Fraser Northwest Division of Family Practice and Fraser Orthopaedic Institute

Musculoskeletal Medicine: A Study of Impact, Spread and Sustainability

Shared Care Project Final Report and Evaluation

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- For Review and Discussion-

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Acknowledgements

Fraser Northwest Division of Family Practice and Fraser Orthopaedic Institute gratefully acknowledge the work of the North Shore Division of Family Practice in designing and testing a model for musculoskeletal care, the *Rapid Orthopedic Consultation Clinic - ROCC* (a *Shared Care* project). We learned much from their experience that we were able to adapt to *FOI MSK Medicine*. The two Divisions have continued to share information and insights, including some common evaluation questions and a joint effort to address issues of long-term sustainability.

Fraser Northwest also thanks Victoria's Rebalance clinic for sharing their patient survey questions and insights.

Although there are key differences between ROCC, Rebalance and FOI MSK Medicine, together the projects demonstrate the *spread* of knowledge and experience, resulting in numerous efficiencies, including cost savings (for more details see *Return on Investment* on p. 40).

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EXECUTIVE SUMMARY

Fraser Orthopaedic Institute (FOI) Musculoskeletal Medicine Shared Care Project

At a Glance[1]

2,324: total # of patients seen at MSK Medicine from January 2015 - June 2016[2]

***1,502**: # of patients seen from direct GP and Emergency physician[3] referrals*

***822**: # of non-surgical patients redirected to MSK Medicine from FOI surgeons*

48 hrs/1-2 weeks: time for a GP referral request to be acknowledged/time for patient to be notified of their MSK Medicine appointment

6-9 months to 3+ years: pre-project wait time for an initial consult (with an FOI Orthopaedic Surgeon)

4 weeks or less: wait time achieved by the project for an initial consult with an MSK Medicine physician[4]

30%: reduction in one FOI orthopaedic surgeon's wait list due to non-surgical patients being redirected to MSK Medicine

100%: proportion of patients surveyed (n=90) rating their MSK Medicine experience as *Good to Excellent (Excellent 51%, Very Good 38%, Good 11%)*

8.03: Mean score, GP satisfaction with MSK Medicine (on a Likert Scale of 1 to 10, with 1 being extremely dissatisfied and 10 being extremely satisfied) n=39

100%: proportion of GP survey respondents supporting continuation of MSK Medicine

70%: proportion of Fraser Northwest Division member GPs who referred patients to MSK Medicine during the project period[5]

67%: proportion of MSK Medicine patients from the Fraser Northwest area

$40,700 - $50,902: estimated direct system savings based on the difference between MSK Medicine physician consult rates vs. specialist consult rate[6]

$900: system savings for one avoided Emergency Department visit for musculoskeletal pain

Real but not possible to quantify: system savings from costly surgical interventions avoided as a result of timely MSK Medicine care

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[1] All figures are for the funded project period January 2015 through June 2016.

[2] Without MSK Medicine, the majority of these patients would have ended up on a lengthy wait list of 12 months to over 3 years to see an FOI Orthopaedic Surgeon.

[3] The majority of direct referrals came from Community GPs; approximately 10% came from ER Physicians, 2% from Specialists

[4] By the last four months of the project and beyond, wait times were maintained at 4 weeks or less. Wait times can vary considerably during Christmas and summer vacation, or if there is a staffing change.

[5] Represents the proportion of FNW members who might potentially refer MSK Medicine, i.e. does not include hospitalists, retired GPs, or GPs working in specialty areas such as mental health or palliative care

[6] Assumes that if MSK Medicine had not been available, patients would have instead been seen by an FOI orthopaedic surgeon

The World Health Organization has declared musculoskeletal (MSK) conditions a global health burden that is predicted to grow dramatically as populations age. The direct cost of MSK conditions to health services in Canada is 1.0% of the total Gross National Product and indirect costs such as lost productivity and wages account for another 2.4% of GNP[7]. In British Columbia, access to timely MSK care has been hindered by long wait lists to see an orthopaedic surgeon, who may not be the most appropriate provider for the situation.[8]

The Fraser Northwest Division of Family Practice[9] (FNW) and the Fraser Orthopaedic Institute (FOI) in New Westminster, British Columbia, co-developed a solution to the dishearteningly long orthopaedic wait times. Through funding from Doctors of BC's ***Shared Care***[10] initiative, the FOI Orthopaedic Surgeons established *FOI Musculoskeletal (MSK) Medicine*, staffed by Sports Medicine Physicians and a General Practitioner (GP) with a special interest in foot and ankle conditions. MSK Medicine is for non-surgical patients requiring initial musculoskeletal consultation and assessment. Additionally, MSK Medicine physicians provide recommendations such as physiotherapy, orthotics and bracing; referrals to other services, including a surgical referral where indicated; and in-house injections. It complements the urgent and surgical orthopaedic care provided at Fraser Orthopaedic Institute.

The FOI MSK Medicine project was an outcome of successful collaboration between Fraser Northwest GPs and FOI orthopaedic surgeons in 2012-13 to improve the orthopaedic referral process. Through a well-planned and managed team approach, MSK Medicine met or exceeded all of its ambitious short- and medium-term outcome measures.

Sample Outcome Measures and Results

Outcome Measure	Results
√ MSK Medicine is acknowledging GP referral requests within 2 weeks	✸ Lack of timely referral acknowledgement from specialist offices is a significant issue for GP offices; GPs were very pleased with MSK Medicine's timely acknowledgement of a referral request within 48 hours and/or MSK Medicine notifying a patient of their upcoming appointment within 2 weeks of receiving the referral request
√ Patients have timely access to MSK Medicine services	✸ Research and experience has shown that if a patient waits more than 6 weeks for a referred appointment, s/he is likely to make a repeat visit to the GP; by the last four months of the project, wait times for an MSK Medicine appointment were *below* the target range of 6-8 weeks
√ Wait times to see participating orthopaedic surgeons have decreased	✸ For three of the five FOI Orthopaedic Surgeons, overall wait times declined by 7 to 24 months; for the other two, overall wait times remained the same but for truly surgical patients they declined by half. Patients referred from MSK Medicine for a surgical consult with an FOI orthopaedic surgeon (321 or 13.8% of total patients seen) had their appointments expedited and were seen by a surgeon within 1-3 months.
√ More efficient use is being made of appropriate physician specialty	✸ Several FOI orthopaedic surgeons reported that prior to the project, the majority of patients they saw had non-operative MSK conditions. MSK Medicine inverted the proportion of non-surgical vs surgical patients referred to the surgeons such that surgeons are primarily seeing surgical patients and MSK Medicine doctors are seeing musculoskeletal patients. The Right Patients are being seen at the Right Time by the Right Physician.
√ The volume of patients being	✸ During the project period MSK Medicine saw 2,324 patients. Most of these

[7] Burden of major musculoskeletal conditions. Anthony D. Woolf and Bruce Pfleger, Bulletin of the World Health Organization 2003, 81 (9)

[8] Orthopaedic surgeons are trained to treat operative conditions but more than half their referrals may be non-surgical.

[9] Fraser Northwest Division encompasses family physicians in New Westminster, Coquitlam, Port Coquitlam, Port Moody and parts of Burnaby – the traditional catchment areas for Royal Columbian and Eagle Ridge hospitals.

[10] See www.sharedcarebc.ca for a description of the program

	seen at Fraser Orthopaedic Institute has increased		patients were supplementary to the number who *could have been seen* at FOI without MSK Medicine
√	FNW GPs are referring patients to the clinic commensurate with existing referral patterns	✸	Prior to the project, approximately half of referrals to FOI orthopaedic surgeons came from the FNW area; 63% of direct referrals to MSK Medicine came from FNW-area physicians
√	Patients and providers have improved experience of orthopaedic care	✸	Patients, GPs, Orthopaedic Surgeons and MSK Medicine Physicians are highly satisfied with MSK Medicine. 100% of surveyed patients (n=90) rated their experience at MSK Medicine as *good to excellent (89% very good or excellent);* 100% of surveyed Fraser Northwest GPs (n=39) supported continuation of MSK Medicine; and consensus from the orthopaedic surgeons and their MOAs is that MSK Medicine has significantly improved patient care, work flow and provider satisfaction.
√	Return on investment has been demonstrated	✸ ✸	The project achieved all Triple Aim goals. **Population Health** has been improved because patients have timely access to the right care, and patients and providers confirm significantly better **Experience of Care.** As for reduced **Per Capita Cost**, system savings of between $40,700 and $50,902 can be quantified but many more savings can be attributed to this model of care, including avoided ER visits, avoided exacerbation of patients' conditions, avoided narcotic prescriptions due to MSK pain, and reduced personal and societal costs. Shared Care approved $272,918 in funds but the project came in well under budget at $175,000, a savings of $97,918. In recognition of the significant work required, $50,000 has been provided to support a comprehensive evaluation, research and investigation of sustainability options.
√	Benefits and key learnings from the project have spread to other areas	✸	This long-term outcome measure is still pending, however FOI MSK Medicine benefitted greatly from spread of key learnings and support, foremost from the North Shore Division of Family Practice's analogous Shared Care project, and also from Victoria's *Rebalance* project, funded through Specialist Services. The MSK Medicine report is contributing to the body of knowledge concerning the benefits and sustainability of this model of care.

The FOI MSK Medicine Shared Care project ran from January 2015 through June 2016. The well-founded business model for self-sustainability came up slightly short due to external factors. The break-even point had been calculated at four clinic days per week (which the project achieved or exceeded), and office rental income from MSK Medicine physicians of $300 per day (which was on the low side of the $300-$400 rate typical in the community). However, it became apparent that Sports Medicine physicians' income from MSP billings made this rate too high to be feasible and daily rent was capped at $200.

Over the past year, since Shared Care funding concluded June 30th 2016, the FOI orthopaedic surgeons have subsidized the $55,000 annual operating costs of MSK Medicine via income from the sale of braces and splints. This is not a sustainable solution in the long run. However, the project has established a compelling value proposition for delivery of musculoskeletal care in BC. The data and evidence from this report adds to the body of knowledge gathered from analogous projects on the North Shore and in Victoria, and Shared Care is leading discussions on how to support long-term sustainability. Alternative delivery models might well involve allied health professionals such as Advanced Practice Physiotherapists in team-based care with a Sports Medicine physician. Advanced Practice Physiotherapists are a proven model of musculoskeletal care in Ontario.

MSK Medicine has become a vital part of the community of care in Fraser Northwest Division and beyond. The focus going forward will be on maintaining this highly regarded, much needed, and successful service.

PURPOSE AND SCOPE OF THIS REPORT

This report is a narrative and evaluation of a highly successful ***Shared Care*** project co-led by the Fraser Northwest Division of Family Practice and Fraser Orthopaedic Institute (FOI) Orthopaedic Surgeons between January 1, 2015 and June 30, 2016.

It is a study of impact, spread and sustainability of a model for delivering timely and effective musculoskeletal (MSK) medicine services to patients and providers. It exhibits the value of a ***Shared Care*** approach to achieve significant, measurable improvements to patient care, patient/provider satisfaction and reduction of system costs.

The term "final report" may mislead, as Fraser Orthopaedic Institute Musculoskeletal Medicine (FOI MSK Medicine) in New Westminster continues to operate at full capacity nearly one year after completion of Shared Care funding. This has been possible due to subsidies from FOI Orthopaedic Surgeons from sales of braces and splints. The story of FOI MSK Medicine – and of models like this – continues to be written. Thus the report can and should be used as a catalyst for discussion at Health Authority, Doctors of BC and Ministry of Health levels about how this proven model of patient care can be sustained and spread in future.

Scope of report

The report spans the period from initiation of Fraser Northwest Division's (FNW) initial Shared Care work with Fraser Orthopaedic Institute (FOI) surgeons in 2012 through development, implementation and conclusion of funding for the specific MSK Medicine project in June 2016. It also notes post-funding questions, issues and recommendations.

Part A: Context for MSK Medicine describes the context for the project, its structure and MSK Medicine services. **Part B: Evaluation** provides the outcome measures, indicators, supportive data and results analysis. **Part C: Conclusions and Recommendations** summarizes the key learnings and suggestions going forward.

Multiple audiences

The report bears multiple audiences in mind:

As the *fund holder*, the **FNW Board and members** will be interested in the impact of MSK Medicine on patients and physicians in our area, and in the project's alignment with overall Division goals.

As the *funder*, **Shared Care** (Doctors of BC) will see the extent to which the project met stated outcomes (including overall Triple Aim goals), the return on investment of funds, project sustainability, and potential for spread of key learnings.

As the *key project partner and ongoing deliverer* of MSK Medicine, the **FOI Orthopaedic Surgeons** and **MSK Medicine Physicians/Staff** have a stake in an accurate portrayal of the project and its post-funding successes and challenges.

For **other Divisions/Health Authorities/jurisdictions** dealing with similar issues of timely and appropriate access to orthopaedic care, the report provides key learnings that may be adaptable to their local context.

PART A: CONTEXT FOR MUSCULOSKELETAL MEDICINE

A global health issue

> ***"Musculoskeletal conditions are prevalent and their impact is pervasive. They are the most common cause of severe longterm pain and physical disability, and they affect hundreds of millions of people around the world. At any one time, 30% of American adults are affected by joint pain, swelling, or limitation of movement."*** [1]

In this fashion, the World Health Organization (WHO) describes the considerable burden musculoskeletal (MSK) conditions exact on population health and society. By endorsing the *Bone and Joint Decade 2000-2010*, WHO and the United Nations focused attention on MSK conditions as a global health burden that is predicted to grow dramatically as populations age.

Studies from a number of countries[11] quantify personal, household, and societal impacts of MSK conditions. In Canada, the Ontario Health Survey determined that MSK conditions account for 40% of all chronic conditions, 54% of all long-term disability, and 24% of all restricted activity days. In BC, strains constituted 57% and 60% of workplace injuries among older and younger workers, respectively (source: WorkSafe BC Statistics 2011).

The effects of MSK conditions include:
Personal and household

- Chronic pain
- Disability (the main cause of disability among older age groups)
- Decline in mental health and social functioning
- Reduced quality of life
- Job loss and/or decreased employability
- Income loss, lower living standard

Societal

- Work absence
- Lost productivity
- Sick leave, disability pensions
- Burden on health care system – examples:
    - In the United Kingdom, MSK complaints are the second most frequent reason for a physician consult and the most common reason for repeat consults[12]
    - In Ontario, MSK conditions are responsible for nearly 20% of health care system use
    - In Sweden, MSK complaints are the most the most expensive cost of illness category, accounting for 22.6% of the total cost of illness[13]

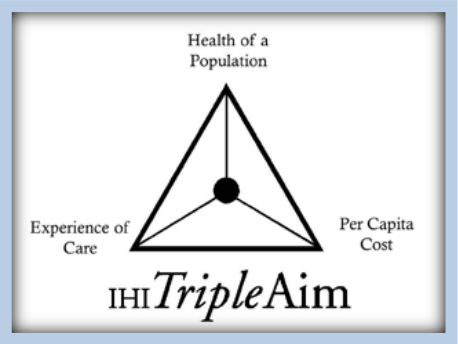
Table1 shows the direct and indirect costs of MSK conditions to health services in three countries.

[11] UK, United States, Canada, Australia, Norway, Sweden
[12] UK Department of Health Musculoskeletal Services Framework
[13] Swedish Cost of illness Study, 2012

Country	Direct Cost of MSK Conditions to Health Services	Indirect Costs (lost productivity and wages)
Netherlands	0.7% of GNP	Not provided
Canada	1.0% of GNP	2.4%
United States	1.2% of GNP	1.3%

Table 1. Cost of Musculoskeletal Conditions to Health Services
Source: Burden of major musculoskeletal conditions. Anthony D. Woolf and Bruce Pfleger, Bulletin of the World Health Organization 2003, 81 (9)

Shared Care - a British Columbia approach



British Columbia's Shared Care initiative is a collaborative partnership between the BC Ministry of Health and Doctors of BC. Triple Aim goals are embedded in its mandate *"to provide funding and project support to family and specialist physicians to improve the flow of patient care from primary to specialist services"*. [14] Shared Care has provided funding to several Divisions of Family Practice to support GP-Specialist collaboration in Orthopaedics, identified as a priority specialty nation-wide.

Orthopaedics Shared Care in Fraser Northwest Division of Family Practice

The Fraser Northwest Division of Family Practice (FNW) encompasses family physicians in New Westminster, Coquitlam, Port Coquitlam, Port Moody and parts of Burnaby – the traditional catchment areas for Royal Columbian and Eagle Ridge hospitals. The members work to improve patient access to local primary care, increase local physicians' influence on health care delivery and policy, and provide professional support for physicians.

Fig. 1. Communities Comprising the Fraser Northwest Division of Family Practice

[14] Shared Care website www.sharedcarebc.ca

Incorporated in November 2010 with 109 members, FNW membership has grown to 333 as of February 2017. This report uses June 2016 membership Fig.2 (269 members) as the basis for analyzing local impact of the MSK project during the Shared Care-funded period, January 2015 through June 2016.

