT) incidents and the associated prophylaxis regimens utilized, with the goal of identifying patterns and informing future practice improvements to reduce DVT occurrences.

Background

This study aims to analyze the National Surgical Quality Improvement Program (NSQIP) data from the past five years to identify cases of Deep Vein Thrombosis (DVT) in arthroplasty surgeries at Royal Inland Hospital. Specialists will conduct a detailed chart review to examine the characteristics of both surgeons and patients, focusing on risk factors and the DVT prophylaxis used in each case. Through this analysis, we hope to identify potential patterns or trends in DVT occurrences. The insights gained will be presented to the arthroplasty group for consideration, with the goal of informing practice changes aimed at reducing DVT rates, if deemed necessary.

Project Design

Data from the past five years has been collected from the National Surgical Quality Improvement Program (NSQIP) for review. This data will be analyzed by a team of specialists at Royal Inland Hospital. The analysis and subsequent interpretation of results are expected to be completed within an estimated timeline of three months once the review commences.

Plan

Data Review

Analyze NSQIP data from the last five years to identify cases of DVT at RIH.

Chart Review

Conduct detailed chart reviews for each DVT case to assess:

- Surgeon involvement
- Patient characteristics and risk factors
- DVT prophylaxis methods used

Pattern Analysis

Identify any emerging patterns or trends related to DVT occurrences.

Collaborative Review

Present findings to the arthroplasty group.

Practice Evaluation

Evaluate current clinical practices with an emphasis on potential changes aimed at reducing DVT rates, if warranted.

NSQIP DATA 2018-2023

Total # VTEs **27**

Total LMWH
16

Enox	11
ASA	7
Rivarox	1
Warfarin	2
Dalteparin	5
Apixaban	1

Year # Cases Reviewed # Events

2018	163	3
2019	706	5
2020	672	6
2021	689	3
2022	736	6
2023	969	4

Totals 3935 27

27/3935

0.67%

Results/Outcomes

Decreasing postoperative complications and enhancing patient safety

Next Steps

The next phase involves reviewing NSQIP data to identify trends in DVT occurrences. Through careful analysis, we aim to uncover potential patterns that could contribute to a deeper understanding of DVT risk factors. We will also analyze DVT rates by surgeon. The insights gained from this study will be presented to the arthroplasty group, aiming to inform practice changes aimed at reducing DVT rates, if necessary.

Team

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Fraser Health Surgical Digital Patient Optimization Pilot

Dr. Susan Lee [Anesthesiologist], Marcia Shoucair [Nurse Navigator] and Melissa Bisek [Nurse Navigator]

Surgical patient optimization (or prehabilitation) is a multidisciplinary approach to decrease pre-surgical risk factors and improve a patient's health in the time leading up to their surgery. Enabling patient optimization as it relates to surgical patient outcomes and health system efficiency is a key priority for Fraser Health.

Background

In collaboration with four surgical offices, Fraser Health has conducted a three-month pilot project at the Eagle Ridge Hospital to help patients be as strong and healthy as possible prior to their surgery. The pilot involved approximately 177 patients who are scheduled to receive primary hip and knee arthroplasty, hernia repair and/or laparoscopic cholecystectomy. The pilot focused on providing access to a digital tool that allows patients to complete their Pre-Surgical Questionnaire online and receive tailored education materials, resources and information to help them make the most of their time leading up to surgery. In turn, we believe patients will have a better overall pre-surgical experience and improved communication with their health care providers.

Objectives

- Increase the lead time for patient optimization
- Enable and support surgical patient optimization
- Enhance connection, communications, and information

Pilot Benefits

Patients and Families: Shift from waiting for surgery to preparing/optimizing for surgery
Medical Office Assistant: Shift from overcrowded and busy surgeon offices rooms to more efficient and calm rooms and digital sharing of information. Ability to select low risk patients for last minute scheduling changes

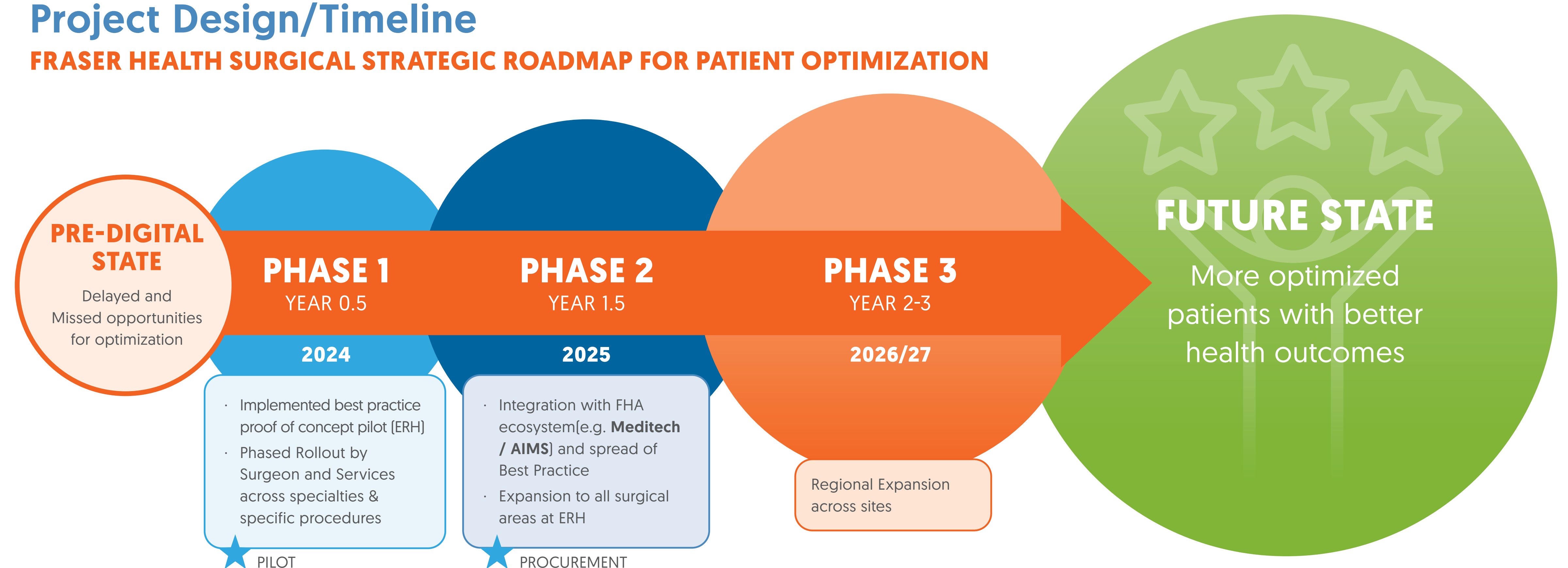
Nurses: Reduction in admin burden in triaging/screening through clinical algorithms to enable focus on nursing & patient optimization

