Bone and joint illness is among the fastest growing health care burdens in Alberta, fueled by decades of population growth, an aging population that is living into very old age, and a high obesity rate. Add to the fuel a new spark: radical elective interventions, such as hip and knee replacements, are in increasing demand by younger adults as a way to maintain highly active lifestyles.

In 2015-16, the Bone and Joint Health Strategic Clinical Network and Alberta Bone and Joint Health Institute collaborated to build value for Albertans focusing on three major areas of bone and joint care – hip fracture, inflammatory arthritis, and hip and knee replacements – in which the value-generation opportunities were significant due to high demand, population risk, high cost of service or stressed resources.

In these three areas, the BJH SCN, with support services provided by ABJHI, achieved significant success in fulfilling its broad mandate to improve service quality and outcomes, expand prevention efforts, and increase resource efficiency. It also expanded its direct involvement in research, facilitated greater cooperation between industry and research groups, and accelerated collaboration among frontline health professionals, zone leaders, academics, professional organizations and patient representatives.

The value proposition ABJHI brings to the BJH SCN is its demonstrated capability to engage broad-based stakeholder groups in programs to prevent illness, improve patient outcomes, and measure and report progress as part of a continuous improvement strategy.

In addition to enlisting the support services of ABJHI, the BJH SCN has built a dedicated coalition of stakeholder participants – patients, health care professionals, researchers, academics, service managers and policy people – who provide insight into service needs and emerging issues, and how to respond most effectively to them.
Fragility and Stability

A pre-emptive strike by the BJH SCN as population aging and increasing life expectancy signal rising incidence of osteoporosis [OP]. Key partners: Surgery sites, ERs, home care, long-term care, continuing care, nursing homes.

[Program developed and managed by the BJH SCN; coordinated by ABJHI.]

**PROGRAM OBJECTIVES**

- Reduce the rate of HIP FRACTURE
- Provide Albertans with the best EVIDENCE-BASED CARE when fracture occurs
- Smooth transition from ACUTE care to RESTORATIVE care
- Base restorative care on LEADING PRINCIPLES

**2014-15 [start of program]**

1. **Prevent Secondary Fracture**

   - Catch a Break
     - Increase awareness of OP
     - Educate patient & primary care on screening & treatment options
     - Change behaviour re. OP medications, supplements, modifiable risk factors

   - 7,300 family physicians provided with OP treatment guidelines

2. **Reduce Variability in Hip Fracture Care**

   - Acute Care Clinical Pathway
     - Quick surgery = better outcomes
     - Early mobilization = reduced length of hospital stay
     - Reduced stay frees up beds
     - Better outcomes = higher satisfaction

   - 2014-15 → 2015-16

   - Time to OR ≤ 48 hrs
     - Target 90% 83% 75%

   - Mobilization Day 1
     - Target 90% 81% 79%

   - Avg. Length of Stay
     - Target 15.7 13.6 days 15.4

3. **Integrate Care in the Community**

   - Fracture Liaison Services
     - Dedicated care team for hip fracture patients age >50
     - Medical treatment plan
     - Referrals to inpatient & community programs
     - Transfer to GP at 12 months

   - 1st 3 sites win official FLS status
   - 286 hip fracture patients assessed
   - OP medication started for 115/286 [40%]
   - 81/286 [28%] referred to other prevention programs

   - 2014-15

- 2,700 hip fractures/yr.
- $24M/yr. in acute care costs
- 4 Working Group meetings [160 participants]
- 2 strategy planning sessions
- 2 provincial Fracture Liaison Services collaboratives [250 participants]
- 21 presentations/conferences
- All sites in FLS National Registry
- Calgary OP Centre collaboration

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**Health Link**

- Screened 10,100
- Identified 7,300 as high risk

**BMD testing**

- 67% 64%

**Daily vitamin D use**

- 78% 63%

**Daily calcium use**

- 61% 47%
Inflammatory Arthritis

Improve access to leading evidence-based care to address Alberta’s growing burden of disease and shortage of rheumatology specialists. Key partners: Rheumatologists, family doctors, allied health professionals, patients.

[Program developed and managed by the BJH SCN; coordinated by ABJHI.]