Member Type	#	Community GP[15] Member Location	#
Community GP[16]	139	Burnaby	14
Locums	30	Coquitlam	53
Hospitalist	29	New West	29
Hospitalist/Locum	8	Port Coq	31
Residents	18	Port Moody	6
Retired	15	Other	6
Other[17]	30		
Total	**269**	**Total**	**139**

Table 2. Distribution of Fraser Northwest Division GPs by Community and Member Type (June 2016)

Member-driven priorities

In **December 2011**, ***Shared Care*** approved funds to support FNW's project charter for "*improving patient care across the Family Practitioner/Specialist interface and the efficient use of GP, SP and health care resources*"[18]. In **January 2012**, the Division hosted an engagement event and survey to ascertain members' priority specialty areas. Among all specialist services, GPs ranked Orthopaedics as the highest priority specialty. Thirty-one of 36 survey respondents said they were dissatisfied with the referral process to orthopaedics.

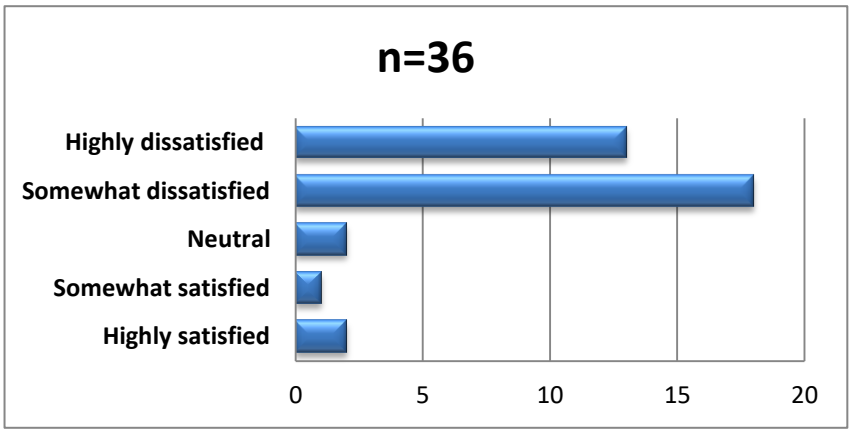


Fig. 2. GP Satisfaction with Orthopaedics Referral Process Jan 2012

In response to this member priority, in **June 2012** the Division launched the Shared Care Orthopaedics advisory committee.

[15] Includes members identifying as Community GP and Walk-In Clinic GPs
[16] Includes members identifying as Community GP and Walk-In Clinic GPs
[17] Includes GPs focusing on area of special interest such as palliative care, addictions, psychiatry
[18] Fraser Northwest Division of Family Practice Shared Care Project Charter 2011

Improving the Orthopaedics referral process

Over the next twelve months, the FNW committee successfully achieved the following goals:

- Enhanced mechanics of GP-Specialist referrals, including increased awareness and improved urgent referrals to Fraser Orthopaedic Treatment Clinic (urgent care)
- Standard investigation/treatment protocols for selected presenting complaints developed and posted on the Division's Pathways website
- A Continuing Medical Education (CME) event on managing knee osteoarthritis
- Guidelines for urgent versus non-urgent referrals (posted on Pathways)
- A pilot fax-back referral acknowledgement process
- Improved communication between providers

Pathways is an online resource that allows GPs and their office staff to quickly access current and accurate referral information, including wait times and areas of expertise, for specialists and specialty clinics.

Pathways was first developed by the Fraser Northwest Division as a tool to help improve patient referrals made by GPs to specialists and specialty clinics. It is the repository for FNW's *Shared Care* outputs.

An external evaluation completed in June 2014 concluded that the *Improving the Orthopaedics Referral Process* project *"...successfully developed and implemented all of its planned activities and deliverables ..."*[19]

The problem of dishearteningly long waitlists

The improvements described above were reason for celebration. However, the Fraser Northwest Division Orthopaedics advisory committee was keen to pursue a more far-reaching solution to address the significant problem of *timely patient access to diagnosis and appropriate care for musculoskeletal (MSK) conditions*.

In 2013, wait times to see an FOI Orthopaedic surgeon for an initial consult ranged from 9 months to over 3 years. In the majority of cases, referrals were for non-surgical musculoskeletal conditions.

"Prior to the MSK clinic I felt like giving up. It was like running on a treadmill. I was getting to the point of apathy. There were too many referrals, too great a backlog – I wanted to send referrals back but doing so was too much work. Managing waitlists had become a huge challenge." FOI Orthopaedic Surgeon

"My waitlist bothered me. I didn't feel I could refuse referrals. Professionally and personally it's unethical." FOI Orthopaedic Surgeon

Consequently, in 2013, the committee began exploring the potential for applying Ontario's successful Advanced Practice Physiotherapist model to the BC context. These specially-trained physiotherapists support patients with non-surgical MSK conditions and provide pre-and post-operative care. Data from Toronto's Sunnybrook Hospital Holland Musculoskeletal Program confirmed the model's superior effectiveness in increasing access and quality of care for MSK patients, as well as garnering high patient and provider satisfaction. [20]

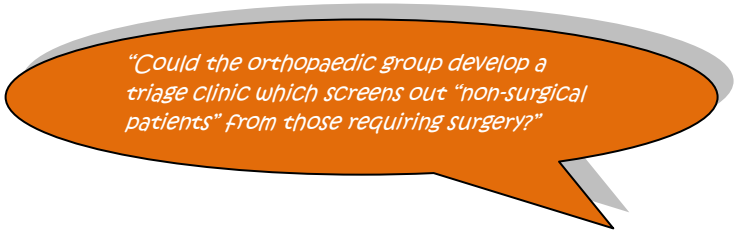
[19] Evaluation of the Fraser Northwest Division of Family Practice Partners in Care Project: Orthopaedics–Gastroenterology – Psychiatry/Mental Health. Reichert and Associates, June 2014, p. iv

[20] http://sunnybrook.ca/content/?page=holland-musculoskeletal-program

With Fraser Northwest GP support[21] and a potential physiotherapist in place, the committee met with Sunnybrook medical staff via teleconference to garner details. In subsequent discussions with Fraser Health Authority and Share Care, the model proved to be unfeasible in BC due to lack of a mechanism at the time for funding an Advanced Practice Physiotherapist salary. However, given the combined learning from the Fraser Northwest and North Shore MSK/orthopaedic projects, and the advent of BC's Patient Medical Home/Primary Care Home initiative, the time is right to reconsider this model of care (see *Conclusions and Recommendations*).

Next step: adapting the North Shore Division's successful Rapid Orthopedic Consultation Clinic model

Early (2014) data from this Shared Care project through the North Shore Division of Family Practice showed substantial reductions in Orthopaedic wait lists – for one surgeon, the wait time fell from 18-24 months to just three months – as well as high GP and patient satisfaction. In the spring of 2014, the Fraser Northwest Orthopaedics advisory committee began discussions with the North Shore Division of Family Practice and Shared Care to determine how aspects of the ROCC model might be adapted to Fraser Northwest. Drawing on their key learnings, Fraser Northwest developed a tailor-made solution for the local area and in December 2014, Shared Care approved funds for the *Fraser Northwest Musculoskeletal Medicine* project[22].



A prophetic quote from a Fraser Northwest GP surveyed in 2012

[21] A "Poll Everywhere" was conducted at FNW's April 3, 2013 Knee Osteoarthritis CME (95 participants). 90% of poll respondents indicated initial support of the APP concept.

[22] The original project title was: *Improved Access to Orthopaedic Care in Fraser Northwest*

MSK Medicine Project Structure

MSK Medicine is a part of integrated orthopaedic care provided at Fraser Orthopaedic Institute (FOI) in New Westminster, British Columbia. *http://orthodoc.aaos.org/FOI/*

Fig. 3. Integrated Orthopaedic Care at Fraser Orthopaedic Institute

Established by New Westminster's six orthopaedic trauma surgeons, FOI opened in 2012 in a newly-constructed building two blocks from Royal Columbian Hospital. The fourth-floor premises are accessible, bright and spacious, with a large waiting area that comfortably seats patients. Imaging and lab services are available in the same building and there is ample underground parking, as well as a Sky Train station with a five-minute walk. The area is a hub for medical services in BC's Lower Mainland.

FOI Services in Brief

Fraser Orthopaedic Treatment Clinic (FOTC)
FOTC provides urgent care for most orthopaedic acute injuries. Family doctors can refer patients directly to the clinic. Casting, splinting, bracing and wound care are provided on site.

Orthopaedic Surgeons
Dr. Kelly Apostle - Foot & Ankle, Trauma
Dr. Dory Boyer - Sports Medicine, Foot & Ankle, Trauma
Dr. Farhad Moola - Shoulder, Elbow, Hand & Wrist, Trauma
Dr. Bertrand Perey - Hand & Wrist, Trauma
Dr. Trevor Stone, Pelvic and Lower Extremity Reconstruction, Trauma
Dr. Darius Viskontas, Pelvic and Lower Extremity Reconstruction, Trauma

MSK Medicine

MSK Medicine is for non-surgical patients requiring initial musculoskeletal consultation and assessment, along with recommendations/referrals to other services (see *MSK Medicine Services).*

Dr. Stephanie Anderson - GP with special interest in Foot and Ankle (since project inception)
Dr. Deneen Baron - Sports Medicine (joined Aug 2015)
Dr. Shiroy Dadachanji - Sports Medicine (from Jan 2015 to Aug 2016)
Dr. Sara Forsyth - Sports Medicine (since Oct 2016)
Dr. Lukasz Sozwa - Orthopaedic Surgeon (various periods during 2016 and 2017)
Dr. Heather Wray - Sports Medicine (Jan 2015 to July 2015)
Sarah Peckham - MOA
Riley Young - MOA (Jan 2015 – May 2015)

Project Structure

Fig. 4 illustrates the 'formal' reporting structure for the MSK Medicine project. The original FNW Orthopaedics advisory committee, which oversaw the *improving orthopaedic referrals* initiative, was reconfigured as the MSK Medicine working group, co-led by Dr. Kathleen Ross (GP) and Dr. Darius Viskontas (SP), with support from Leslie Rodgers (FNW Shared Care Lead).

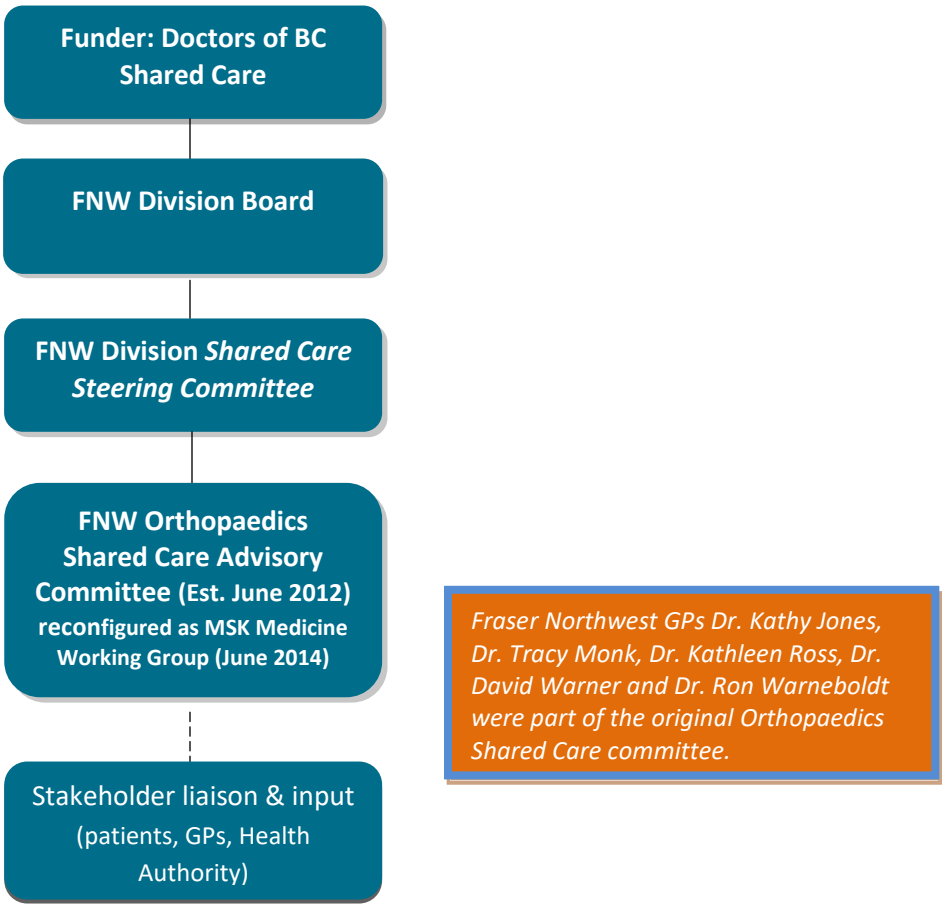


Fig. 4. Structure of MSK Medicine Shared Care Project

MSK Medicine Working Group

Physician Leads
Dr. Kathleen Ross, GP Lead
Dr. Darius Viskontas, SP Lead

Orthopaedic Surgeons
Dr. Kelly Apostle
Dr. Dory Boyer
Dr. Farhad Moola
Dr. Bert Perey
Dr. Trevor Stone

MSK Medicine Physicians
Dr. Stephanie Anderson
Dr. Deneen Baron
Dr. Shiroy Dadachanji
Dr. Sara Forsyth
Dr. Heather Wray

Staff
Leslie Rodgers, FNW Project Lead
Sarah Peckham, MSK MOA

Advisors (ad hoc)
Margaret English, Doctors of BC
Gary Sveinson, Doctors of BC
*Tara Muncey, ROCC (North Shore)**

The working group met seven times over the course of the project but the people involved were in constant communication in various ways. This assured both strategic (e.g. financial sustainability) and operational (e.g. day-to-day) matters were monitored, identified, and resolved in a timely and responsive way. Communication with the range of interested stakeholders included:

- Dr. Kathleen Ross and Leslie Rodgers providing monthly updates to, and requesting input as needed from, the FNW Division's Shared Care Committee and Board, and from Doctors of BC – Shared Care
- Dr. Viskontas regularly updating the Royal Columbian Hospital Orthopaedic Surgery Department
- Informal communication with Fraser Health representatives
- Exchanges with the North Shore Division and with Rebalance regarding their experiences

The working group's tasks included:

- Input to and sign-off on proposal
- Review MSK Medicine communication tools and strategies
- Develop and monitor outcome measures
- Establish business sustainability model
- Monitor progress toward achieving outcomes
- Recommend course changes as needed (PDSA cycles)
- Represent the project in professional settings
- Review and endorse the final report/evaluation

*Tara Muncey of the North Shore's ROCC provided important consulting advice to MSK Medicine during start-up and initial operations.

Plan-Do-Study-Act (PDSA) cycle
PDSA is a widely used method for quality improvement developed by Deming in the 1950s. The cycle involves four iterative steps:
- **Plan** - Draw on existing knowledge to formulate a plan
- **Do** - Implement the plan.
- **Study** - Assess the effects of implemented changes implemented
- **Act** - Review and modify the changes for the next cycle

MSK Medicine Services in Detail

FOI MSK Medicine complements FOI integrated orthopaedic care with the services listed below.

- Initial musculoskeletal consultation and assessment
- Recommendations/referrals to other services
- Follow up appointments offered after: specialized imaging (e.g. MRI, CT, Ultrasound); injections (if post-injection therapy required; and unrelieved symptoms
- Consultation report to referring physician for direct (from GP), redirected (from FOI Orthopaedic Surgeon) and Emergency Department physician referrals
- Expedited diagnostic services:
  i. In house joint injections
  ii. In house trigger point injections
  iii. Request for joint injection under fluoroscopy
  iv. Custom bracing onsite
  v. OTS and prefabricated bracing onsite
  vi. Expedited surgical referral access
- WorkSafe BC assessments
- Official WorkSafeBC MARP site (Medical and Return-to-Work Planning Assessment)

Body Part: Initial Complaint

Fig. 5 shows the distribution of referrals to MSK Medicine by body part, based on the first 1,751 referrals.