Physicians: Opportunity to utilize new decision support / algorithm-based screening

Health System: Create operational efficiencies in pre-surgical journey and improve patient and provider experience

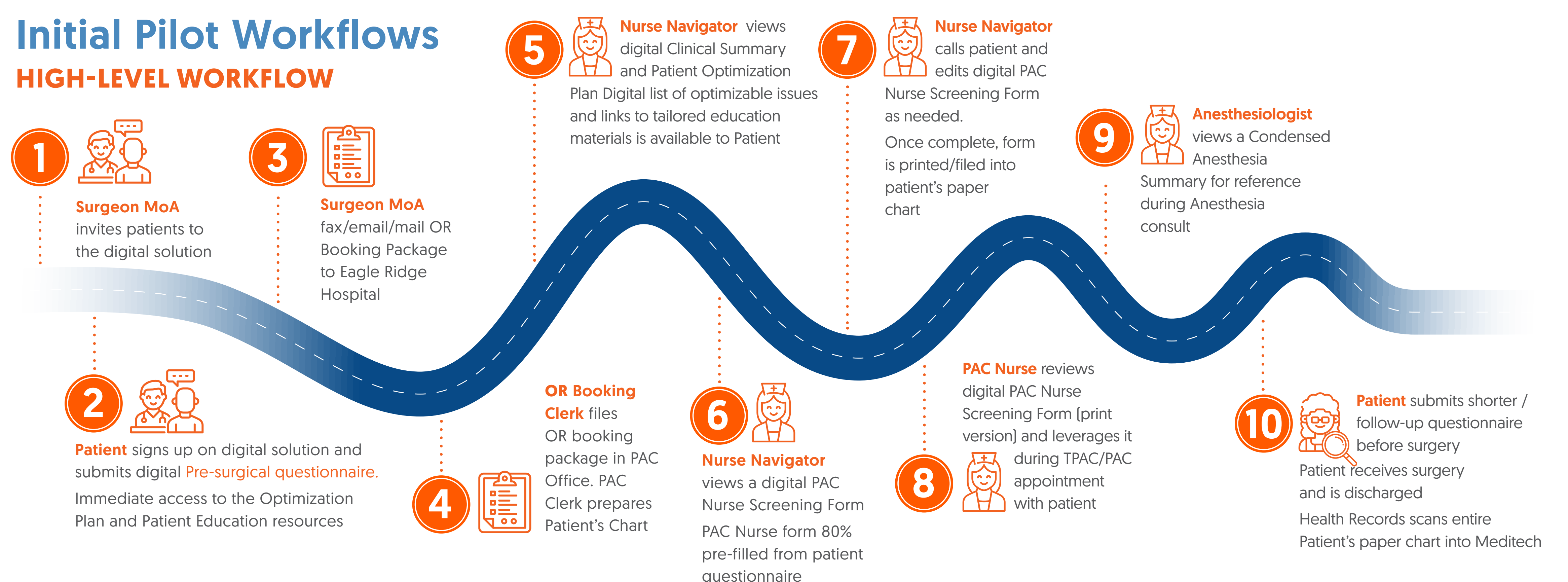
Project Design/Timeline

FRASER HEALTH SURGICAL STRATEGIC ROADMAP FOR PATIENT OPTIMIZATION



Initial Pilot Workflows

HIGH-LEVEL WORKFLOW



Evaluation As of Oct 31, 2024

177 TOTAL PATIENTS ENROLLED

A data collection and evaluation phase will occur in Fall 2024 to evaluate the success of the pilot with focus on impact on surgical patients, providers, and the health system.

References

This has been informed by provincial work by Surgical Patient Optimization Collaborative (SPOC) and the provincial work by Perioperative Care Alignment and Digital Solution Committee (PCADS)

Team

Brought to you by a collaboration across Surgeon Office Partners, Fraser Health Digital Patient and Provider Experience (DPPE) Team and Eagle Ridge Hospital Clinical Operations

CLINICIAN CHAMPION GROUP

Dr. Susan Lee | Anesthesiologist (susan.lee@fraserhealth.ca)
Marcia Shoucair | Nurse Navigator (marcia.shoucair@fraserhealth.ca)
Melissa Bisek | Nurse Navigator (melissa.bisek@fraserhealth.ca)



Funding for this project was provided by the Specialist Services Committee (SSC), one of four Joint Collaborative Committees (JCC) representing a partnership between Doctors of BC and the Government of BC

Ready, Set, Surgery

Optimizing Surgical Patients in the North

Authors: Stacey Vanegmond [Regional PSS Optimization, Surgical Services]
& Sooky Moore [Project Manager]

To provide surgical patient optimization for orthopedic patients undergoing surgery at Dawson Creek Hospital and Fort St. John Hospital by March 2025.

Background

Previously UHNBC implemented a successful surgical optimization program including the patient populations of gynecology, urology, and orthopedics in 2019.

Inspired by this success, G.R. Baker Memorial Hospital launched its own program focusing on optimizing general surgery patients, demonstrating the broad benefits of these innovative approaches.

Now is the time to reignite the commitment to Surgical Patient Optimization across Northern Health. Our goal is to ensure every patient is supported through personalized prehabilitation and optimization strategies, leading to better surgical outcomes, shorter recovery times, and an enhanced overall patient and provider experience.

“We’ve all had a case go poorly and wished things went better. I believe that preoperative programs can improve outcomes by exposing blind spots, mitigating risk behaviors and optimizing current health. A structured preoperative program can achieve this by identifying key areas and using a team based approach to target these areas.”