- Inflammatory Arthritis affects all ages
- 1 rheumatologist/104,000 Albertans ⇒ Canadian Rheumatology Assoc recommends 1/75,000
- Early diagnosis & treatment are key to optimal outcomes
- Care occurs in non-acute setting

**Program Objectives**

- Early Diagnosis & Access to specialty care
- Timely intervention with Appropriate Medication
- A Treat-to-Target strategy for achieving low disease activity or remission
- Patient education & Informed Decision-Making
- Team-Based care

**Program Development & Management**

- BJH SCN
- ABJHI

**1. Engagement**

- Build Relationships
  - Provincial & National
- Support Research Initiatives
  - AIHS PRIHS collaboration
  - CIORA grant applications
  - Seed grant applications
- National Collaborations
  - AAC Data Harmonization Initiative

- Created province-wide network for IA care
- Established Provincial Working Group
- Arthritis Central Intake PRIHS 3 letter of intent
- Engaged with ~25 practitioners
- Supports BJH SCN goals

**2. Strategic Plan**

- Objectives
  - Increase capacity for care
  - Decrease disparity in clinical care & outcomes
- Principles
  - Patient-centric
  - Province-wide
  - Ease of access to care
  - Multi-disciplinary approach
  - Inclusive of all stakeholders
  - Comprehensive across care continuum
  - Measurable [all 6 quality dimensions]
  - Partnerships in health

- First-ever provincial model of care
- Shared care endorsed provincially
- Adaptable model

- Population
  - Patients with diagnosis of differentiated IA

- Core Services
  - Assess disease activity
  - Review medications & lab work
  - Conduct functional assessment
  - Renew prescriptions & lab requisitions
  - Provide patient education

- Evaluation Framework
  - Addresses all 6 quality dimensions
  - Aligns with National Data Harmonization Initiative

- To be evaluated in 2016-17

**3. Shared Care Model**

- To be evaluated in 2016-17

**Engagement Framework**

- To be evaluated in 2016-17

**Evaluation Framework**

- To be evaluated in 2016-17

**Support Framework**

- To be evaluated in 2016-17

**Plan**

- Design
- Implement
- Sustain
Hip and Knee

Improve quality of care in all dimensions and build and maintain adherence to provincial care path. Key partners: 13 hospital sites, 69 surgeons, 9 MSK clinics, AHS Finance, AHS IT, AHS Infection Prevention & Control.

[Program developed and managed by the BJH SCN; coordinated by ABJHI.]

- 24,000 referrals [est.]
- 9,800 elective surgeries
- $93M acute care funding [est.]
- 2 Learning Collaboratives ⇒ 270 total participants
  - Front lines • Surgeons
  - Administration • Clinics
- 2 Working Group meetings
- Presentations at Canadian Orthopaedic Association & Osteoarthritis Research Society International conferences

**PROGRAM OBJECTIVES**

CONTINUOUSLY IMPROVE patient outcomes & system efficiency

ENGAGE FRONTLINE PROFESSIONALS in quality enhancement programs & in MEASURING & REPORTING results

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1. **Continuous Quality Improvement**

Frontline team-based CQI program

- Reduce blood transfusion rate
- Track patient-reported outcome measures
- Reduce length of hospital stay
- Reduce hospital readmissions

- 'Hidden wait' revealed
- Readmission 09/10: 4.7%
  - 15/16: 3.9%
- $52M bed-day savings [cumulative] 15/16: 3.8%

2. **Reduce Variability**

Joint Accountability

Activity-based funding for elective hip & knee replacements

- Teams at 13 hospitals across Alberta
- Improve quality to increase cost efficiency
- Sustainability planning

- $5M blood transfusion savings [cumulative] 13/14: 14.1%
  - 15/16: 4.6%
- Avg. days 09/10: 4.7
  - 15/16: 3.8

3. **Improve Safety**

Maximize benefits for patients with obesity

- High proportion of obese patients
  - 1/2 of hip & 2/3 of knee patients have BMI ≥30
- Increased risk of poor outcomes
- Draft framework on strategies
- Infection monitoring

- 1/2 of hip & 2/3 of knee patients have BMI ≥30
- Variability in patient access & outcomes
- How to best identify & optimize at-risk patients

4. **Validate Quality**

Attain Accreditation

- Improve quality of care
- Validation by Accreditation Canada
- Recognize value of frontline-driven continuous quality improvement

- Accreditors recommend Leading Practice application
- Local CQI teams & Balanced Scorecards keys to success
- Deep infection rate Gen pop 0.35% Obese pop 1.19%
- Build partnerships with other SCNs, e.g. DON, Surgery

- System-wide improvement [since 2010]
- Medical adverse event risk 1.4x
- Deep infection risk 3.6x

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Plan Design Implement Sustain
Research

Build research partnerships and capacity, prioritize and facilitate research, and accelerate knowledge translation.