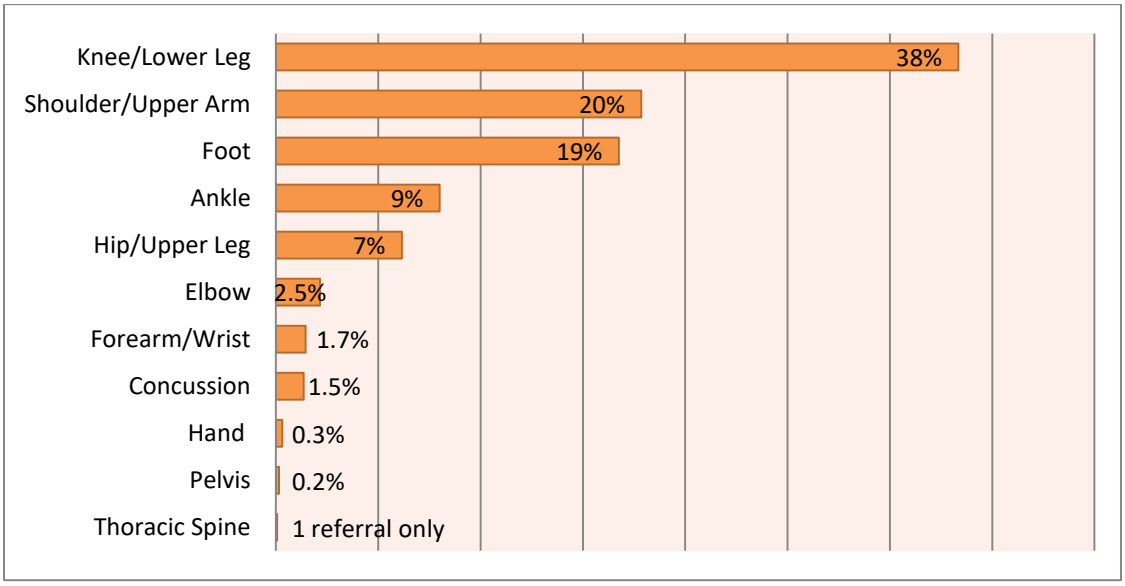


Fig. 5. Distribution of Referrals by Body Part for First 1,751 Referrals

MSK-Orthopaedic Interface – a key benefit of integrated care
The integrated FOI model substantially improves timely access to care. Patients referred to MSK Medicine from an FOI surgeon are typically seen within two weeks. Similarly, the surgeons' offices expedite surgical referrals from MSK Medicine; patients are seen within 2-6 months, depending on the individual surgeon's wait times -a significant improvement from the 9-36+ months.

Intake Process

Fig. 6 illustrates the intake process at MSK Medicine.

Note 1: In cases that are unclear, the MOA consults with an Orthopaedic Surgeon or MSK physician.

Note 2: Approximately 10-15% of referrals are missing necessary information, such as images and a physician referral letter

Note 3: Patient is seen at the urgent care FOTC clinic (Fraser Orthopaedic Treatment Clinic) by the first available and appropriate surgeon ***within 1-3 days***

Note 4: Examples of inappropriate referrals include spinal cord fractures and possible orthopaedic oncology cases. Inappropriate referrals – about 5-10 per month - constitute a small proportion of overall referrals.

Note 5: Referring GP's office is asked to call the patient with the appointment time; if referral comes from an Emergency Department, MSK Medicine notifies the patient directly

Note 6: In-office treatment includes injections

Note 7: Orthopaedic Surgeon's office provides appointment notice to MSK Medicine MOA to notify patient of appointment

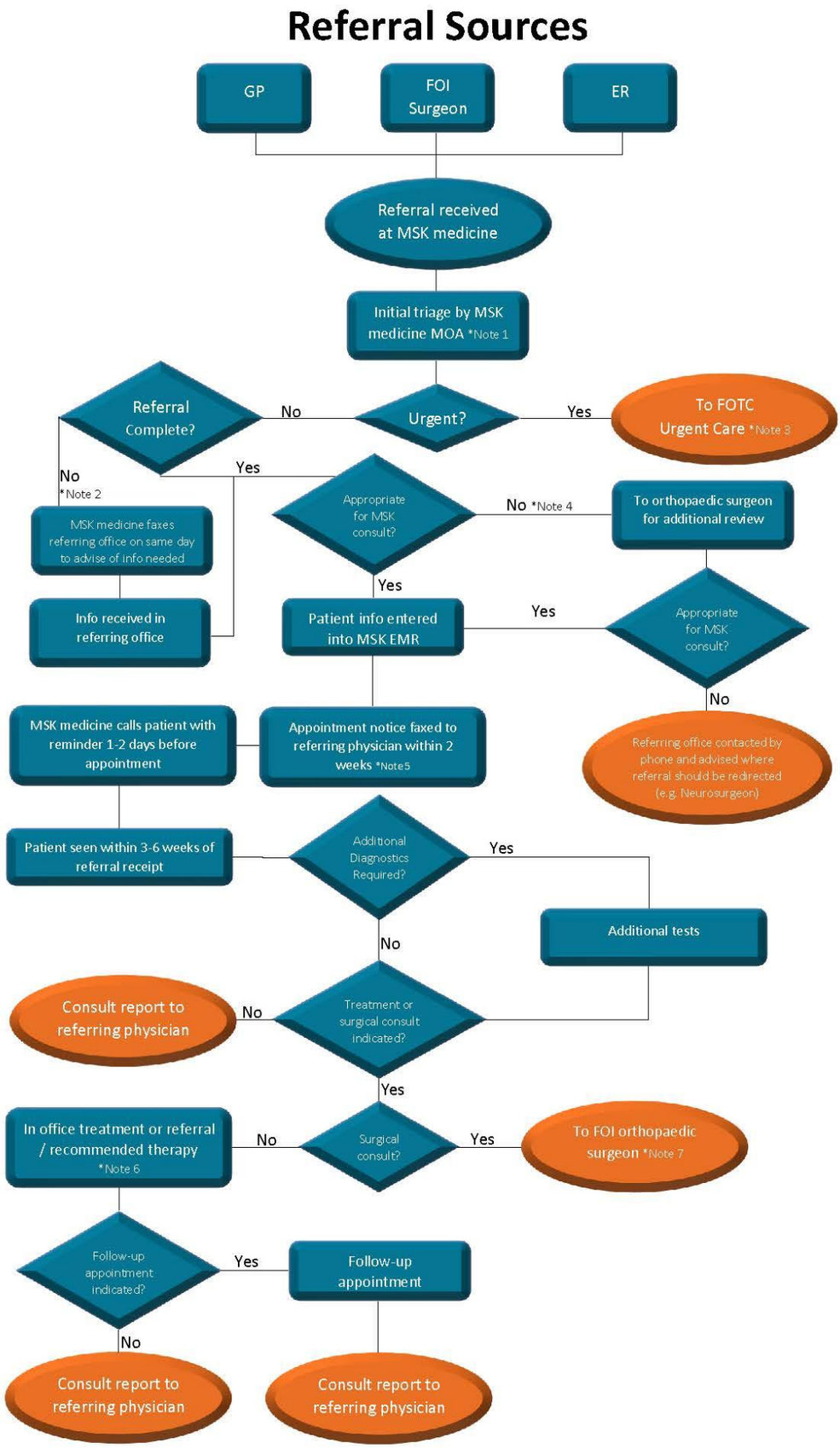


Fig. 6. FOI MSK Medicine Intake and Assessment Process

PART B: EVALUATION

Beginning with the end in mind

From project conception through multiple Plan-Do-Study-Act (PDSA) cycles, the MSK Medicine project team focused on jointly-established outcome measures. We began with the end in mind – a *successful* and *sustainable* MSK Medicine service in Fraser Northwest. Within this framework, the team developed goals for the short-term (Jan-March 2015), mid-term (April 2015-June 2016) and long-term (post-funding July 2016 and beyond). This section of the report presents the project outcomes, success factors, and key lessons learned.

Summary of Outcome Measures for MSK Medicine Project
Short-term outcomes (Start-up phase Jan-March 2015)
ST1: GPs from Fraser Northwest and adjacent Divisions have had input to and support MSK Medicine
ST2: Referral process and communications materials have been developed and communicated to GPs
ST3: Clinic is staffed, operational four days per week and receiving GP referrals
Medium-term outcomes (Operational phase Apr 2015-June 2016)
MT1: MSK Medicine is acknowledging GP referral requests within 2 weeks
MT2: Patients have timely access to MSK Medicine services
MT3: Wait times to see participating orthopaedic surgeons have decreased
MT4: More efficient use is being made of appropriate physician specialty
MT5: The volume of patients being seen at Fraser Orthopaedic Institute has increased
MT6: FNW GPs are referring patients to the clinic commensurate with existing referral patterns
MT7: Referring physicians are using the FOI referral face sheet
MT8: Patients and providers have improved experience of orthopaedic care
Long-term outcomes (Post-funding phase July 2016 and beyond)
LT1: Return on investment has been demonstrated
LT2: Benefits and key learning from the project have spread to other areas
LT3: MSK Medicine is sustainable after completion of Shared Care funding

Methodology and data collection

Data sources that informed this evaluation are listed below. Copies of surveys and interview guides are provided in the Appendices.

DATA SUPPORT FOR ...	COMMENTS/DESCRIPTION
Patient Experience of Care	
Satisfaction • 2016 paper survey at MSK Medicine • Anecdotes from referring GPs	Survey administered over 4 days in April 2016. Each patient attending an appointment was asked if s/he would be willing to complete the anonymous survey and leave it in a slotted box. All but a few patients agreed. The survey was concluded at n=90 after consistency of responses was determined.
Access to care • Pre-and post-project wait times • Time to diagnostics/treatment • Wait time for surgical consult	All EMR and other data provided by MSK Medicine and Orthopaedic Surgeon MOAs.
GP Input and Satisfaction	
Pre-project • Jan 2012 member survey	Survey conducted as part of January 2012 FNW member engagement re: newly funded Shared Care initiative to improve the referral process in priority areas, including orthopaedics.
Project initiation • Table discussions notes from Feb 20, 2015 project launch • Feedback during Feb 20th Q&A • Review of communication outputs	MSK Medicine project officially launched at a Feb. 2015 member engagement event. Feedback from table discussions was collated to inform clinic design.
Project implementation • GP survey at March 10, 2016 member engagement event • In-depth interviews with three GPs • Feedback from FNW Shared Care Committee and Board	A GP satisfaction survey was distributed at the March 2016 event.
Orthopaedic Surgeon/MSK Medicine Satisfaction	
• In-depth interviews with all five participating surgeons, three MSK Medicine physicians, MSK MOA and four orthopaedic MOAs	Interviews were conducted one-on-one
Applicable Models/Information from Elsewhere	
• Meetings and discussions with North Shore Division of Family Practice and Rebalance (Victoria) to share information and ideas • Review of national and international publications and literature	The GP and patient surveys used by the North Shore and Rebalance were adapted as closely as possible by Fraser Northwest to provide comparable data. The North Shore and FNW also shared respective evaluation questions. Cited throughout the report

Short-Term Outcomes – Project Start-up January through March 2015

The three short-term outcome measures were the focus of initial project activities such as:

- A member engagement event on Feb 26, 2015 to launch the project and gather GP input to the clinic design and referral process
- Developing a common face sheet for referrals to all FOI services
- Establishing the MSK Medicine service
- Developing a business sustainability model
- Frequent project team communication and meetings

Short-term Outcome Measure ST1: GPs from Fraser Northwest and adjacent Divisions have had input to and support MSK Medicine

Why was this important?

FNW Shared Care projects are collaborations between GPs, Specialists and stakeholders. GP input on the outcome measures, design and referral process for MSK Medicine was essential to ensure the project met the needs of GPs and their patients, and to establish a sense of "co-ownership" of the project.

What question(s) was this outcome measure designed to answer?

How does GP input and support influence the success of a MSK Medicine service?

Indicators:

- # of GPs attending the project launch event
- Feedback from table discussions and Q&A with project team
- Integration of input into MSK Medicine design

Results:

√ This outcome measure was **MET**.

Ninety-one people attended the project launch and engagement event on February 26, 2015. Participants included 78 GPs (58 from Fraser Northwest, 16 from Surrey-North Delta, and 4 from Ridge Meadows); 10 members of the new MSK Clinic team[23]; and representatives of Fraser Health and Shared Care. Feedback from the event was highly positive from all perspectives.

> "Excellent job tonight to all those involved. The feedback was very positive." Orthopaedic Surgeon

The project team aimed to spread the benefits of the MSK Medicine project to adjacent Divisions of Family Practice. Thus GPs from three neighbouring Divisions – Burnaby, Ridge Meadows, and Surrey-North Delta – were invited to the launch event.

[23] Four orthopaedic surgeons, the three MSK Medicine physicians, and three support staff

GPs were excited about the new service and gave important input that was incorporated into the project design:

- Types of MSK conditions GPs hoped to refer
- Overall hopes for the clinic
- Openness to using a combined one-page face sheet for referrals to any of the FOI services (acute injury clinic, MSK Medicine or direct referral to surgeon)
- Suggestions for wording and content of the referral face sheet

Short-term Outcome Measure ST2: Referral process and communication materials have been developed and communicated to GPs

Why was this important?

To ensure full clinic days and GP/patient satisfaction, GPs needed to know how to access MSK Medicine services and have a positive first experience.

What question(s) was this outcome measure designed to answer?

- Is there sufficient GP awareness of MSK Medicine to sustain four clinic days per week?

Indicators:

- # and examples of communication with GPs
- Information posted on Pathways
- GP and patient satisfaction

Results:

√ This outcome measure was **MET.**

The new MSK Medicine service was communicated through:

- The February 26, 2015 launch event (78 GPs)
- Information on Pathways (announcement on Home Page, complete information on MSK Medicine services, how to refer, wait times, and so on
- Posting the PowerPoint from the February event on the FNW website
- A feature article in the FNW Nor'Wester newsletter
- Updates in FNW Fast Facts bi-weekly e-newsletter

Short-term Outcome Measure ST3: MSK Medicine is staffed, operational four days per week and receiving GP referrals

Why was this important?

High demand and interest from the community meant MSK Medicine needed to be fully operational to receive a surge of GP referrals after the official February 2015 launch event.

What question(s) was this outcome measure designed to answer?

- Can MSK Medicine be fully operational within two months of project approval?

Indicators:

- Three physicians are practicing at MSK Medicine
- Hours of operation
- # of direct referrals

Results:

√ This outcome measure was **MET**.

By the time of the February 2015 launch to the GP community, MSK Medicine was fully staffed with three physicians (two Sports Medicine physicians and one GP with a special interest in foot/ankle conditions) and two part-time MOAs (1 full-time equivalent). Clinic days were averaging four per week and had been fully booked with *redirected referrals* from Orthopaedic Surgeons' wait lists, along with a few direct referrals from GPs and Emergency Physicians. By March a considerable portion of *redirected patients* had been seen and the number and proportion of *direct referrals* grew.

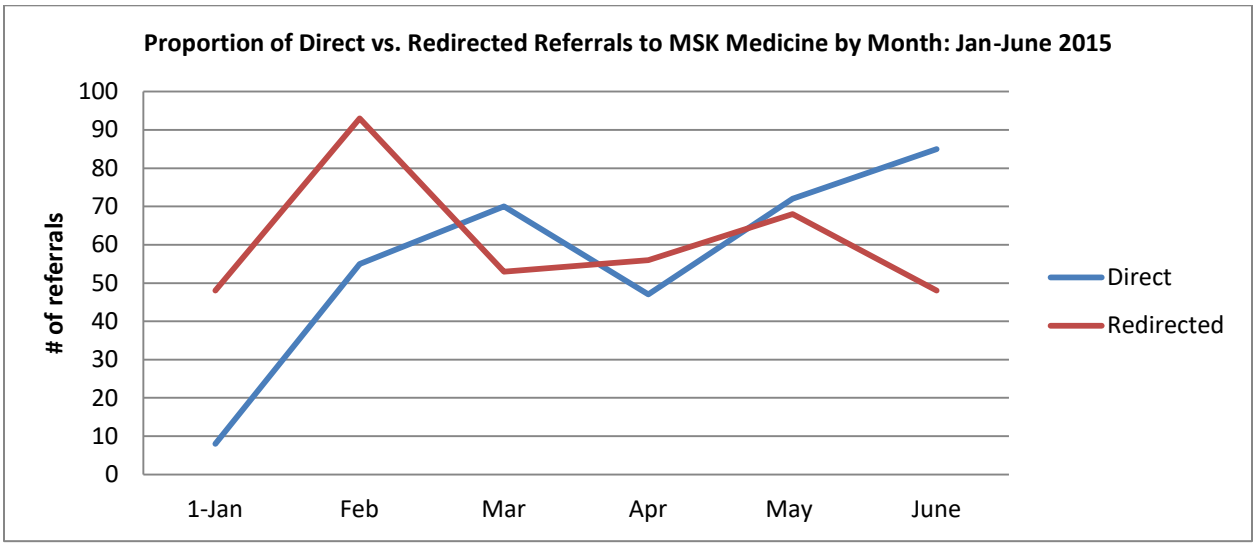


Fig. 6. Changes in Proportion of Referrals During First Six Months of Operation

Medium-Term Outcomes – April 2015- June 2016 (conclusion of funding)

The eight "medium-term" outcome measures were the focus of multiple PDSA (Plan-Do-Study-Act) cycles over the course of the project.

Medium-term Outcome Measure MT1: MSK Medicine is acknowledging GP referral requests within two weeks

Why was this important?