DR. STEPHANUS VAN DEVENTER | ORTHOPEDIC SURGEON, DCDH/FJN

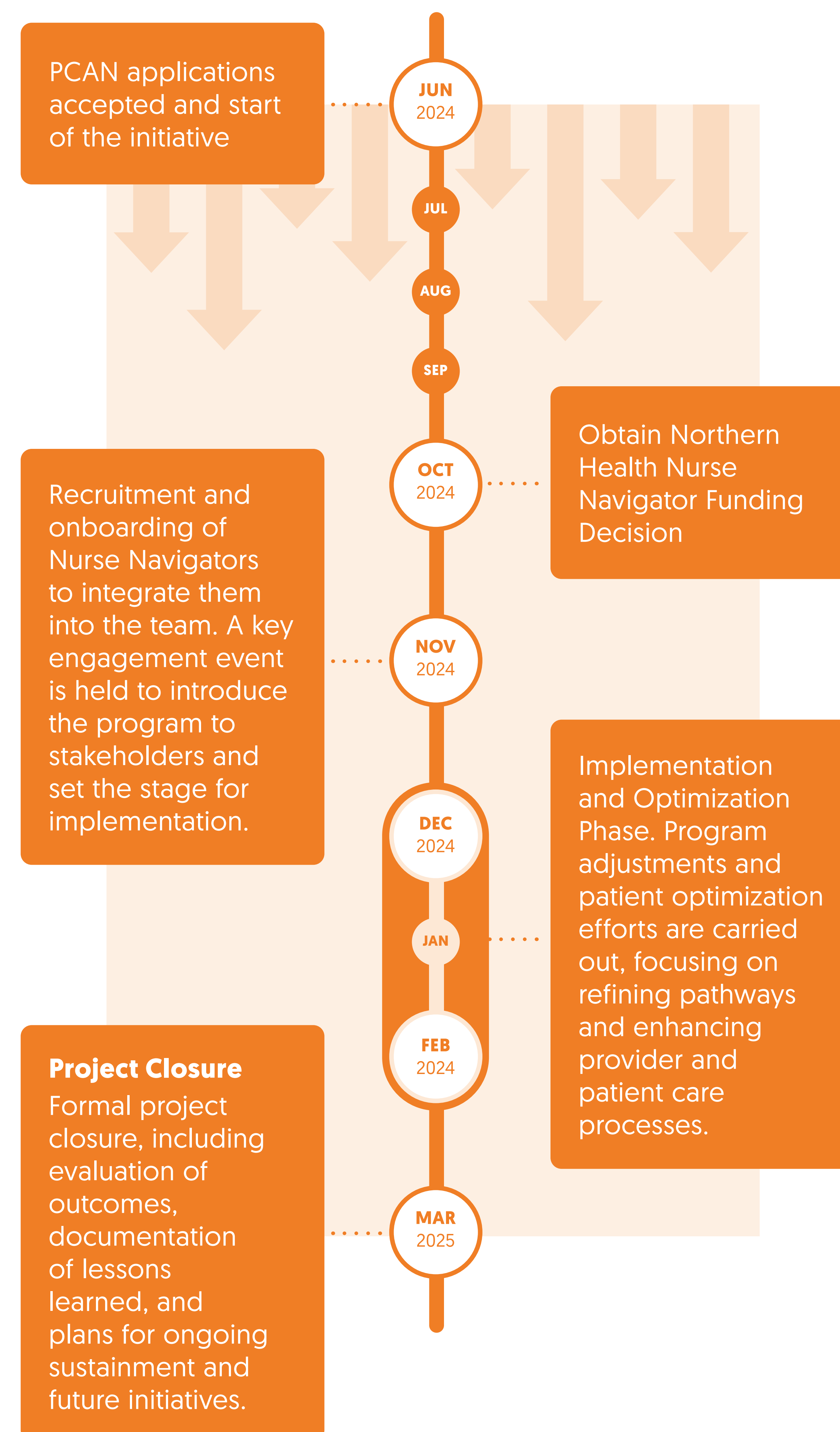
“We have succeeded in beginning surgical optimization and bridging the gap between community supports and surgical services. Over the past 2 years we expanded from 3 pathways to integrating all 13 into practice, secured funding to ensure a permanent Optimization Nurse position, and initiated group prehabilitation sessions. We have had positive outcomes and most importantly, patients reported feeling supported in positive change.”

TINA LEMOINE | PSS OPTIMIZATION NURSE, GRB

Objectives

Both programs aim to enhance surgical outcomes by focusing on the clinical components of Glycemic Control, Smoking Cessation, Frailty, and Social Supports, which have been adapted from UHNBC’s successful SPOC model. Following some resource issues, the teams demonstrated its adaptability by replacing Frailty with Physical Activity.

Project Timeline



Next Steps

The next steps involve awaiting approval from Northern Health to post and fill the Nurse Navigator positions, which will allow the program to officially begin. Following this, a data capture strategy will be developed to track and measure key outcomes. The program will then start testing the clinical pathways to ensure effectiveness and refine them as needed. Patient feedback will be collected using PREMs (Patient-Reported Experience Measures) and PROMs (Patient-Reported Outcome Measures) to continuously improve the program. Additional process measures, such as monitoring surgical cancellations and complications, will be used to assess the impact and success of the optimization strategies. Our balancing measure includes provider satisfaction, hospital readmission rates and length of stay.

Team

Dr. Stephanus Van Deventer | Orthopedic Surgeon, FJN/DCDH
Dr. James Hargreaves | Anesthesia Lead, DCDH
Tanya Stevens-Fleming | Director of Care, FJN
Julie Lee | Director of Care, DCDH

Toni-Rae Bloomfield | Surgical Services Lead, DCDH
Pamela Gibbs | Surgical Services Lead, FJN
Karla Beale | Surgical Services CPL, FJN
Jana O'Neill | Executive Lead, Surgical Services

Dr. Marijo Odullio | Surgical Lead, Surgical Services
Dr. Pal Dhadly | Anesthesia Lead, Surgical Services
Stacey Vanegmond | Regional PSS Optimization, Surgical Services
Sooky Moore | Project Manager