Key partners: Local researchers [AIHS, University of Alberta, University of Calgary, McCaig Institute, PACER], national and international research and funding agencies, administrators, clinicians, patients, study participants.

[ABJHI uses its unparalleled access to patient data, deep analytics capability and rich data repository to support bone and joint research.]

- Revamped research office
  ⇒ New Scientific Director [Dr. David Hart]
  ⇒ New Assistant SD [Dr. Anna Kania-Richmond]
- Supported 13 grant submissions
- 100+ researchers SCN members
- 90+ Centralized Intake collaborators

Work Planning

Workshop
Engage diverse BJH SCN stakeholders
- Examine state of knowledge in areas of high relevance, e.g.
  1. Stem cells
  2. Obesity
  3. Exercise
  4. Biomarkers
- Make recommendations to inform research, practice, policy

Provincial Research Advisory Council
Reactivate & expand PRAC
- Align research strategies with BJH SCN priorities [prev & conserv mngmnt]

OBJECTIVES
FACILITATE CONNECTIONS among the BJH SCN’s broad membership
MATCH PROBLEMS in bone & joint health with practical & feasible SOLUTIONS

1. BJH SCN Research Projects

PRIHS Centralized Intake
Design optimal centralized intake system for Albertans with OA
- Build measurement framework
- Implement & evaluate

SpineAccess Alberta
Design multidisciplinary assessment & triage plan
- Train assessors: physiotherapists, chiropractors, family doctors
- Address logistics at sites

2. Research Facilitation

McCaig Institute ‘Speed-Dating’
Interactive sessions connecting clinical problems with solutions

MEDEC Events
Research/medical technology industry cross-collaboration
- 3 research applications to Accelerating Innovations into CarE
  1. Scoliosis database [Dr. G. Faulkner]
  2. Stem cell [Dr. R. Bray]
  3. Gait analysis [Dr. R. Ferber]

3. Powering Research with Data

ABJHI facilitated 7 research requests supported by BJH SCN

Patient-level data from 17 repositories

Provide PRIHS Centralized Intake with detailed patient flow data
AB data reveals relationship between delay to OR & mortality
Ortho Fellows study transfusion & infection link
Data Liberation
Unleash the power of data to inform best practices and continuously improve the quality of care. Key partners: AHS [Analytics, IT, Research Support, Infection Prevention & Control, Legal], Alberta Health, surgeons, Alberta Orthopaedic Society, clinics, patients.

[ABJHI maintains a bone and joint health multi-custodian data repository in partnership with AHS and physicians.]

OBJECTIVES
Provide EVIDENCE & INTERPRETATION to support best practices, policy & planning
Monitor QUALITY OF CARE
Identify opportunities for IMPROVEMENT

1. Best Practices
Identify risk factors of obesity in arthroplasty
Explore reasons for early arthroplasty revision
Investigate link between early access to OR and mortality in hip fracture patients

2. Quality of Care
Ad-hoc analysis of periprosthetic infection
Collaboration with IPC on SSI surveillance
Audit and feedback informing CQI initiatives

3. Pan-SCN Collaboration
Surgery SCN: demand model for unscheduled surgical services
Pan-SCN provincial webinar on Balanced Scorecard
Diabetes, Obesity, Nutrition SCN: opportunity for collaboration on obesity in arthroplasty

DATA SOURCES
Clinic Visits
Surgical Supply/Costing
OR Data
Clinical Risk Grouper
PROMs
Patient Registry
Ortech
Clinic Wait List
Clinic EMR
ABJHI Data Repository

• 79 custodians
• 96,000 patients
• 220+ reports generated every year
• 3 new ways to identify patients, procedures, infections
• 7 research requests

Evidence-based protocols
Time to OR ≤48 hrs
In-hospital mortality risk
2x-3x

Infection
Medical complication
Readmission
Reduced function

Detection of post-op infection 30%
Quarterly Balanced Scorecards support CQI
1 LOS 2 Readmission 3 Infection 4 Blood transfusion 5 Patient experience

Working with site periprosthetic joint infection committee to identify root cause[s]

Explore reasons for early arthroplasty revision
Identify link between early access to OR and mortality in hip fracture patients

Surgery SCN: demand model for unscheduled surgical services
Pan-SCN provincial webinar on Balanced Scorecard
Diabetes, Obesity, Nutrition SCN: opportunity for collaboration on obesity in arthroplasty

Explore opportunity for evidence-based improvement

43 attendees