> ***"Patient satisfaction and high-quality care depend on effective coordination of care not just within a primary care physician's office but also between primary and specialty care physicians. This requires that an efficient, timely referral process be in place ..."***[24]

In Fraser Northwest Division, GPs had identified lack of timely referral acknowledgement from specialist offices as a significant issue.[25] When a GP office sends a referral, their EMR system codes it as an alert requiring attention until the specialist office has acknowledged receipt. Meanwhile, patients may make several calls to the GP office to ask about their specialist appointment. This is inefficient and frustrating for all concerned.

What question(s) was this outcome measure designed to answer?

- *Does timely acknowledgement of GP referral requests improve care coordination and patient and provider satisfaction?*

Indicators:

- Time from referral to MSK Medicine to acknowledgement to GP office (target of 2 weeks or less)
- Patient and provider satisfaction with referral process

Results:

√ This outcome measure was **EXCEEDED.** MSK Medicine either acknowledged a referral request within 48 hours or notified the patient of their appointment date within 1-2 weeks.

GPs were very pleased with MSK Medicine's timely referral acknowledgement and/or appointment booking. Almost every GP surveyed at the March 2016 follow-up engagement event said this was helpful (see Fig. 7).

[24] Robert K. Jarve, MD and David W. Dool, BSC Simple Tools to Increase Patient Satisfaction With the Referral Process *Family Practice Management 2011 Nov-Dec;18(6):9-14*

[25] In a survey conducted at FNW's Jan 2012 member engagement event (n=34), half of GP respondents said it was taking four months or more to hear back from an Orthopaedic Surgeon's office. 90% said acknowledgement of a referral request within 48 hours would be "*very or extremely helpful*".

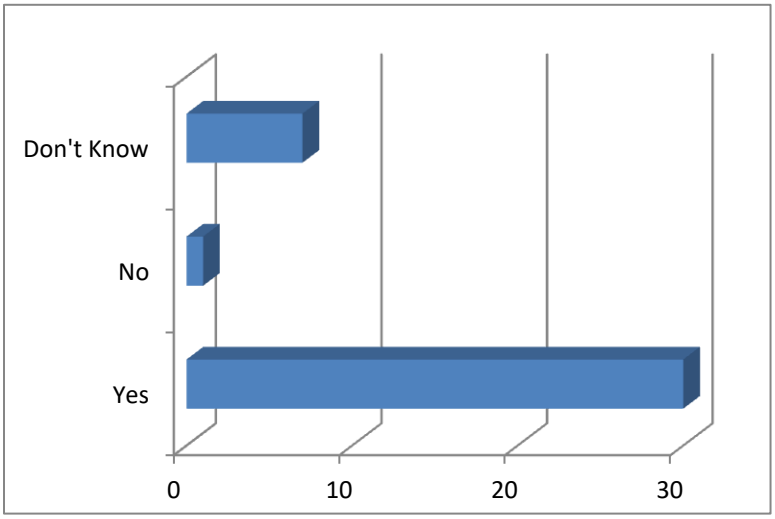


Fig. 7. GP Response to March 2016 Survey Question:
Is the referral acknowledgement from MSK Medicine within 2 weeks helpful? (n= 36)

Medium-term Outcome Measure MT2: Patients have timely access to MSK Medicine services

Why was this important?

IHI: Health care should happen promptly, for the sake of both patients and the health care providers ... Waiting can take an emotional toll. At worst, it can be medically harmful. ... For care providers, waits and delays often mean wasted time, lost continuity and frustration. [26]

Serious health consequences to long waits include: increased mental anguish; physical pain; greater deterioration in patients' health; longer recovery time following treatment; and poorer outcomes ... Long waits are also economically costly to patients, families and the country as a whole through lost productivity, lost earned income and lost tax revenues for governments. [27]

"I can think of a couple of cases where a very long wait caused patient harm." FOI Orthopaedic Surgeon

The project team specified the desired time frame for an initial MSK Medicine consult as six to eight weeks following referral. Research and experience had shown that if a patient waits more than six weeks for a referred appointment, s/he is likely to make a repeat visit to the GP.

What question(s) was this outcome measure designed to answer?

- *Is 6-8 weeks an achievable time frame for first appointment?*
- *How does timely access to initial consult affect the overall patient journey?*
- *Does timely access to initial assessment improve access to follow up services?*
- *How does access affect patient and provider satisfaction?*

Indicators:

- Wait time to initial MSK assessment
- Reduction in time to diagnosis, further testing and treatment
- Patient and provider satisfaction

[26] Improvement Stories/Across the Chasm Aim #5: Healthcare Should be Timely 2016 Institute for Healthcare Improvement

1. [27] From Wait Time Alliance web site *www.**waittimealliance**.ca*

Results:

√ This outcome measure was **MET**. By the last four months of the project, wait times for an MSK Medicine appointment (for both General MSK and Foot/Ankle) were in fact *below* the target range – at four weeks or less. MSK Medicine also provided timely, efficient referrals to treatment and to any required additional diagnostics, including a surgical consult where indicated.

Fig. 8 shows average monthly wait times for an initial consult for General MSK medicine (**blue** line) and Foot/Ankle (**red** line) over the course of the project. Both areas began with significant waits at project launch as MSK physicians worked through the hundreds of patients *redirected* from FOI orthopaedic surgeons' daunting waitlists. By March 2015 this backlog had been cleared in time for an influx of new, direct referrals from the GP community. Foot/Ankle consults (red line), achieved and maintained the goal of eight weeks or less for initial consult after the project's first three months. Wait times for a general MSK consult saw more variation due to physician turnover, higher volumes, and vacation scheduling.

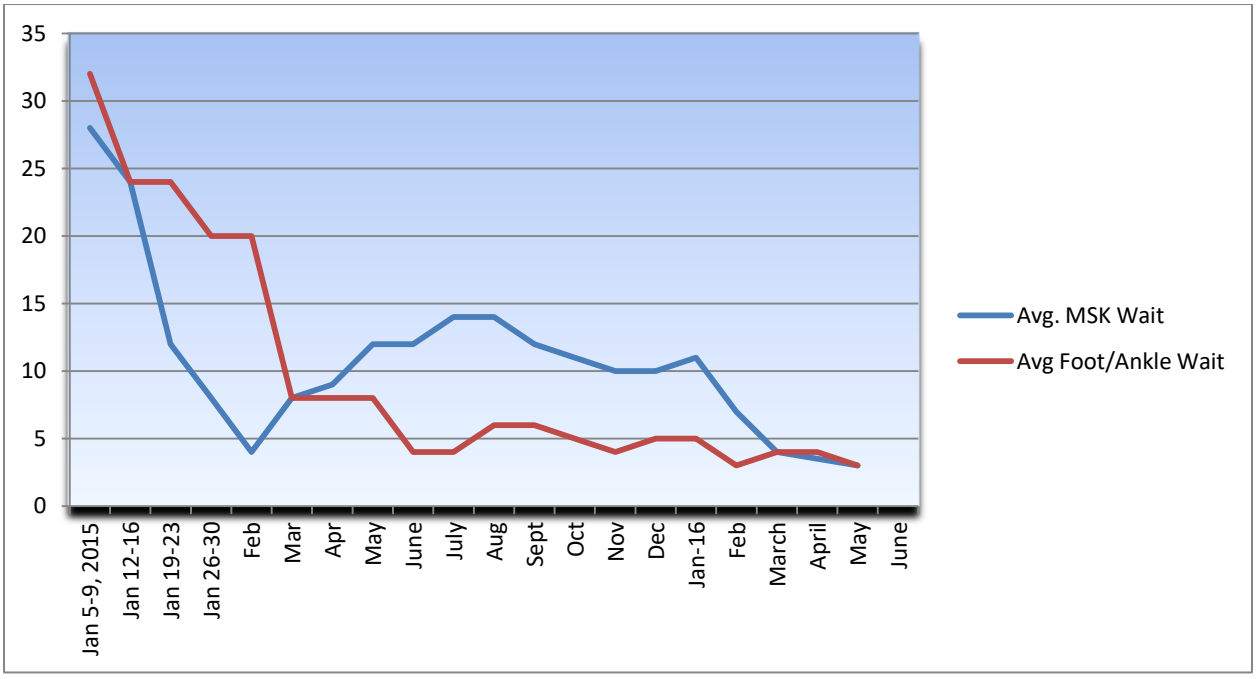


Fig. 8. Avg. Wait Time to Initial Consult (Approximate) in Weeks Jan 2015-June 2016[28]
Note that January 2015 (first month of operation) is broken down by week

The wait times clock

Timely access to an initial MSK consult is a vital component of the patient journey. What is more, it accelerates the journey by facilitating access to additional testing, diagnosis and treatment (Wait C) and referral to a surgeon if needed (Wait D) – see Fig. 9.

[28] These are approximate averages only as wait times sometimes varied considerably within a one-month period. Chart shows approx. wait time from date referral received at MSK Medicine to date of patient's first appointment.

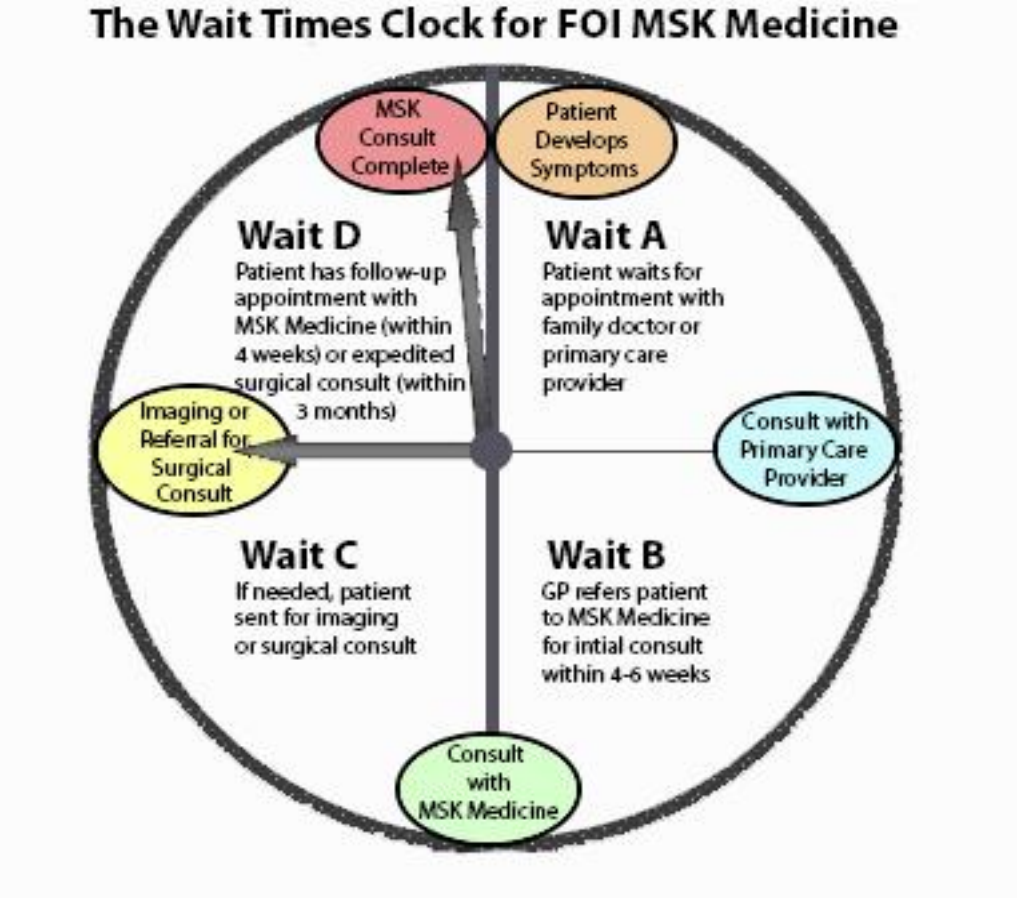


Fig. 9. Schematic of Wait Times "Clock"
Adapted from original source diagram: Ontario Ministry of Health and Long-Term Care

Figure 10 shows that the majority of initial MSK medicine consults resulted in diagnosis and referral for treatment, ushering patients into timely, appropriate care and rehabilitation. Patients requiring a subsequent consult (321 or 13.8%) with an FOI orthopaedic surgeon had their appointments expedited and were seen within one to three months.

May 2017 update: Due to the volume of referrals and available office consults, wait times for MSK Medicine-referred patients to see an FOI orthopaedic surgeon have risen to two to eight months. However, this is still substantially less than the 12 – 36+ month waits prior to the project.

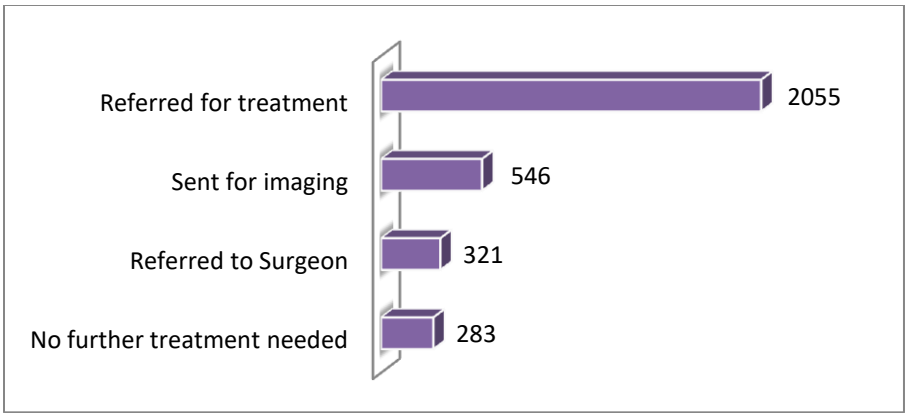


Fig. 10. Results of Initial MSK Medicine Consult -- Number of Patients[29]

Medium-term Outcome Measure MT3: Wait times to see participating orthopaedic surgeons have decreased

Why was this important?

Wait times prior to the project of nine to 36+ months to see one of the FOI orthopaedic surgeons (whether for a surgical or non-surgical condition) were frustrating – if not demoralizing - for everyone. A chief concern was potential for exacerbation of a patient's condition: a mild, treatable condition becoming moderate to severe; a non-surgical condition becoming surgical due to lack of early intervention; or at worst, potential for patient harm. Reduced wait times for a surgical consult was thus a desired project outcome.

"A long wait list is distressing for a physician," FOI Orthopaedic Surgeon

What question(s) was this outcome measure designed to answer?

- *To what extent can MSK Medicine reduce wait times to see an FOI orthopaedic surgeon?*

Indicators:

- Wait times pre- and post-clinic implementation[30]
- Faster routing of surgical patients to surgical consult

Results and Discussion:

This outcome measure was **MET** to varied degrees.

Wait times for FOI Orthopaedic Surgeons are influenced by multiple factors, some of which the MSK Medicine project could influence and some which it could not. Figure 11 provides a schematic of those influences. The **red-shaded** circles indicate spheres of influence, the **blue-shaded** circles factors that were beyond the project scope.

[29] The total is greater than the number of patient seen, as some patients had more than one type of follow-up.

[30] Pre-project wait times are estimates. Most of the FOI Surgeons offices began using the Wait One EMR capability well into the project. Post-project wait times are based on Wait One data.

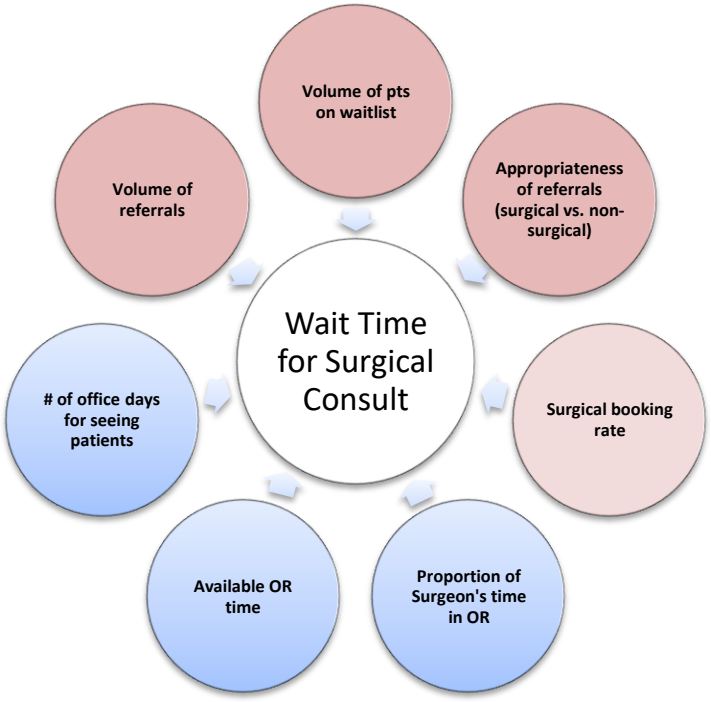


Fig. 11. Factors influencing wait times for an FOI surgical consult

Volume of patients on FOI orthopaedic surgeons' wait lists

MSK Medicine helped to reduce FOI surgeons' patient *consultation wait lists* substantially. In the fall of 2014, surgeons and their MOAs began reviewing the accumulated backlog of referrals to group them by: (i) clearly or likely to be surgical - these were retained on the surgeons' wait lists; and (ii) clearly or likely to be non-surgical, and therefore candidates for MSK Medicine. With the referring physicians' concurrence, these patients were redirected to MSK Medicine, and while it took several months to see the backlogged patients, the impact was considerable. The wait list for one of the knee and hip specialists was reduced by 30% from 375 patients to approximately 235. During the 18-month course of the project, FOI surgeons redirected 963 non-surgical referrals[31] to MSK Medicine so that patients were seen in a matter of a few weeks rather than having to wait many months or even years.