Prehabilitation in British Columbia



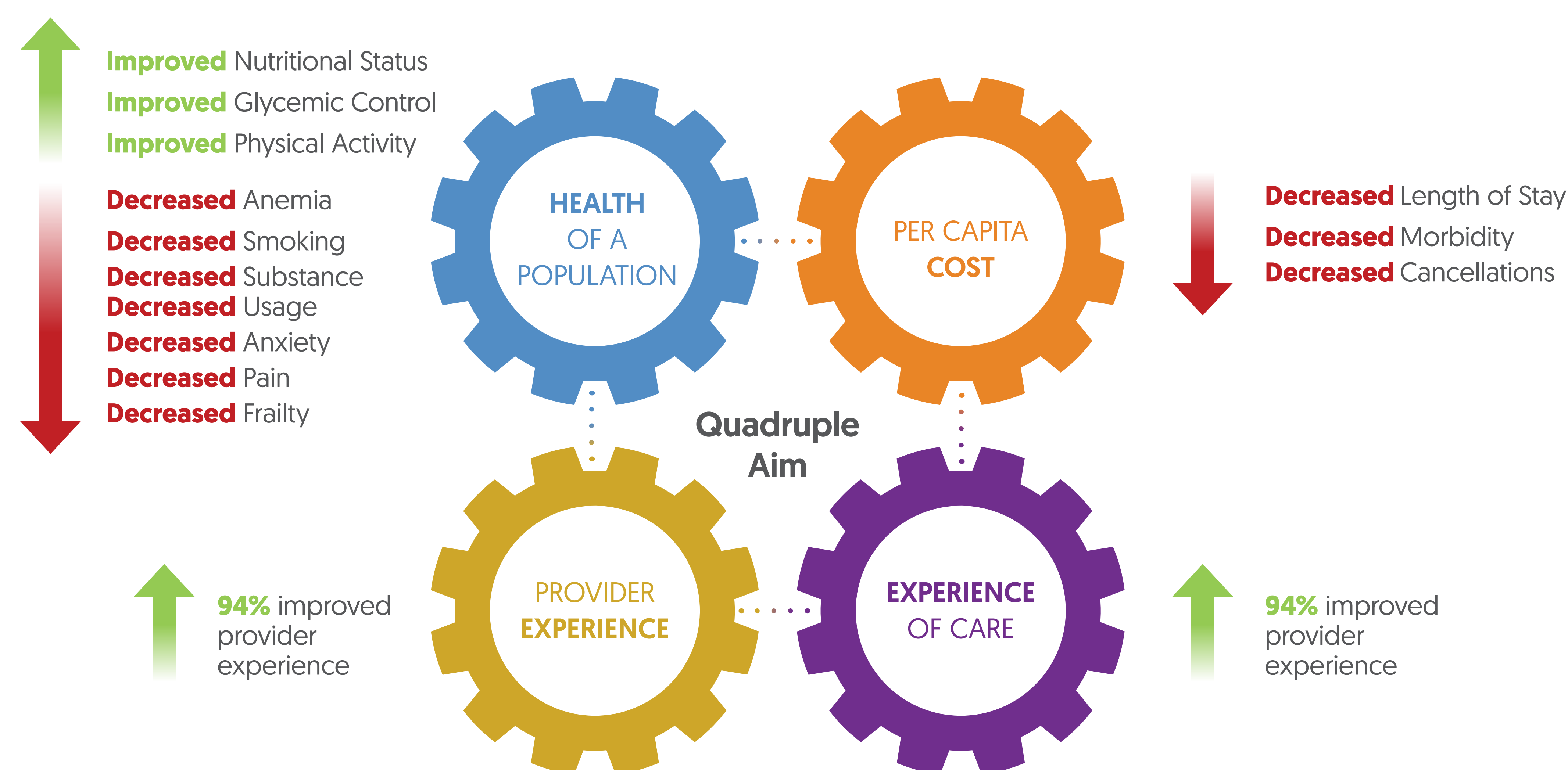
SCAN the QR code for more information

What is Prehabilitation?

Prehabilitation is a multidisciplinary approach to decrease presurgical risk factors and improve a patient's health in the time leading up to surgery. It means helping patients get as healthy as possible prior to surgery by addressing modifiable risk factors that can affect surgical outcomes.

Current State of Prehabilitation in British Columbia

Through SPOC 1.0 & 2.0, prehabilitation programs have been established in > 50% of hospitals performing surgery in BC. Doctors of BC PCAN Innovation Funding continues to fund additional sites to introduce prehabilitation and optimization components and existing SPOC sites are expanding their programs to add additional components or new procedures.

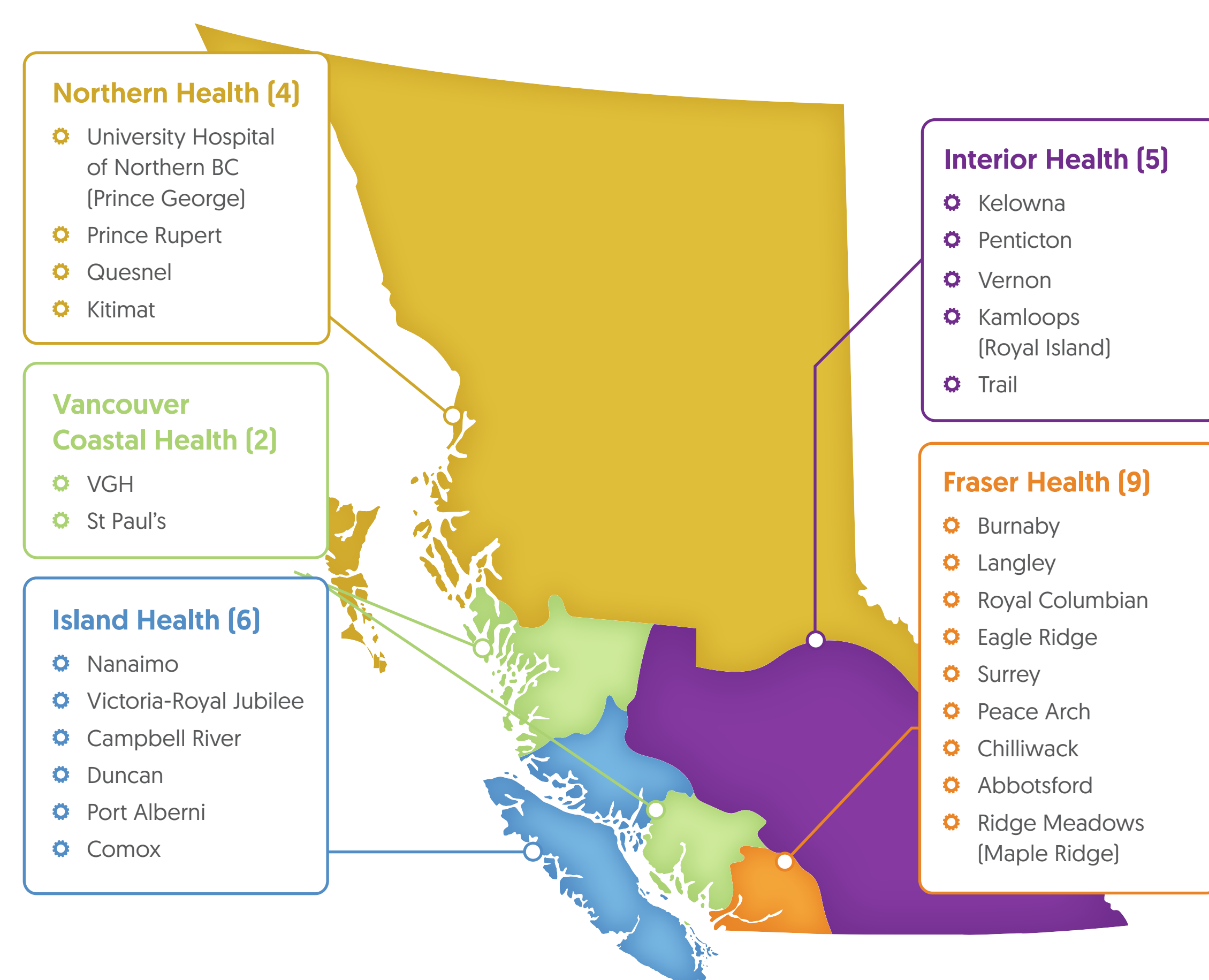


BC Surgical Patient Optimization Collaborative

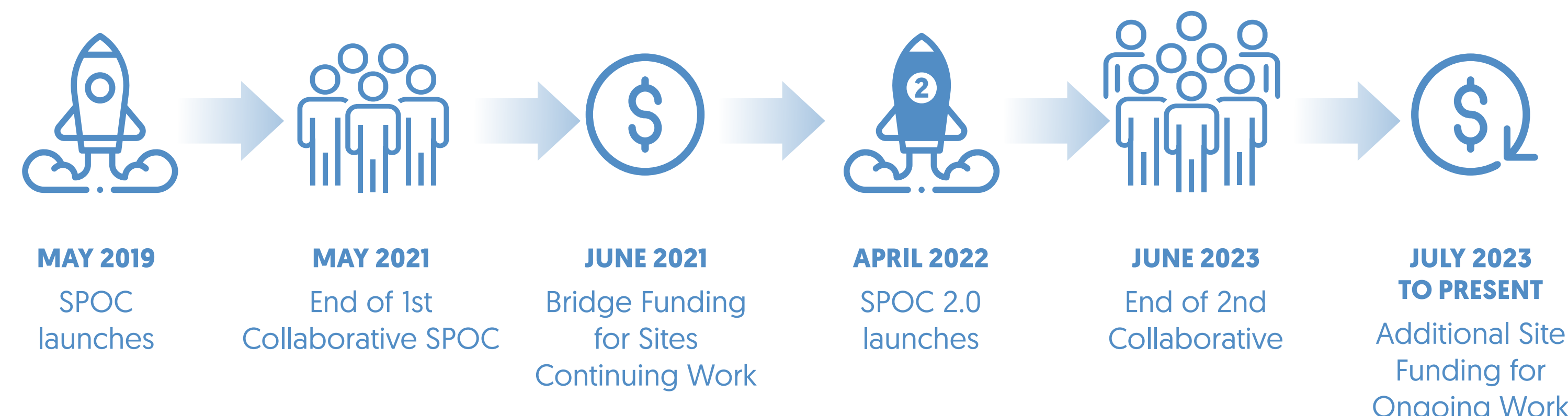
The Surgical Patient Optimization Collaborative [SPOC] first launched in May 2019 with 14 sites and expanded with another 13 sites in 2022, to include a total of 27 sites.

TYPES OF PROCEDURES

- Hip & Knee Arthroplasty
- Gynecology – benign & oncology
- Urology – prostate & radical cystectomy
- General Surgery – colorectal & benign
- Esophagectomy
- Complex spine instrumentation



The collaboratives mark four years of learning, implementing and demonstrating the benefits of prehabilitation to surgical patients, providers, and the health care system within the BC surgical landscape.



Updating BC Prehabilitation Resources

The Specialist Services Committee of the Doctors of BC has created the following resources to support sites developing and implementing prehabilitation systems:

- BC Surgical Prehabilitation Toolkit
- Surgical Patient Prehabilitation Implementation Toolkit
- Patient Passport Surgical Prehabilitation
- Spread and Sustainability of Change Resource Cards

Over the last six months a working group with clinical representation from across the province has reviewed and updated the Surgical Prehabilitation Toolkit with actionable recommendations for prehabilitation and optimization

for each clinical component. Screening tool recommendations have also been updated

based on current evidence-based guidelines. This updated toolkit is now available via the QR code below.



Access a digital copy of the BC Surgical Prehabilitation Toolkit here



Next Steps

- PCAN Innovation Funding is supporting the prehabilitation working group to develop an online resource hub at mysurgerybc.ca with patient and provider prehabilitation and optimization resources. This will be a central location where patients can access videos, educational materials, and links to providers. Health care providers will also be able to access referral templates, patient handouts, and additional guidance for prehabilitation and optimization screening.
- PCAN Innovation Funding will continue to support sites to create prehabilitation workflows in preparation for digital enablement of prehabilitation

BC Diagnosis Prioritization Codes Review Project

BC Ministry of Health, Doctors of BC, PHSA Surgical Patient Registry, BC Health Authorities

The BC Diagnosis Prioritization Codes (Dx Codes) Review Project seeks to review and update all surgical Dx Codes for both adults and pediatrics. This includes revising code descriptions, removing outdated codes, and creating new codes based on best practices and data analysis.

The project will be overseen by a Steering Committee with representatives from the BC Ministry of Health, Doctors of BC perioperative section heads, Health Authority Surgical Networks, and the PHSA Surgical Patient Registry (SPR).

Background

Dx Codes were first implemented in 2010 to ensure patients with similar conditions receive equitable access to surgical procedures across various service locations. In 2015 and 2016, all adult and pediatric Dx Codes, except for those related to cardiac surgery, underwent a comprehensive review and update.

An annual update process for the Dx Codes is managed by the provincial SPR (Surgical Patient Registry). This ensures codes are kept current through requests from surgeons, provincial clinical groups, health authorities, analysis of 'other' code utilization, and surgical policy considerations. Surgeons, specialists, and system partners wishing to request a review or update of one or more Dx Codes can do so by contacting the SPR via the SPR Service Desk or emailing sproffice@phsa.ca.