Referrals Redirected from FOI Orthopaedic Surgeon	# of pts referred	Cancellations/no-shows, etc.	# of pts seen by MSK Medicine Physician
	963	141	822

Table 3. Redirected Orthopaedic referrals and patients seen at MSK Medicine

[31] Of these, after cancellations and "no-shows", 822 patients were seen.

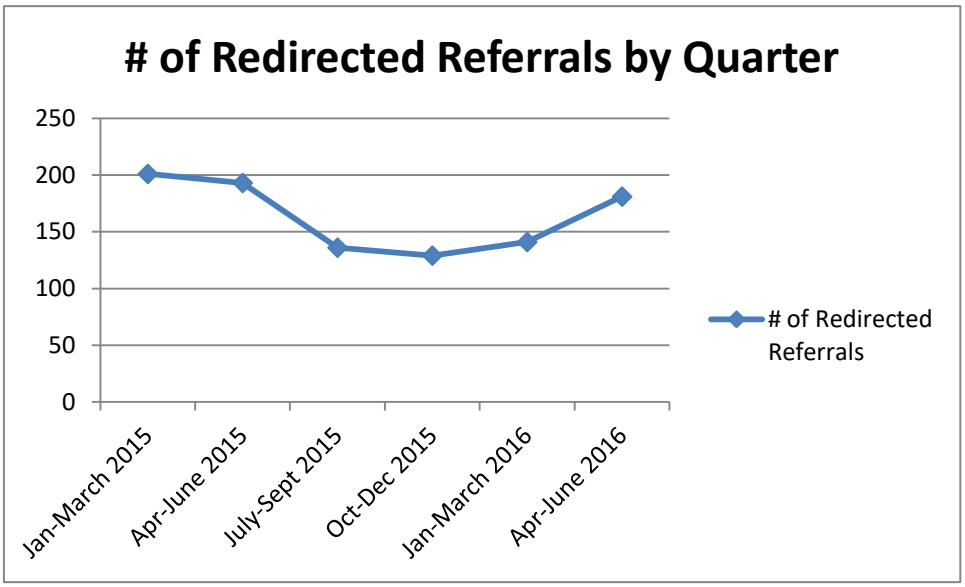


Fig. 12. Redirected Referrals by Quarter

MSK Medicine continues to play an important role in receiving non-surgical referrals from surgeons

"We haven't added to our waitlist since the MSK clinic started." Orthopaedic Surgeon MOA

Volume and appropriateness of referrals

MSK Medicine also helped *prevent* many non-surgical referrals from going to an orthopaedic surgeon. A sizeable proportion of the 1,502 *direct MSK Medicine referrals* may have otherwise ended up on a surgeon's referral list, extending wait times for all patients.

Each FOI surgeons' office triages incoming referrals and redirects non-surgical conditions to MSK Medicine. As a result, surgeons are primarily seeing surgical patients – an appropriate use of the specialty.

"Besides taking people off of our waitlist, we have been able to funnel new referrals directly to MSK, which has helped to have them expedited and not added to our waitlist." Orthopaedic Surgeon MOA

Surgical booking rate

Though only somewhat within MSK Medicine's scope of influence, FOI orthopaedic surgeons reported a rise in the rate of surgical booking, owing to the increased proportion of surgical patients being seen.

"There has been an increase in the rate of surgical bookings for patients I see from MSK Medicine as they are pretty much all operative." FOI Orthopaedic Surgeon

"There has been a huge increase in rate of surgical bookings." FOI Orthopaedic Surgeon

Combined impact

The combined impact of these factors on wait times was different for each surgeon (see Table 4). Wait times for Dr. Kelly Apostle (foot and ankle surgeon) and Dr. Farhad Moola (shoulder, elbow, hand and wrist surgeon) decreased noticeably. Not so for hip and knee specialists Dr. Darius Viskontas and Dr. Trevor Stone, although Dr. Viskontas' office reports that *"wait times for truly surgical patients is now approximately two years, down from five years." MOA*

Surgeon	Est. Wait Time Fall 2014	Est. Wait Time June 2016*	Reduction in Wait Time
Apostle	12-18 mos.	3-4 mos.	Up to 15 mos.
Boyer	6-9 mos.	< 2 mos.	Up to 7 mos.
Moola	24-30 mos.	6-9 mos.	Up to 24 mos.
Stone	> 3years	> 3years	n/a
Viskontas	> 3years	> 3years	n/a

Table 4. Estimated Changes in Wait Times for FOI Orthopaedic Surgeons[32]

"Patients are getting more timely access to see me. Before the MSK clinic, by the time a patient got to me they had been waiting 2-3 years and the condition was resolved. So it was a wasted appointment and not professionally gratifying." FOI Orthopaedic Surgeon

"I'm now seeing patients in a reasonable time – 3 to 6 months. It was 3 to 4 years in 2008-2009." FOI Orthopaedic Surgeon

Medium-term Outcome Measure MT4: More efficient use is being made of appropriate physician specialty

The Right Patient, The Right Place, The Right Time

Why was this important?

Health care must be efficient. This is one of 6 major "Aims for Improvement" in IHI's 2001 Report, Crossing the Quality Chasm: A New Health System for the 21st Century

Efficient use of physician resources is good for everyone. Patients experience more timely care and better health outcomes. Able to utilize their best skills and training, physicians experience greater professional and personal satisfaction. And the health system benefits from reduced duplication and unnecessary waits, and earlier and less costly care.

Patients with non-surgical musculoskeletal conditions should not be on lengthy wait lists to see a surgical specialist.

What question(s) was this outcome measure designed to answer?

- *How does an MSK Medicine service contribute to more efficient use of physician and health care resources?*

Indicators:

- *Non-surgical musculoskeletal conditions referred to MSK Medicine*
- *Proportion of surgical vs. non-surgical referrals going to orthopaedic surgeons*
- *Increase in appropriateness of referrals*
- *Provider satisfaction*
- *Patient access to diagnostics and treatment*

[32] These wait times are estimates as only 1-2 of the FOI Orthopaedic Surgeons' offices were using the Wait One Accuro EMR function at project start-up.

Results and Discussion:

This outcome measure was **MET**.

Several FOI orthopaedic surgeons reported that prior to the project, a majority of patients they saw had non-surgical musculoskeletal conditions. This was inefficient and frustrating for patients and physicians alike. Surgeons disliked having to tell non-surgical patients that they could not help them and patients went away unhappy, ending up back at the GP's office from which they were originally referred.

"Prior to MSK Medicine, about 5-10% of my consults were surgical, now it's up to 40% overall. 90% of the referrals from (the MSK Medicine foot and ankle GP) are surgical." FOI Orthopaedic Surgeon

"It's uncomfortable (for me) to have to counsel patients on non-operative treatments and I am not interested in this." FOI Orthopaedic Surgeon

"At least 60% of the referrals we receive are being redirected to MSK." Orthopaedic Surgeon MOA

"90% of patients are happy to see (the MSK Medicine physician) first. If they are surgical, they are more psychologically and emotionally prepared for surgery when they see the surgeon." Orthopaedic Surgeon MOA

MSK Medicine inverted the proportion of non-surgical vs. surgical patients being referred to and seen by FOI orthopaedic surgeons. Now, surgeons see primarily surgical patients and non-surgical referrals are redirected to MSK Medicine. Where a surgical consult is indicated, MSK Medicine expedites the referral so a patient is seen by the right orthopaedic surgeon within three months. This is a profound improvement over the lengthy wait times prior to the project. MSK Medicine also diverts referrals away from the urgent-care Fraser Orthopaedic Treatment Clinic: "*We have also been able to give any knee referrals that were referred by the Emergency Department to MSK, which has helped as we have not had to put them in our crazy-busy trauma clinic." Orthopaedic MOA*

"I am seeing more appropriate referrals and seeing them in a more timely manner." Orthopaedic Surgeon

Of the 2,342 patients seen by MSK Medicine Jan 2015 through June 2016:

- Most (2,055) were *treated or referred for treatment* immediately
- 546 (23%) were *sent for additional imaging and followed up* at MSK Medicine within 2-4 weeks after the imaging results were received
- 321 (13.8%) were sent for a *surgical consult* to be seen within three months
- 283 (12%) *required no further treatment* and their care journey concluded

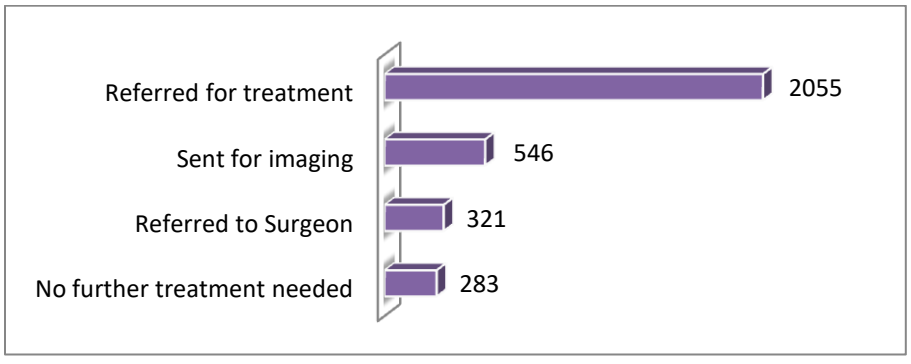


Fig. 13. Outcome of Initial MSK Medicine Consult
Note that the total exceeds the number of patients seen as some patients had multiple follow-up pathways

"I will refer a patient to MSK Medicine earlier before considering (referring to) an Orthopaedic Surgeon." Fraser Northwest GP

Volume of referrals/appropriateness of referrals

Without MSK Medicine a significant proportion of its 1,502 *direct referrals* during the project period would have gone to FOI Orthopaedic Surgeons, putting ever more upward pressure on wait times. FOI surgeons' offices reported that although they continue to receive referrals for non-surgical MSK conditions, the proportion of non-surgical to surgical referrals has decreased dramatically. Each office triages incoming referrals and redirects non-surgical conditions to MSK Medicine. As a result, physician specialties are being used appropriately.

Medium-term Outcome Measure MT5: The volume of patients being seen at Fraser Orthopaedic Institute has increased

Why was this important?

A greater volume of patients being seen – and by the right physician at the right time - is an essential measure of success. Additionally, fully booked MSK Medicine clinic days support long-term sustainability, retention and satisfaction of clinicians, and efficient use of resources.

What question(s) was this outcome measure designed to answer?

- *By how much does MSK Medicine increase the volume of musculoskeletal patients seen at FOI?*

Indicators:

- Volume of patients referred and seen
- # of clinic days fully booked in advance
- Wait time for appointment
- GP uptake of MSK Medicine

Results and discussion

This outcome measure was **MET**. MSK Medicine saw **2,234** patients during the 18-month project period. As shown in Table 5, 64% of patients seen were *direct referrals* from General Practitioners, Emergency Physicians and a few Specialists, and 36% were *redirected referrals* from one of the FOI Orthopaedic Surgeons.

Source of Referral	# of pts referred	Cancellations/no-shows, etc.	# of pts seen by MSK Medicine Physician
Community GPs, ER Physicians, other SPs	1,679	177	1,502 (64%)
Redirected from FOI Orthopaedic Surgeon	963	141	822 (36%)
Total	2,642	318	2,324

Table 5. Referral Source and Patients Seen

Dividing the total 2,324 patients over the 18 months of the project gives an average of 129 patients seen per month, but of course this varied considerably and was lower during project start-up. The monthly

average since July 2016 (post-funding) has been 158. It can be argued that most of the 2,324 patients seen were supplementary to the number who *could have been seen* at FOI without MSK Medicine.

Different usage patterns

Physicians accessed MSK Medicine services for their patients in different ways. Forty-three of the 337 referring physicians (13%) were responsible for *almost half* of all direct referrals (49%), each referring 10 or more patients. Ten physicians (3%) referred 30 or more patients each, comprising 24% (400) of all direct referrals. The greatest number of referrals from one physician was 50. One hundred and thirty-four (134) physicians referred only one patient. Difference in usage was due to many factors, such as the nature of a GP's patient panel (i.e. proportion of musculoskeletal conditions) and GP comfort level with treating MSK conditions.

Medium-term Outcome Measure MT6: Fraser Northwest GPs are referring patients to the clinic commensurate with existing referral patterns

Why was this important?

Fraser Orthopaedic Institute is centrally located in the Lower Mainland and referrals to its orthopaedic surgeons and acute care clinic come from many locales; however, typically at least half of referrals originated from Fraser Northwest Division GPs. For MSK Medicine to demonstrate value to the FNW Division, at least half of referrals should be from the local area.

What question(s) was this outcome measure designed to answer?

- *To what extent does MSK Medicine benefit Fraser Northwest GPs and their patients?*

Indicators:

- At least 50% of referrals to MSK Medicine are from the Fraser Northwest area
- At least half of FNW GPs have made direct referrals to the clinic

Results and Discussion:

This outcome measure was **EXCEEDED**. Sixty-three percent (63%) of direct referrals to MSK Medicine came from FNW-area physicians, primarily GPs, along with local Emergency Department physicians and several specialists (see Fig. 14). Moreover, 143 Fraser Northwest Division member GPs made referrals. This represents over 70% of the approximate 200 community GPs who might potentially refer to the clinic (see *A closer look*).

With an average of four clinic days per week, FOI MSK Medicine has no need to limit referrals by geographic area.

Direct referrals

Figure 14 shows the origin of direct referrals[33] to MSK Medicine during the project period. A total of 337 physicians referred patients -- 212 (63%) from the Fraser Northwest geographic area, 24% from other communities within Fraser Health Authority, 10% from Vancouver Coastal Health and 3% from outside the Lower Mainland.

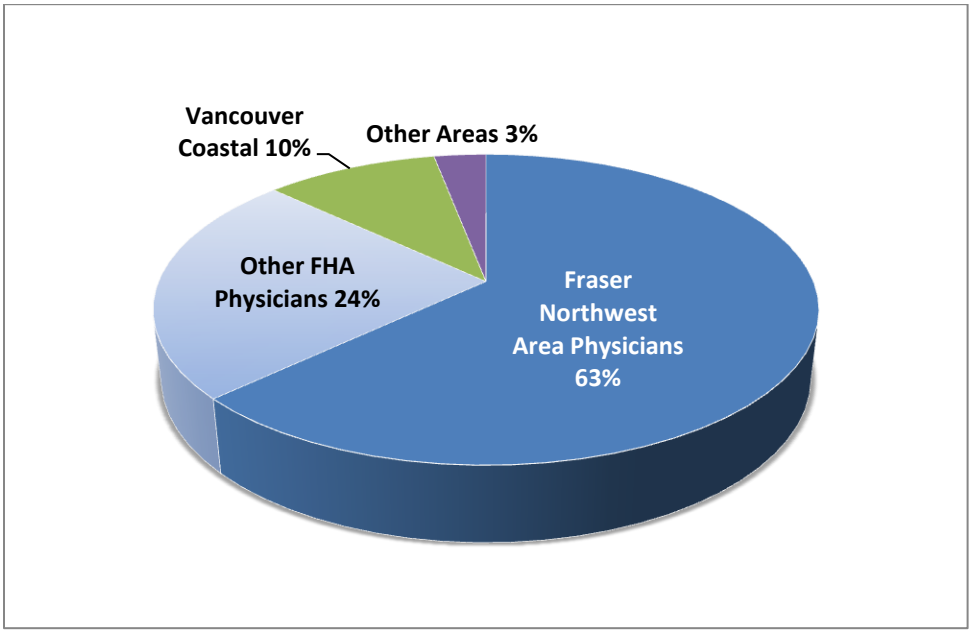


Fig. 14. Origin of Direct Referrals to FOI MSK Medicine
87% of all direct referrals to FOI MSK Medicine came from within the Fraser Health Authority

A closer look at referring physicians from Fraser Northwest area

Table 6 shows the distribution of referring physicians *from within* the Fraser Northwest geographic area. Member GPs were and continue to be the greatest users of MSK Medicine, comprising 68% of all physicians using the service from our area and 42% of all referring physicians in total. Thirty of 45 Emergency Department physicians at Royal Columbian Hospital also referred to the clinic, as did five from Eagle Ridge Hospital Emergency. The remaining referrals came from area GPs who were not FNW members during the project period[34], and from other specialties.