Project Overview

1 Analyze Current Usage of BC Diagnosis Prioritization Codes

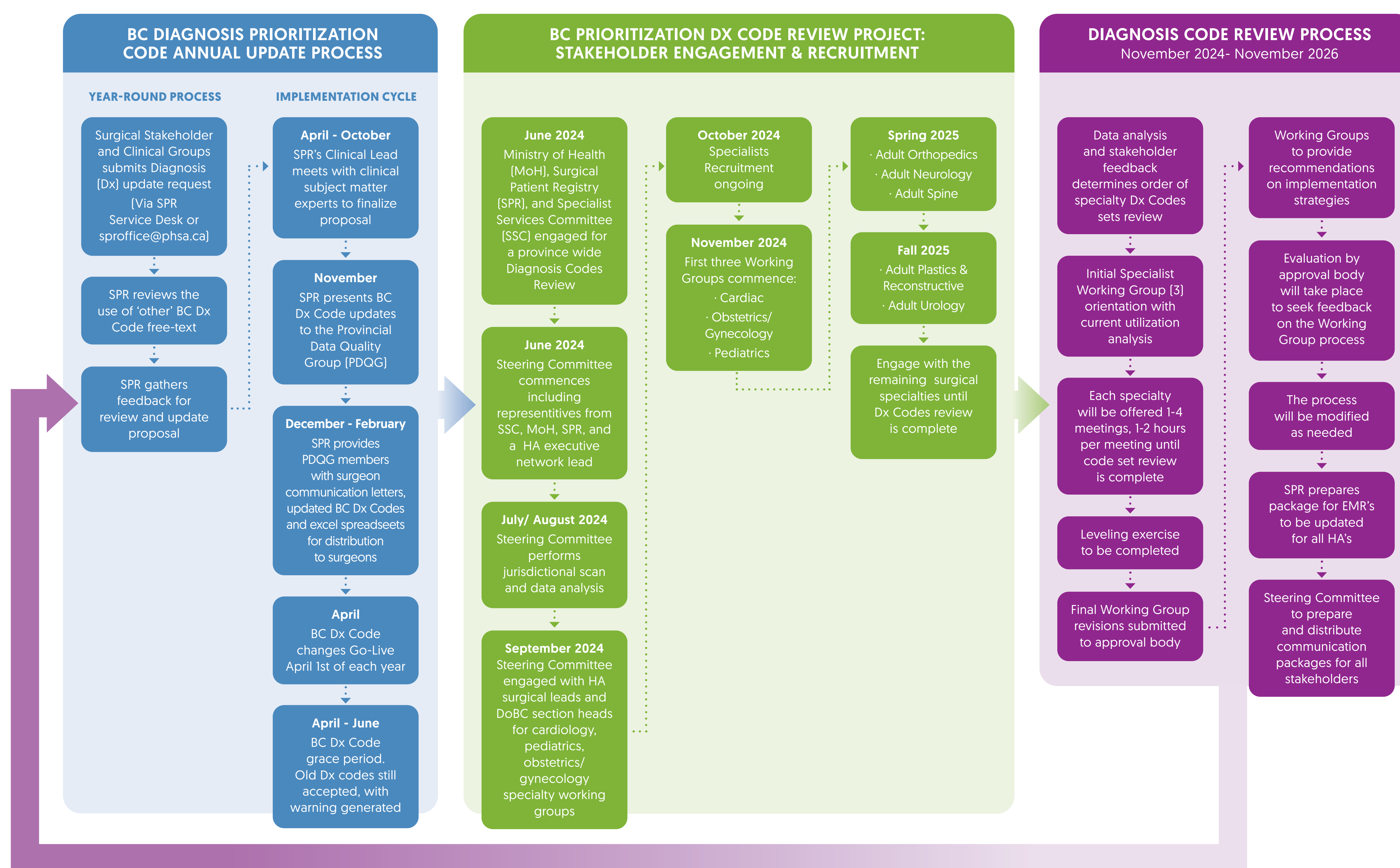
2 National Best Practice Comparison

3 Stakeholder Consultation

4 Improve Dx Code Assignment and Utilization

5 Recommendations

Process Map Evaluation



Results/Outcomes

- Review of all 16 Dx Codes sets to align with current best practice
- Enhanced collaboration with surgeons and specialists
- Improved Dx Code selection and utilization
- More accurate and meaningful reported wait times
- Improved accuracy of surgical patient prioritization and equitable access
- Advanced analysis for future decision-making on process improvement opportunities by all healthcare system partners.

Next Steps/ Lessons Learned

- Commence and complete objectives for initial 3 specialty Dx Code sets: Cardiology, Obstetrics & Gynecology, and Pediatrics.
- Schedule 4 biweekly meetings with each Specialty Working Group [3] to complete the Dx Code set review process.

Team

DOCTORS OF BC; PERIOPERATIVE CLINICAL ACTION NETWORK (PCAN)/ SPECIALIST SERVICES COMMITTEE (SSC)

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PCAN PERIOPERATIVE CLINICAL ACTION NETWORK

SSC SPECIALIST SERVICES COMMITTEE

Funding for this project was provided by the Specialist Services Committee (SSC), one of four Joint Collaborative Committees (JCC) representing a partnership between Doctors of BC and the Government of BC

Developing a Provincial Digital Solution

SUPPORTING PRE-SURGICAL SCREENING AND PATIENT PREHABILITATION



Visit the PCAN website for more info

The perioperative system in BC does not currently enable patient prehabilitation.

The current pre-surgical journey offers limited time for prehabilitation and optimization prior to surgery, despite long waitlists. An improved screening system is needed to identify at-risk patients during their waitlist time and prioritize them for prehabilitation and optimization.

Prehabilitation

Prehabilitation is a healthcare intervention that takes place before surgery with the aim to improve patient's health, resulting in reduced postoperative complications, enhanced recovery, and improved general health and wellbeing. Prehab leverages the unique opportunity for patient engagement that occurs during the preoperative period, as patients are more motivated and receptive to structured behavioral interventions that will impact their upcoming surgery.

Prehabilitation has been shown to:

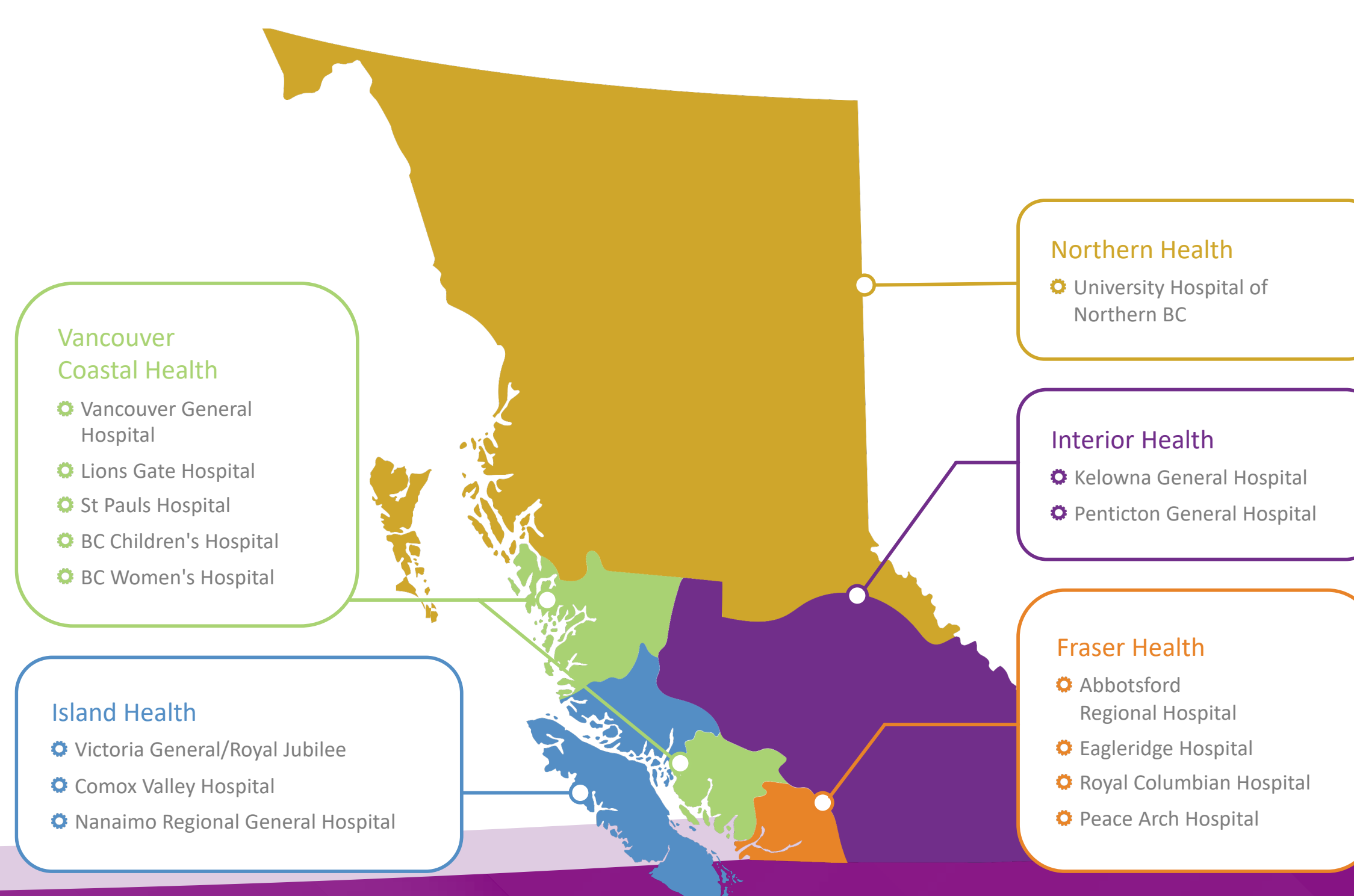
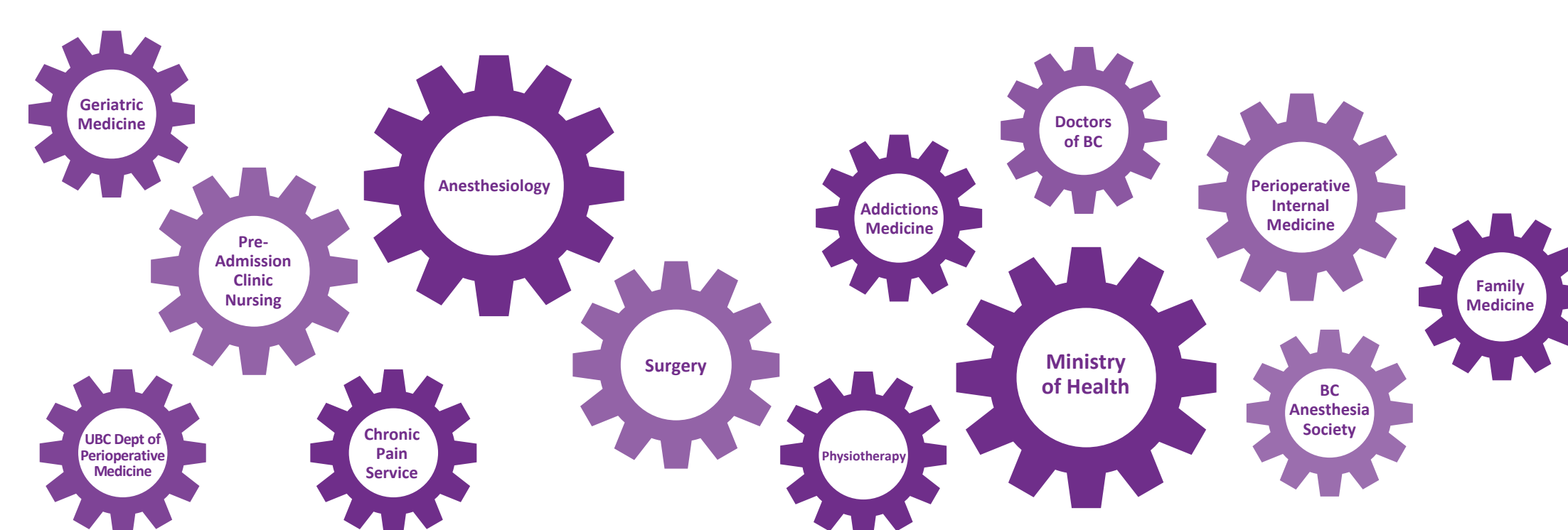
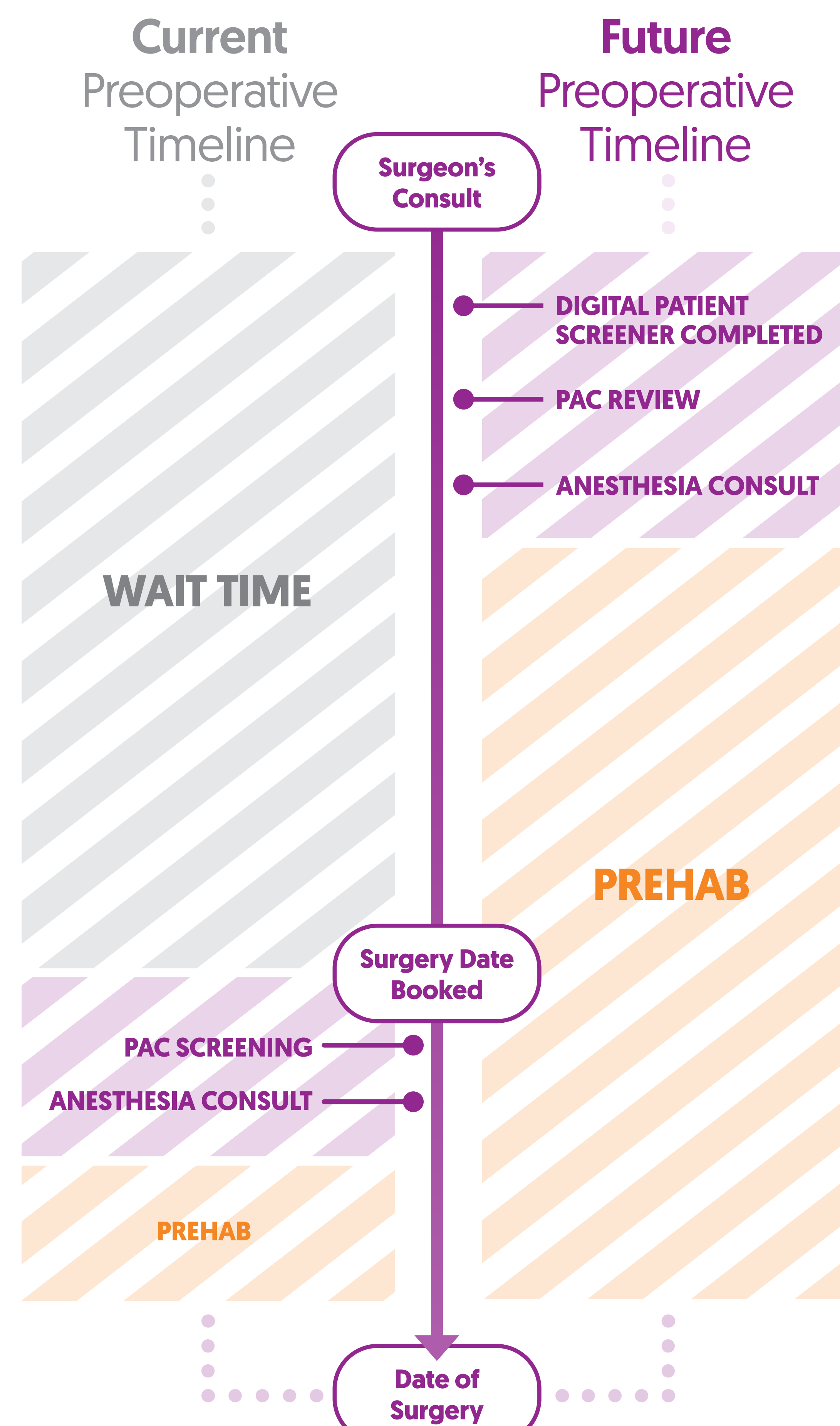
- reduce hospital length of stay
- reduce postoperative complications by up to 30-50%
- decrease cancellation due to patient's mental and physical health
- improve patient satisfaction