Origin of Direct Referrals from Within FNW Area	# of Referring Physicians	%
FNW Division member GPs	143	68%
Non-member GPs	25	11%
Emerg. Dept. physicians	35	17%
Other Specialists	9	4%
Total	212	100%

Table 6. Sources of Direct MSK Referrals from within Fraser Northwest area

[33] Excludes referrals *redirected* from FOI Orthopaedic Surgeons to MSK Medicine.
[34] A majority of these 25 non-member GPs have subsequently joined the Division.

70% of FNW member GPs made direct referrals.[35] The 143 member GPs who referred to MSK Medicine represents over 70% of the pool of approximately 200 members[36] who potentially might refer to the clinic. An additional 16 member GPs did not *directly* refer to the clinic, but had patients who were *redirected* from an Orthopaedic Surgeon.

Distribution of redirected referrals

Figure 15 shows the distribution of *redirected* patients seen by geographic area. Thirty-nine percent of redirected referrals (378) came from the Fraser Northwest area[37].

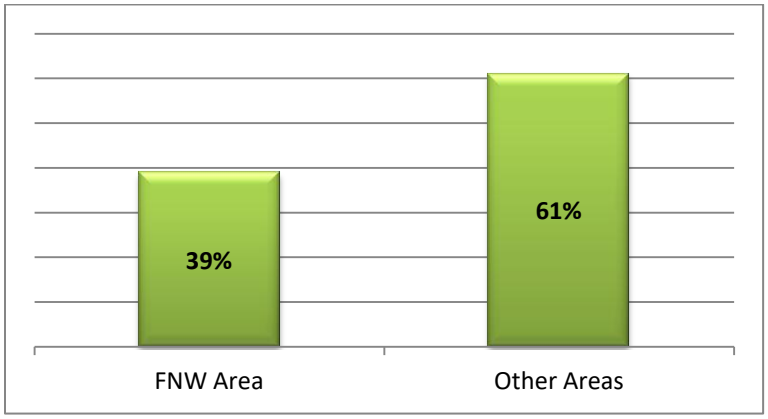


Fig. 15. Proportion of Redirected Referrals from FNW and Other Areas

Medium-term Outcome Measure MT7: Referring physicians are using the FOI referral face sheet

Why was this important?

GP offices are inundated with specific referral forms for dozens of specialties and services. Reducing and simplifying paperwork is highly desirable for improving office efficiency and provider satisfaction for both the referring site and the receiving site, and for reducing potential for error or delay. It was therefore desirable to have a common referral face sheet for all FOI services.

What question(s) was this outcome measure designed to answer?

- *Does a common face sheet help improve efficiency and effectiveness of the referral process?*
- *Will referring physicians adopt a new referral form?*

[35] The proportion of FNW members who have used MSK Medicine services has likely increased since June 2016.

[36] As of June 30, 2016, FNW Division had 272 members. Of these, 72 were either Hospitalists (26); Residents (18); Retired (13) or in other forms of practice where it is unlikely they would access MSK Medicine services for their patients (e.g., Palliative Care, Addictions Medicine, Mental Health, etc). Thus the pool of FNW members in June 2016 who potentially might refer to MSK Medicine is calculated at 200, and includes all GPs in community and walk-in practices, locums, and physicians who practice in multiple settings, (e.g. Hospitalist and GP, Hospitalist and Locum)

[37] Of the 378 redirected patients from the FNW area, 258 (or 27% of all redirected patients seen) were patients of 105 member GPs, 67 patients of non-member GPs, 44 patients referred from Royal Columbian Hospital Emergency Department, and 9 patients referred from Eagle Ridge Hospital Emergency Department

Indicators:

- Face sheet is posted on Pathways and integrated into GP EMRs
- % of FNW physicians using the referral face sheet
- % of other referral sources using face sheet

Results and Discussion

This outcome measure was **MET**. The March 2016 Fraser Northwest GP survey revealed that at least twenty-seven of 39 GP survey respondents (70%) were using the FOI referral face sheet, either directly from their EMR system or from Pathways. This is consistent with information from MSK Medicine, which estimates that 90% of referrals from the Fraser Northwest area came with the face sheet, including those from local Emergency Department physicians.

The one-page face sheet supported efficiencies in two ways:

- By speeding up processing time and efficiency for MOAs and physicians at GP offices, Emergency Departments, MSK Medicine, FOTC and individual orthopaedic surgeons
- By providing an easy-to-follow template and information for the referring site, thus increasing the chances of needed referral information being included

GPs and their MOAs welcomed the simplicity and efficiency of the referral process. Work flow has been affected positively. A copy of the referral face sheet can be found in Appendix 2.

Here are some GP comments on the referral face sheet:

"It's easy to refer using the form."

"The process is simple."

"Quicker than traditional referral processes."

"The form is very easy to complete. MOA does it from (GP) consult notes."

Medium-term Outcome Measure MT8: Patients/providers have improved experience of care

Why was this important?

Improved *Experience of Care* is a goal of Triple Aim and Shared Care, and involves both patients and providers. It is arguably the ultimate goal of system improvement.

What question(s) was this outcome measure designed to answer?

- *To what extent are patients, GPs, specialists and staff satisfied with the process of, and care provided at, MSK Medicine?*

Indicators:

- Stakeholder satisfaction
- Time needed to access diagnostic and support services
- Patients provided with timely information re: appointment times

Results and Discussion

This outcome measure was MET. Like those using Victoria's *Rebalance* and the North Shore's *Rapid Orthopaedic Consultation Clinic*, patients and physicians using FOI MSK Medicine were highly satisfied with their experiences.

Patient Satisfaction

Survey respondent profile

Overall, the n=90 patient survey conducted during April 2016 was representative of MSK Medicine's patient profile. Respondents were fairly equally split between gender and type of visit (first vs. follow-up visit).

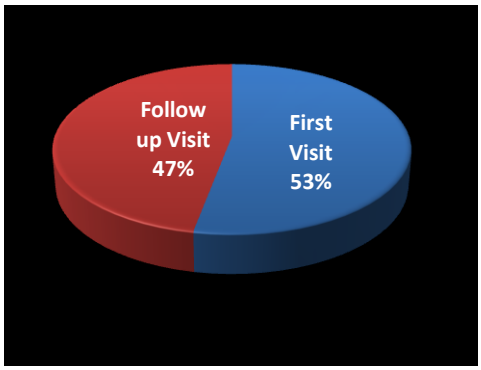


Fig. 16 First vs. Follow up Visit

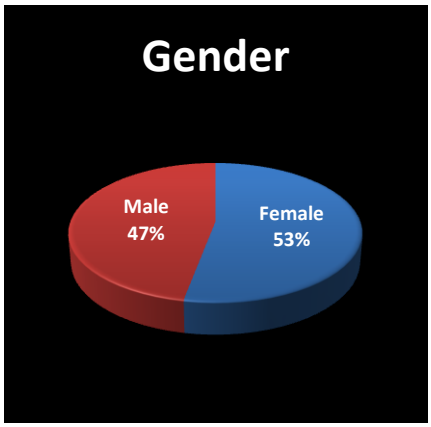


Fig. 17. Respondent Gender

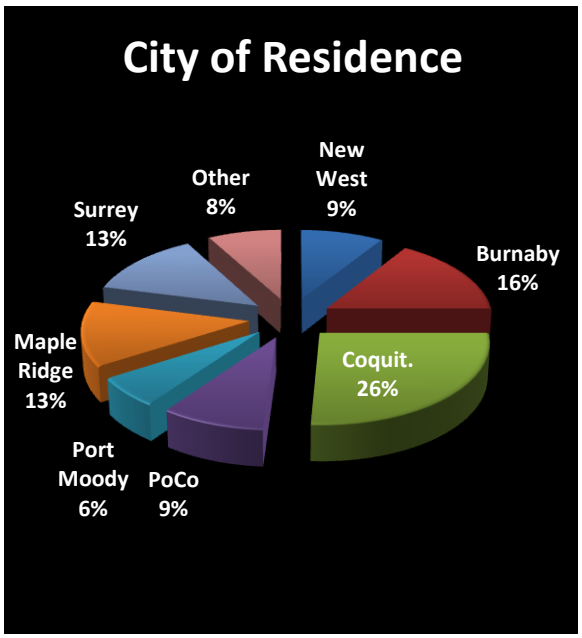


Fig. 18. City of Residence

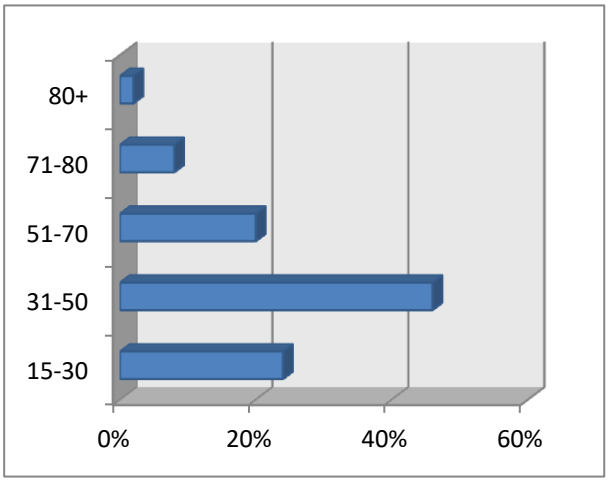


Fig 19. Distribution of Respondents by Age Group

Satisfaction ratings

Whether rating their physician's expertise, quality of explanation, staff helpfulness or overall experience, patients were highly satisfied with MSK Medicine.

Fig. 20. Patient Rating of MSK Doctor's Expertise

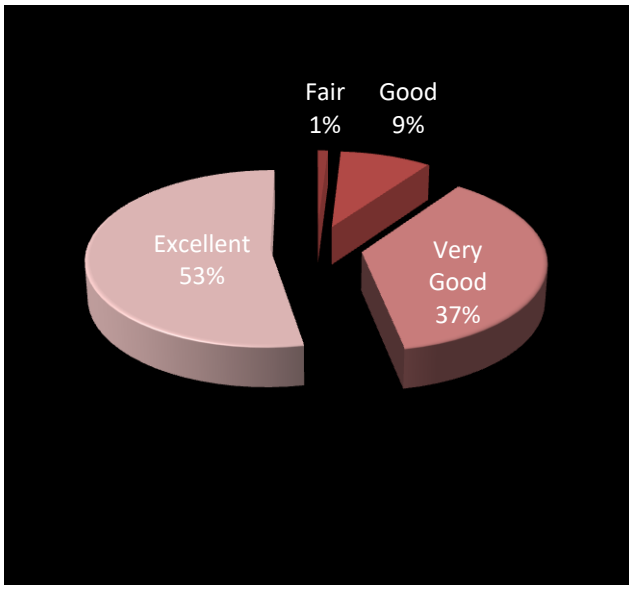


Fig. 21. Patient Rating of Doctor's Explanation

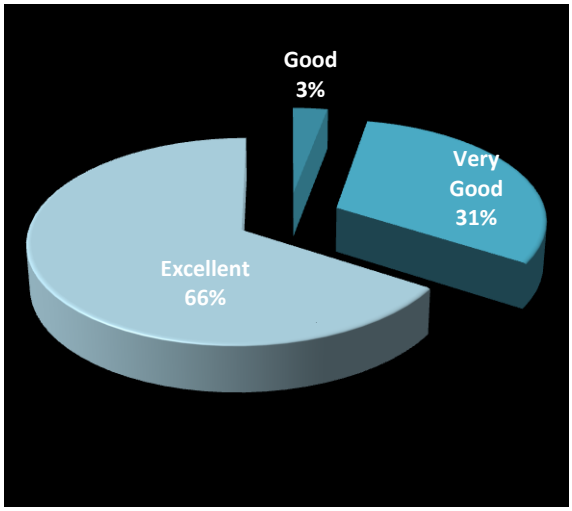


Fig. 22. Patient Rating of Staff Helpfulness

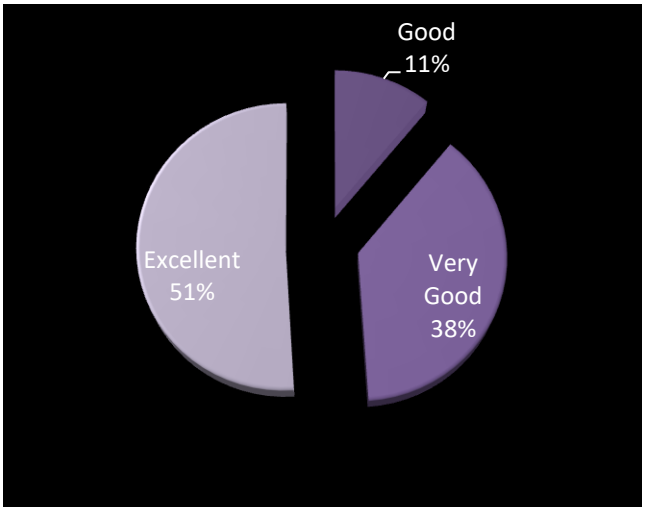


Fig 23. Patient Rating of Overall Experience

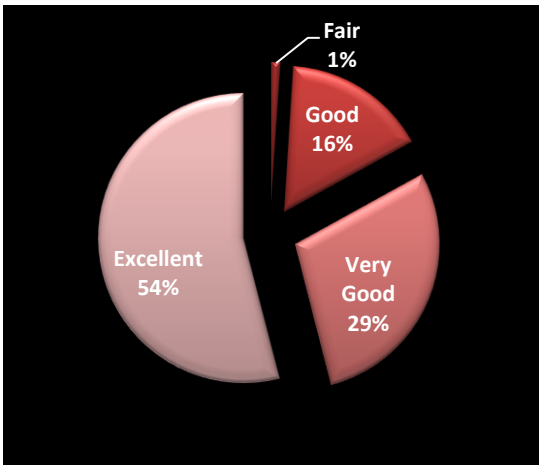


Fig. 24 Patient Rating of Appointment Scheduling

"(The best part of the experience was) short waiting time after referral." (Patient)

"Surprisingly quick to get an appointment and receiving advice to help my son … he'll be doing these exercises!" (Patient)

Asked to name the best part of their experience, patients most frequently named their doctor and the office staff, followed by the timely access to a consult.

Best part of experience	Frequency
Doctor	19
Staff	19
Access	14
Treatment	3
Facility	2

Table 7. Patients' Best Part of MSK Medicine Experience

Below is a sampling of patient comments about their experiences.

"The doctor and staff were kind, helpful and very accommodating."

"Timeliness of doctor seeing me (both in making my appt and when I arrived at the clinic). Clear, straightforward explanation of options and diagnosis was much appreciated."

"Quick access. Great doctor. Friendly staff. Sorry, couldn't pick just one (best part)."

"Friendly support staff and empathetic physicians."

"It was all around a positive experience."

Patients' journeys to follow-up and care were expedited following their initial MSK Medicine consult. Fig. 25 shows the results of initial consults.

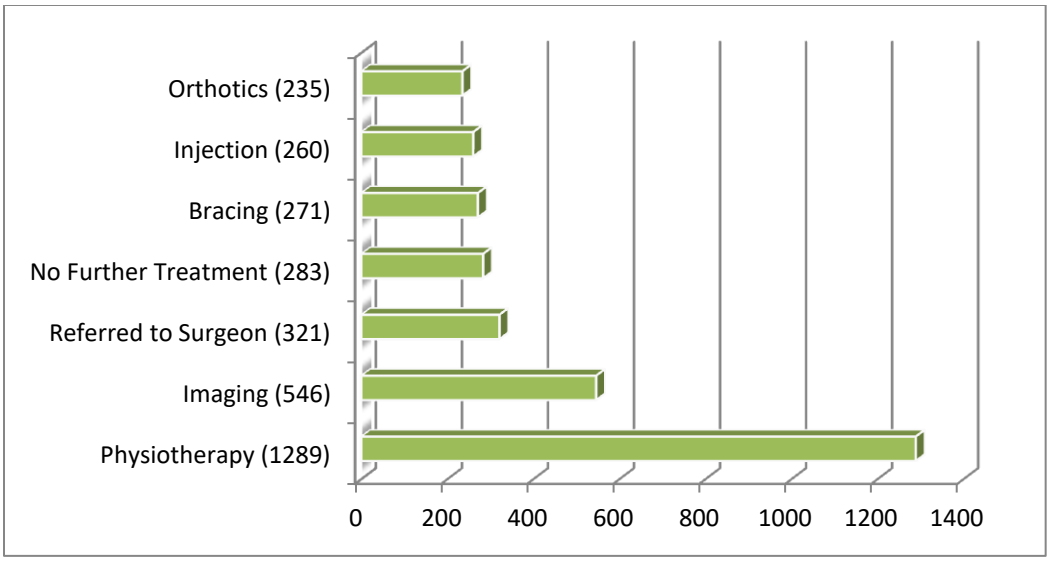


Fig. 25. Results of Initial Patient Consult at MSK Medicine

Most people want to help themselves … and supporting self-care can improve health outcomes, increase patient satisfaction and help in deploying the biggest collaborative resource available to the NHS and social care – patients and the public'.[38]

Provider satisfaction - GPs

The March 2016 member engagement survey and in-depth interviews confirmed Fraser Northwest GPs' high regard for FOI MSK Medicine. Asked to indicate their satisfaction on a Likert scale of 1 to 10, with 1 being extremely dissatisfied and 10 being extremely satisfied, survey respondents reported very high satisfaction with MSK Medicine.

- How satisfied are you with the FOI MSK Medicine? **Mean score: 8.03**
- How satisfied with the assessment/treatment & consult report? **Mean score: 8.0**

Satisfaction with the wait time for a consult was also high but reflected the variability in wait times in the first few months of the project.

- How satisfied with the wait time to book the initial consult? **Mean score: 7.06**

"Initially was cumbersome but then office has smoothed out the hiccups" (GP)

Timely access to initial consults had a positive impact for GPs in several ways. For a number of GPs, it was among the top outcomes overall, e.g.:

What have you found most helpful about the referral and assessment process?

√ *Speed!!*
√ *Fast and easy*
√ *Rapid response*
√ *Shorter waits*
√ *Appointments are timely*
√ *Quicker access to specialized assessment*

[38] UK Department of Health Musculoskeletal Services Framework

Almost every GP respondent said that MSK Medicine had improved patient care.

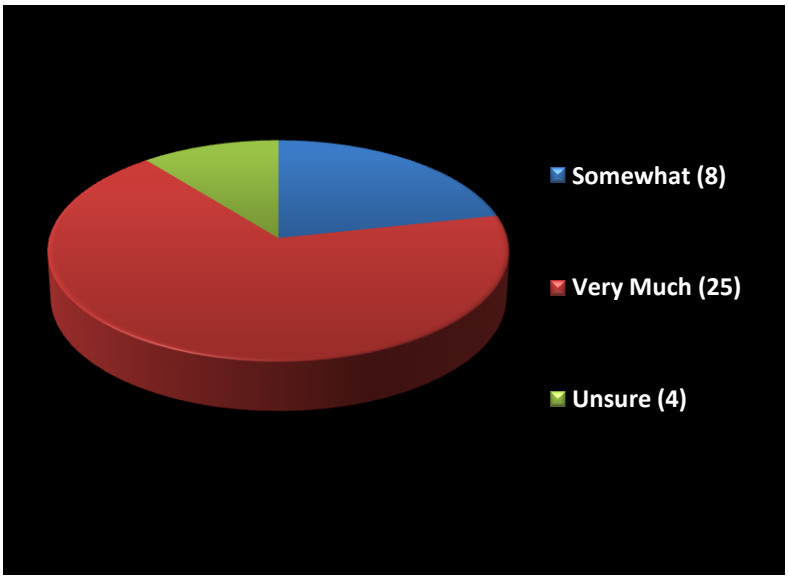


Fig.26. GP Response to Question: *Do you think FOI MSK Medicine has Improved Patient Care? (n=37)*

GPs articulated several key reasons for their high satisfaction:

- *"Rapid access to initial consult"*
- *"Faster access to necessary investigations (e.g. MRI)"*
- *"Ease and simplicity of referral process (including prompt acknowledgement and appointments)"*
- *"Quality of the consults"*
- *"Patient satisfaction"*
- *"The "one-stop" approach at FOI"*
- *"Fewer repeat visits to the GP re: the MSK complaint"*
- *"Patients really appreciate the rapid response"*

<u>Few challenges or suggestions for improvement</u>

Asked to note any challenges, GP survey respondents mentioned just a few; these - along with the response from the project team – are summarized below.

Challenge (in GP's words)	**Project Team Response**
Summer 2015 had long waits	Acknowledged –fewer clinic days were available due to turnover of MSK clinicians and summer vacation
Initially was cumbersome but then office has smoothed out the hiccups	Acknowledged – hiccups were a normal and expected part of the start-up process and were quickly resolved
Not sure which pts are appropriate for MSK vs Ortho @ times	A benefit of MSK Medicine is that a physician can assess and redirect for an expedited Ortho consult if needed
Asking for specific x-rays that should be arranged by us	Asking GP office for needed imaging is part of a complete referral package
Short lead time between appt. notification and the actual appointment date	Part of MSK Medicine's success is in getting patients seen quickly and maximizing clinic days
Not improved Ortho wait times below 3 months yet	Acknowledged – wait times to see some FOI Orthopaedic Surgeons declined significantly but demand means it is unlikely 3 month wait times can be achieved. However, pts seen at MSK Medicine who

	required a surgical consult were seen by a surgeon within 3 months during the project period *(as of May 2017 the wait is 2-8 months)*.
There were a few cases where I wanted an orthopaedic opinion and were redirected to MSK.	GPs can still request that a patient be seen by an orthopaedic surgeon. However, it benefits everyone if a patient whose condition *may or may not* be surgical is seen first at MSK Medicine.
• Info not coming back as up to date or current. Pts sometimes gives me more info than report • I rarely even get a consult letter back after the patient sees FOI. I usually have to request it. • Some referrals to Acute Injury Clinic delayed many months	These latter three comments relate not to MSK Medicine but to the acute injury component of FOI

Finally, 100% of GP survey respondents said they would refer patients to MSK Medicine in the future. Here are some of their comments:

"Great work!"

"Keep it going."

"Keep up the good work."

"Great service."

"Less repeat visits waiting for advice."

"Some pts are afraid their injury will mean surgery or disability. Clinic is reassuring."

"Increased patient satisfaction. Very happy patients and good follow-up."

"Has worked out extremely well. Patients are happy with expedited care and hearing they don't need surgery."

Provider satisfaction – Orthopaedic Surgeons and MOAs

In-depth interviews revealed that although it has not solved everything, MSK Medicine has significantly improved patient care, work flow and satisfaction for FOI Orthopaedic Surgeons and their MOAs. In their own words, their input is clustered by theme area below.

Impact of Shared Care approach on relationships with GPs

"Before Shared Care I had nothing to do with family doctors, no communication etcetera. My contact with lead GPs here has increased. It's been good to meet and provide information to GPs". Orthopaedic Surgeon

"I have a better understanding of what goes on with GPs and how I can make a change and hear back from them." Orthopaedic Surgeon

"Relationships with GPs are more collegial and friendly. It has help to put faces to names. If you know the GP there is context for a relationship." Orthopaedic Surgeon

"(Shared care) is imperative. If you don't bring people together you can't identify a common goal. We may not understand the entire problem on our own." Orthopaedic Surgeon

"There is no substitute for face to face interaction." Orthopaedic Surgeon

Impact on work flow

"MSK Medicine has reduced my wait list by 50%." Orthopaedic Surgeon

"My office days have improved because the patients I'm seeing are (now) surgical and have been prepared for the idea of surgery. So it's faster and easier. I can focus on the technical aspects of the surgery." Orthopaedic Surgeon

"The office runs smoother." MOA

Happier patients, happier GPs

"GPs and patients are happy!" Orthopaedic Surgeon

"Just look at the patient survey results. These are people who would be on a long waitlist otherwise." Orthopaedic Surgeon

"There has been huge progress. Up to 2,500 people would not have seen anyone. I have to assume they are better because they have been seen." Orthopaedic Surgeon

"All patients are seen quicker. Patients who didn't need surgery would get appropriate care and support. Patients needing surgery would see me sooner." Orthopaedic Surgeon

"Patients love it!" Orthopaedic Surgeon MOA

"Patients are happy to be seeing someone faster because they are in pain." MOA

Right Patient, Right Provider

"The volume of non-operative patients I see has decreased." Orthopaedic Surgeon

"I am able to assess surgical situations more efficiently. I'm not seeing non-surgical patients. This is more satisfying." Orthopaedic Surgeon

"The MSK clinic helps me sleep at night. Before, patients were in pain and we couldn't help them. The waitlist was overwhelming." Orthopaedic Surgeon MOA

Improved work flow and efficiency

"Consults are happening quicker" Orthopaedic Surgeon

"Patients are getting access to surgery faster." Orthopaedic Surgeon

"Imagery and non-operative options have improved vastly." Orthopaedic Surgeon

"Patients are offered non-surgical options first – rather than going immediately to surgical. This saves $." Orthopaedic Surgeon

"As an MOA I appreciate having an option of not having a patient on a waitlist for years and years." Orthopaedic Surgeon MOA

"Sarah (MSK Medicine MOA) is wonderful – nothing gets through the cracks." Orthopaedic Surgeon MOA

Provider satisfaction –MSK Medicine Physicians

Overall, these physicians spoke very positively about their experience at FOI MSK Medicine. Among the greatest rewards they articulated were:

- The opportunity to work with and learn from the highly skilled FOI orthopaedic surgeons
- The positive work environment (excellent MOA and staff, collegiality with physicians)
- A sense of community
- High job satisfaction – can intervene to help patients early – patients leave happy
- Gratifying to see patients who were languishing on long wait lists with no help being provided
- Variety in conditions being seen

- Time flies by because the clinic is fully booked and busy
- A very nice physical environment

"This is a great model – it would be great if more GPs could work as a consult." MSK Medicine Physician

"MSK patients are motivated – they will do what you recommend."

"It's gratifying to have happy patients."

As for things that could improve, the highest thing on the wish list was for an increase in MSP consult fees for Sports Medicine, especially given the patient profile of MSK Medicine - an older demographic requiring more time for assessment and diagnosis than younger, athletic patients. Other suggestions were for half-hour, regular (quarterly) meetings and more frequent feedback from the FOI surgeons, voice dictation capability to streamline the dictation process, a greater proportion of WorkSafe BC referrals, and an arthroplasty unit at Royal Columbian Hospital.

Long-Term Outcomes (Post-funding phase July 2016 and beyond)

It is still early in the post-funding phase of FOI MSK Medicine (11 months); these long-term outcome measures are meant for at least a two- to five-year horizon. However, it is instructive to look at developments to date and set guideposts for the future.

Long-term Outcome Measure LT1: Return on investment has been demonstrated

Why was this important?

A 2014 report from the Conference Board of Canada[39] proposes four guiding principles for a sustainable health care system: accountability for results; value for money; fair and timely access; appropriateness ("...best resources ... best time ... best health outcomes...")

The MSK Medicine project team takes seriously its accountability to patients, Doctors of BC and the province's taxpayers, and the Board and membership of Fraser Northwest Division of Family Practice. It is important to demonstrate that the investment in this project has brought value to all.

What question(s) was this outcome measure designed to answer?

- *To what extent can system cost savings be demonstrated as a result of the project?*

Indicators:

- *Final project costs*
- *Impact of system improvements compared to project costs*
- *Increased system efficiency*
- *Reduction in the proportion of non-surgical referrals to orthopaedic surgeons*
- *More efficient use of appropriate physician specialty*

Results:

This outcome measure was **MET**.

The outcomes from both the *FOI MSK Medicine* and *Rapid Orthopedic Consultative Clinic* Shared Care projects, combined with those from the Specialist Services-funded *Rebalance* project, prove the effectiveness of musculoskeletal services in achieving Triple Aim goals. **Population Health** is improved because patients have timely access to the right care, and patients and providers confirm significantly better **Experience of Care**. As regards the third Triple Aim goal, reduced **Per Capita Cost**, the project results imply health system savings and preliminary data can be provided to begin *quantifying* those savings. Furthermore, a case study from a 2014 quality improvement project[40] in Belfast, Northern Ireland supplies evidence of savings from a GP-Sports Medicine MSK model of care.

[39] *Defining Health and Health Care Sustainability.* The Conference Board of Canada/Canadian Alliance for Sustainable Health Care, July 2014.

[40] British Medical Journal Quality Improvement Report 2015

Musculoskeletal Medicine Reduces System Costs - Evidence from Northern Ireland

In this project, a family practice introduced an MSK and SEM (Sport and Exercise Medicine) clinic staffed by a GP with a special interest and qualifications in MSK and SEM. The GP held one half-day clinic monthly for three months, during which 35 patients were seen. Appointment times averaged 20 minutes.

The study compared the cost of:

(i) a routine hospital orthopaedic outpatient review

(ii) a review at an Integrated Clinical Assessment and Treatment Service (ICAT) for orthopaedics (orthopaedic ICATs are staffed by Sports Medicine physicians and other allied health professionals – a typical appointment is one-hour long)

(iii) the family practice-based MSK and SEM clinic (this is the model most similar to FOI MSK Medicine based on length of appointment; the Belfast clinic averaged 20 minutes per appointment - FOI MSK Medicine typically requires 30 minutes for an initial consult and 15 minutes for a follow-up)

The comparative costs were:

- Cost of a routine hospital orthopaedic outpatient review: £213 per patient: ($358.58Cdn)[41]
- Cost of ICAT review: £183 per patient ($303.78)[42]*
- Cost of GP-based MSK-SEM clinic review[43]: £61 per patient ($101.26Cdn)*

Per capita savings for MSK-SEM rather than a routine hospital orthopaedic review: £152 ($252.32Cdn per patient)

An initial analysis of potential system cost savings from FOI MSK Medicine

If not for FOI MSK Medicine, it is likely that *the majority* of the 2,324 patients seen during the funded project period would have instead been referred directly to an orthopaedic surgeon. Some patients may have gone to an emergency department, some may have seen a sports medicine physician at a clinic elsewhere in the Lower Mainland, and some may have continued seeing their GP or not sought medical treatment for their condition at all. Each of these scenarios has implications for system costs.

Cost of MSK Medicine vs. Orthopaedic Surgeon Consult

Table 8 gives an estimate of the MSP billings for MSK Medicine consults, based on the consult rate for a patient by age group.

Patient Age	% of Total MSK Pts.	# of Pts.	MSP Consult Rate	Est. MSP Billings
2-49	42%	991	$ 75.01	$74,335
50-59	26%	615	$ 82.53	$50,756
60-69	19%	445	$ 86.27	$38,390
70-79	11%	227	$ 97.52	$22,137
80+	2%	46	$112.53	$ 5,176
Total	**100%**	**2,324**		**$190,794**

Table 8. Estimated Cost of MSK Medicine Consult Fees Jan 2015 – June 2016

[41] Based on Apr 20, 2017 exchange rate of 1£ = $1.66Cdn

[42] Based on the cost of one-hour of GP-patient contact, including "direct care staff costs with qualification costs"

[43] Deemed a conservative estimate

Had those 2,234 patients been seen by an orthopaedic surgeon instead, the MSP billings would have been 2,324 x $104 (specialist consult rate) = **$241,696.** The total potential system savings based on MSP billings alone can thus be estimated as follows:

High estimate[44] ($241,696 - $190,794) = $50,902 savings
Medium estimate[45] (90% of $50,902) = $45,812 savings
Low estimate[46] (80% of $50,902) = $40,722 savings

Other cost savings

Other savings are difficult to quantify but the literature cited in this report confirms that early interventions like MSK Medicine reduce system costs in multiple ways:

- Avoided emergency department visits – patients suffering in pain from a musculoskeletal condition may go to a hospital emergency department as a way to access a surgical consult or an expedited MRI; timely access to an MSK Medicine consult can help avoid inappropriate and costly ($900 per visit)[47] use of emergency departments
- Avoided urgent care clinic referrals – an estimated 5% to 10% of emergency department referrals to the on-call orthopaedic trauma surgeon at Royal Columbian Hospital were diverted to be seen by an MSK Medicine physician at a lower consult rate than the surgical consult wait
- Avoided narcotic prescriptions – musculoskeletal patients who receive timely and appropriate care may avoid pain exacerbation that requires narcotic pain relief
- Avoided exacerbation of condition resulting in:
    - A costly surgical intervention and rehabilitation that could have been prevented with early diagnosis and treatment through MSK Medicine
    - Personal and societal/system costs such as: chronic pain, disability, decline in cognitive and social functioning, job loss and/or decreased employability, depression, lost productivity

Shared Care efficiencies

Return on Investment can also be considered from the point of view of *Shared Care project costs.* It is not possible to directly compare the cost of the North Shore's ROCC project with Fraser Northwest's FOI Medicine project, as the two projects were dissimilar in important ways. However, Shared Care approved $272,918 in funds for MSK Medicine and the project came in well under budget at $175,000, a savings of $97,918. These savings were largely due to efficiencies gained by adapting experiences from the North Shore, highly capable and motivated staff, a proactive project team, and a reduced need for physician meetings/sessional payments. An itemization of how project funds were utilized can be found in Appendix 2.

In recognition of the significant work required, Shared Care subsequently provided $50,000 to support this comprehensive project evaluation, research, and participation in collective discussions regarding how best to sustain musculoskeletal medicine services in the long term.

[44] Assumes 100% of MSK Medicine patients would have been referred to an Orthopaedic Surgeon instead
[45] Assumes 90% referred to an Orthopaedic Surgeon
[46] Assumes 80% referred to an Orthopaedic Surgeon
[47] BC Ministry of Health estimated cost of an Emergency Department visit

Long-term Outcome Measure LT2: Benefits and key learning from the project have spread to other areas

Why is this important?