Prehabilitation improves patients' surgical outcomes by optimizing the following components of their mental and physical health before surgery.



PCADS Committee

The PCADS Committee was formed with clinical representation from across BC to compile and synthesize the clinical content to support the development of a provincial pre-surgical digital screening tool. The overarching objective is to facilitate patient risk assessment at the time of surgical decision (i.e., at the surgeon's consult) and use waitlist time to prehabilitate and optimize patients to improve post-surgical outcomes.

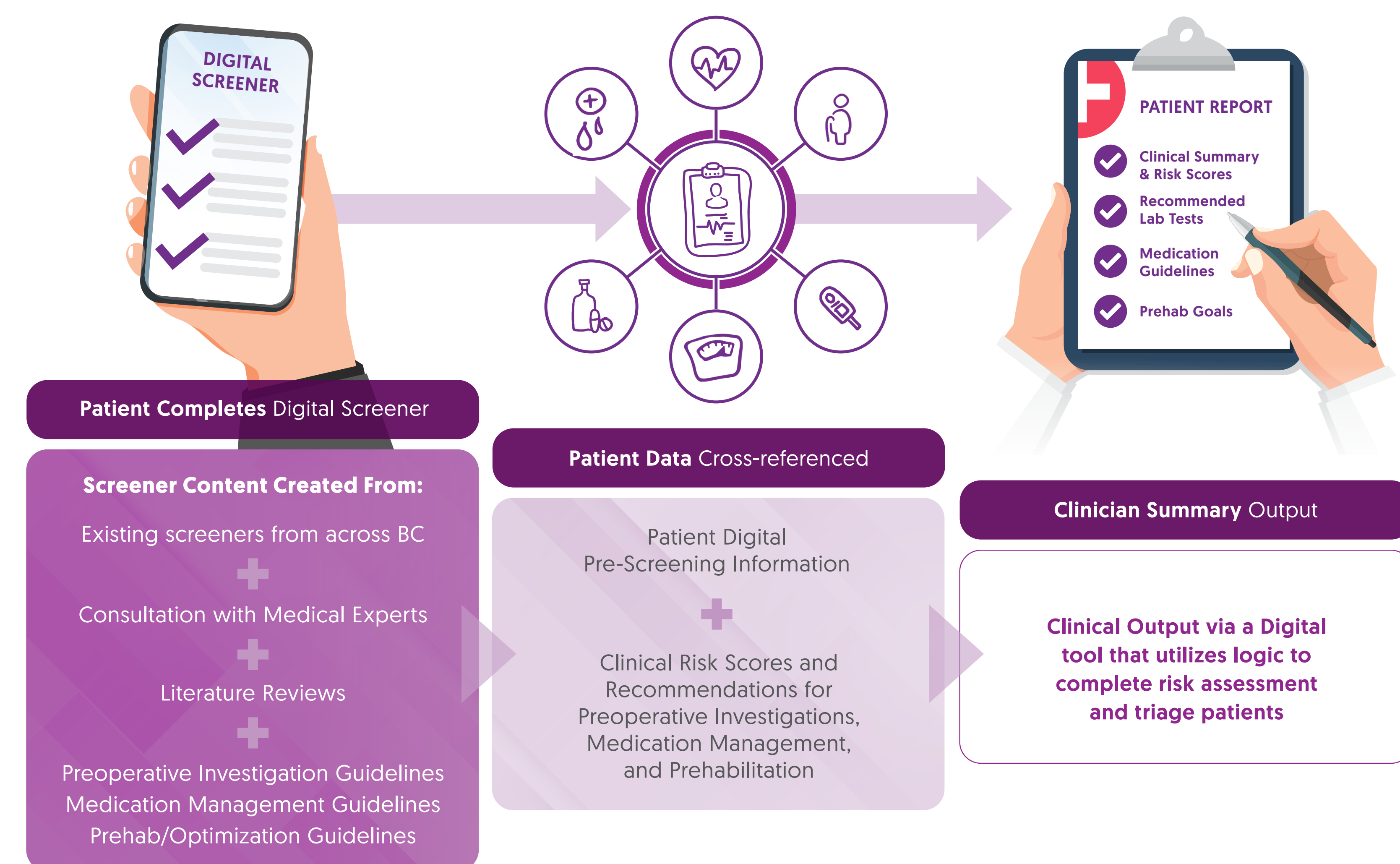


Preoperative Risk Assessment and Triage Tool (PRATT)

The result of the PCADS Project is the **Preoperative Risk Assessment and Triage Tool (PRATT)**, which is designed to:

- ▶ Collect patient health information digitally, as close to surgical decision date as possible, including:
 - Patient demographics
 - Patient health history
- ▶ Generate tailored preoperative recommendations including:
 - 11 validated perioperative risk scores [i.e., RCRI, DASI, FRAIL scale]
 - Recommendations for preoperative anesthesia assessment
 - Preoperative medication management recommendations
 - Pre-Admission Clinic (PAC) nursing actions
 - Preoperative investigation recommendations
 - Flagged areas for prehabilitation and optimization prior to surgery

The tool is intended to be incorporated into a digital platform that will integrate with existing electronic health records and be available to all surgical sites across BC. The PRATT is designed for clinical staff to collect patient health information and obtain risk scores and preop recommendations in a streamlined manner early in the surgical timeline, allowing for increased time for prehabilitation and optimization efforts to improve patient health prior to surgery.



Project Outcomes

An economic analysis based on data available from the Surgical Patient Optimization Collaboration (SPOC) estimates the following potential impacts of a digital screening solution in alignment with BC's quadruple aim.