Spread of key learnings and successes from one area to another is vital for overall system improvement, and for wise and efficient use of funds.

at question(s) was this outcome measure designed to answer?

- *How do benefits and key learnings spread from one project to another? How can this be supported?*

Indicators:

- *Learning from the North Shore ROCC project has been applied to FOI MSK Medicine*
- *Physicians from beyond Fraser Northwest boundaries referring to MSK Medicine*
- *Inquiries from other areas*
- *Adaptation of MSK Medicine learnings elsewhere*

Results and Discussion:

√ This outcome measure is **PENDING.** The FOI MSK Medicine project benefitted greatly from *spread* of key learnings and support, foremost from the North Shore Division with their quite similar ROCC project, and also from Victoria with its novel Rebalance model. Fraser Northwest Division and FOI, in turn, hope to widely share what we have learned and engage Doctors of BC and Fraser Health Authority in discussions regarding sustainability and spread of this proven model of care. Benefits from MSK Medicine have already spread to GPs and patients in other Divisions as any GP with Pathways can access information about and refer to the service. Communication with adjacent Divisions (Burnaby, Ridge Meadows, Surrey-North Delta) has been an FNW priority and many GPs and patients from these areas have already accessed FOI MSK Medicine services.

Long-term Outcome Measure LT3: FOI MSK Medicine is sustainable after conclusion of Shared Care funding

Why was this important?

Sustainability has become an economic imperative in Canadian health care and a policy priority for the British Columbia Ministry of Health[48]. At Shared Care, a strategy is being developed to support sustainability planning in funded projects. Locally, the Fraser Northwest Division-FOI partners set the goal of sustainability for MSK Medicine as a matter of principle, since closing down this needed, clearly successful service would constitute a significant loss to patients and providers in the community.

[48] Delivering a Patient-Centred, High Performing and Sustainable Health System In B.C.: A Call to Build Consensus and Take Action. http://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/health-priorities/setting-priorities-for-bc-health

What question(s) was this outcome measure designed to answer?

- Can a business model be developed for sustaining MSK Medicine beyond the funded period?
- What are the risks to long-term self-sustainability?

Indicators:

- *Sustainability is part of project planning from proposal development onward*
- *Business model for sustainability is developed*
- *FOI MSK Medicine remains operational on a self-sustaining basis after June 2016*

Results and Discussion:

√ This outcome measure was **MET, with important caveats.** FOI MSK Medicine has continued to provide an average of four clinic days per week for a full year after conclusion of Shared Care funding. However, this has been possible only because the FOI orthopaedic surgeons are subsidizing operational costs through income generated from brace and splint sales, which is not a sustainable solution. A model for long-term sustainability of this proven method of musculoskeletal care needs to be developed in collaboration with Doctors of BC (Shared Care and possibly Specialist Services), the Ministry of Health and Fraser Health Authority. Additionally, to avoid further financial risk to the orthopaedic surgeons while discussions proceed, nominal funding will be required to support MSK Medicine operations going forward.

Business Sustainability Model

The key inputs for the MSK Medicine business model were:

i. Determination of the break-even point to cover operating costs;
ii. Support for income generation for MSK Medicine physicians; and
iii. Cost containment.

(i) Operating costs break-even point

Operating costs include MOA salary, dictation, EMR subscription, telephone, office supplies, bookkeeping, and a proportion of fixed expenses such as utilities and depreciation. As of May 2017, annual operating costs were estimated at $55,000 per year. Early financial projections indicated the break-even point would be a minimum of four clinic days per week, which was achieved by January 2016 and has continued through May 2017, and office rental income from MSK physicians of at least $300 per clinic day. The initial daily rental rate was set at a comparatively low $150 per day until clinics were fully booked and running smoothly. The idea was to raise rates incrementally as MSK physicians gained greater efficiencies and billable time, eventually to the $300-$400 daily rate typical in the community.[49] However, analysis of physicians' income versus rental costs proved a rate increase to be unfeasible. The rate was thus capped at $200 per day which, as Table 9 shows, puts MSK Medicine in a deficit situation. Since July 2016 FOI orthopaedic surgeons have covered the deficit with income from sales of braces and splints.

[49] For sake of comparison, the daily rent charged at Fortius Sports Medicine is $350 per day.

Office Rental Daily Rate	Weekly income @ 4 clinic days/wk	Total annual income (assume 48 wks/yr)[50]	Deficit/Buffer	Adjusted Deficit/Buffer[51]
$200	$ 800	$38,400	-$16,600	$19,090
$300	$1,200	$57,600	$ 2,600	$ 2,210
$325	$1,300	$62,400	$ 7,400	$ 6,290
$350	$1,400	$67,200	$12,200	$10,370

Table 9. Analysis of Break-Even Point for MSK Medicine Operations[52]

(ii) Income generation

The project team undertook several strategies to support income flow for MSK Medicine physicians:

- Supporting WorkSafeBC (WSBC) certification of a second MSK Medicine physician (certified physicians are paid $250 for a WSBC patient assessment, compared to an average of approximately $77 for a consult under MSP, depending on the patient's age);
- Supporting physicians in gaining practice efficiencies; and
- Applying for a WSBC Medical and Return-to-Work Planning (MARP) assessment contract (this was achieved post-project, however 30 MARP sites were approved at the same time and the small volume of WSBC MARP referrals to MSK Medicine – two per month – has not increased physicians' income appreciably).

(iii) Cost containment

The project team monitored costs and negotiated savings in areas such as telephone, dictation and EMR services.

<u>Long-term sustainability requires a collaborative approach</u>

In November 2016, members of the FOI MSK Medicine and the North Shore ROCC project teams met with a provincial Shared Care representative to share experiences and discuss risks to sustainability of their respective musculoskeletal medicine services. Given the unqualified success of both projects, Shared Care has committed to helping find an answer to the sustainability question, and meanwhile has provided supplemental funding to ROCC to continue providing services on the North Shore. After a full year of subsidizing MSK Medicine (July 2016 through June 2017), the FOI orthopaedic surgeons will also be requesting nominal funding to cover the operating deficit while sustainability discussions proceed. Key learnings from the MSK Medicine project that can inform discussions include:

- *The challenge of recruitment and retention of MSK Medicine physicians*
  - There is a very limited pool of Sports Medicine physicians available and the pool continues to shrink as GPs are finding there is insufficient financial incentive to train in sports medicine

"The consult fee does not provide a sustainable income when seeing older patients who need longer time for an appointment... The fee hasn't changed since the early 2000s." Sports Medicine Physician

[50] Assumes MSK Medicine is closed for 2 weeks at Christmas and averages 2 clinic days per week during the summer vacation months.

[51] Reduces estimated income by a 15% contingency to account for lost clinic days/rental income in the event of an MSK physician resigning or taking a temporary leave, or another unforeseen situation

[52] Based on annual operating budget of $55,000

- Many sports medicine physicians prefer to treat younger patients with sports-related injuries – the conditions seen at general musculoskeletal medicine tend to be degenerative

"Knee OA gets tiresome – would like to see a variety of patients including younger athletic patients with sports injuries." Sports Medicine Physician

- To support earnings and their professional and personal interests, sports medicine physicians often have several types of practice in a variety of locations, limiting their availability for general musculoskeletal medicine
- Charging MSK Medicine physicians the break-even rate of $300 per day for office rental would seriously jeopardize retention

"If the rent increased I wouldn't be able to continue." MSK Medicine Physician

"Covering the financial part is challenging. We can charge only so much rent. Sports Med docs don't earn a lot of money. Shared Care funds took the financial pressure off." FOI Orthopaedic Surgeon

An alternative approach that FOI MSK Medicine tested was utilizing "underemployed" orthopaedic surgeons – i.e. a surgeon looking for a full-time surgical posting who is willing to practice MSK medicine meanwhile. However, the risk in this approach is obvious.

"It's difficult finding the right people. Sports Medicine doctors or underemployed orthopaedic surgeons might not be the best fit. Maybe an orthopaedic surgeon who no longer wants to operate?" FOI Orthopaedic Surgeon

- *Financial risk to orthopaedic surgeons championing MSK medicine services*
  - FOI surgeons have been subsidizing and shouldering the entire financial risk of MSK Medicine since conclusion of Shared Care funding on June 30, 2016. This is not a tenable situation in the long term. The risk is amplified by the possibility of an MSK Medicine physician resigning[53] – this would mean fewer clinic days and even less rental income.

"Sustainability is a concern." FOI Orthopaedic Surgeon

The FOI MSK Medicine project team is keen to accelerate discussions with provincial Shared Care and other stakeholders (e.g. Fraser Health Authority, Specialist Services) on how to sustain services like FOI MSK Medicine and ROCC that have clearly achieved *Triple Aim* goals. An alternative model for sustainability that could be explored is utilizing non-physicians (e.g. allied health professionals such as physiotherapists) in team-based care. Specifically, the success of Ontario's Advanced Practice Physiotherapist model merits serious consideration.

[53] Two Sports Medicine physicians resigned from MSK Medicine in 2016. Through the efforts of FOI surgeons, replacements were found, but recruitment challenging.

PART C: CONCLUSIONS AND RECOMMENDATIONS

The FOI MSK Medicine Shared Care project has achieved **Triple Aim** goals and met or exceeded all of its ambitious short- and medium-term **outcome measures**. Assessment of long-term outcome measures is pending but guideposts are in place and preliminary indicators are positive. A process has been initiated with Shared Care to discuss long-term sustainability and potential modifications to the MSK Medicine model. Patients are receiving timely and appropriate medical care, avoiding exacerbation of conditions, and expressing high satisfaction with MSK Medicine. Wait times for both musculoskeletal and surgical consults have declined dramatically and feedback from providers is very positive. Additionally, system savings have been identified and itemized.

MSK Medicine has become a valued and indispensable part of the community of care in the Fraser Northwest Division of Family Practice area and beyond.

Success factors and key lessons

From the viewpoint of team members, the major factor in the project's success was the people involved and the collaboration between them. This includes the MSK Medicine physicians and MOA whom patients said formed the best part of their experience; the Orthopaedic Surgeons and GPs who supplied the inspiration, experience and leadership; the FNW Board and members GPs whose backing and feedback was key to a successful MSK service; the FNW Shared Care project lead who managed and evaluated the project; and representatives of Provincial Shared Care (the funder) who provided strategic support throughout the process. Other fundamental success factors were:

- An already-established strong relationship between FOI orthopaedic surgeons and Fraser Northwest GPs as a result of the successful *improving referrals* Shared Care work in 2012-2013;
- The willingness of physicians and staff from the North Shore Division's parallel ROCC project, and from Victoria Division's Rebalance project, to share their experiences and survey tools;
- Early and continued involvement of the GP community in defining needs and in co-designing and evaluating the MSK Medicine service;
- Beginning with the end in mind, i.e. establishing specific outcome measures to guide each phase of the project;
- The commitment of FOI orthopaedic surgeons to subsidize MSK Medicine the year after conclusion of Shared Care funding so this vital service could continue.

Asked what they would do differently if the project were to start over, the project team concurred they would change little, if anything. The consensus was that the project was well run and responsive; good planning meant that opportunities were maximized and problems kept to a minimum – any needed adjustments were made in a timely manner. Some important things were learned:

- Recruiting Sports Medicine Physicians proved to be more challenging than expected;
- Transcription time and costs were greater than anticipated;
- Physicians leading a project of this nature need to understand the time and commitment involved;
- Even though the break-even office rental rate of $300 per day for self-sustainability was on the low side of typical rates in the community, Sports Medicine physicians' income from MSP billings made this rate too high to be feasible.

Next steps

"Simply stated, value in healthcare is quality outcomes divided by total costs of care."[54]

The well-founded business model for self-sustainability of FOI MSK Medicine came up slightly short due to external factors, but the project has established a compelling value proposition for delivery of musculoskeletal care in BC. The data and evidence from this report adds to the body of knowledge gathered from the North Shore's ROCC and Victoria's Rebalance projects. Clearly the next step is to accelerate collective discussions through Provincial Shared Care on the best way(s) to support continuance and long-term sustainability of these services. Solutions will likely involve team-based care with allied health professionals. For example, the well-established and highly successful Advanced Practice Physiotherapist model in Ontario merits serious consideration.

[54] Shen, Dr. Mark. *The Value Proposition.* The Hospitalist, June 2011.

APPENDICES

Appendix 1: FOI Referral Face Sheet (September 2015)

Fraser Orthopaedic Institute Physician Referral Form
Orthopaedic Surgery and Sports Medicine
403-233 Nelson's Crescent New Westminster BC V3L 0E4

FOI | FRASER ORTHOPAEDIC INSTITUTE

DATE:

PATIENT INFORMATION: (affix label or complete)	**REFERRING PHYSICIAN: (affix label or complete)**
Name:	**Name:**
PHN:	**MSP:**
DOB:	**Address:**
Cell:	
Email:	**Phone:** **Fax:**
WCB CLAIM? ☐ Yes ☐ No # _____	

(Cell phone and email's are mandatory, as the patient will be sent a patient questionnaire to be filled out prior to their appointment)

REASON FOR VISIT:

☐ Hip ☐ Knee ☐ Foot/Ankle ☐ Shoulder/Elbow/Wrist ☐ Hand/Fingers

Other: _____

ACUTE INJURY REFERRALS:

Patients that require assessments urgently (e.g. fracture or infection) are considered URGENT REFERRALS and should be faxed to *our **Fraser Orthopaedic Treatment Clinic at 1.866.275.6106***

DIAGNOSIS AND TREATMENT TO DATE: **☐ Letter Attached**

CURRENT MEDICATIONS: ☐ Attached

ALLERGIES: ☐ Attached

PATIENT REQUIRES MEDICAL IMAGING FOR TRIAGE

Have x-rays of affected area been obtained? ☐ Yes, reports attached ☐ No

ELECTIVE MUSCULOSKELETAL REFRRAL & WORKSAFEBC SPORTS MEDICINE ASSESSMENT

☐ Dr. Shiroy Dadchanji (Upper & Lower Extremity, Work Safe BC Assessment)
☐ Dr. Deneen Baron (Shoulder & Knee, WorkSafeBC Assessment)
☐ Dr. Stephanie Anderson (Foot/Ankle)
☐ First Available Physician

Fax referrals to 1-866-275-6106 Phone: 604-549-4102 ext.# 1

ORTHOPAEDIC SURGEON

☐ Dr. Kelly Apostle (Foot & Ankle) / **Fax referral to 778-312-0134**
☐ Dr. Dory Boyer (Lower Extremity Sports Injuries) / **Fax referral to 1-877-679-1960**
☐ Dr. Farhad Moola (Shoulder, Elbow, Wrist and Hand) / **Fax referral to 1-866-883-1615**
☐ Dr. Bertrand Perey (Elbow, Wrist and Hand) / **Fax referral to 604-525-2628**
☐ Dr. Trevor Stone (Pelvis, Hip and Knee) / **Fax referral to 778-312-0118**
☐ Dr. Darius Viskontas (Pelvis, Hip and Knee) / **Fax referral to 604-777-5644**

Upon review, receipt of referral will be confirmed via fax to referring physician's office. Our MSK office or surgeon's office will contact patients or referring physician's office by either phone or fax once a scheduled appointment date has been made. Please refrain your patients from calling the offices inquiring about their referrals and wait times.

Appendix 2: Disbursement of Project Funds

The table below shows the disbursement of the $175,000 project funds by category.

Category	Amount	% of Total
Physician Sessionals	$ 30,984	18%
MSK Medicine Expenses	$ 85,342	49%
Consultant	$ 4,276	2%
Event Expenses	$ 12,116	7 %
Meeting Costs	$ 393	0.2%
Fraser Northwest Project Lead Salary	$ 41,889	24%
TOTALS	**$175,000**	**100%**

Total approved Shared Care funds were $272,918, to be released in two phases. However, the project required only the first disbursement of $175,000, thus coming in $97,918 under budget. These savings were largely due to efficiencies gained by adapting experiences from the North Shore, highly capable and motivated staff, a proactive project team, and a reduced need for physician meetings/sessional payments.

Notes:

- Physician sessionals were less than half the amount budgeted. Most were for the February 2015 project launch and engagement event and the March 2016 report back/evaluation event. The project team needed far fewer meetings and physician involvement than projected as the physicians delegated operational management to the MSK MOA and overall project and strategic management to the FNW Project Lead.
- MSK Medicine expenses included MOA salary, dictation, EMR subscription and support, utilities, office supplies, bookkeeping, and a proportion of fixed expenses such as utilities and depreciation.
- The consultant was from the North Shore's ROCC clinic and provided advice and support during the early phases of MSK Medicine. The actual disbursements were far less than budgeted because her services were required to the extent predicted.
- Event expenses relate to the two GP engagement sessions over the course of the project
- Meeting costs were less than budgeted as fewer meetings were required
- The Fraser Northwest Project Lead salary costs were higher than budgeted as she assumed much of the role anticipated for the Consultant and a greater leadership role in managing the project.