2009

Barber Management
Consulting Inc.

NORTHERN HEALTH
NORTHWEST SURGICAL SERVICES REVIEW

DRAFT: Options Document

November 30, 2009

Table of Contents

Executive Summary

The Northern Health (NH) Service Plan for 2009/10 - 2011/12, developed in Feb 23, 2009, in consultation with key regional stakeholders, identifies a number of priority goals, objectives, strategic initiatives and performance targets. The Service Plan underscores commitments developed within the context of Ministry of Health Services and Ministry of Healthy Living and Sport direction including the overarching goal to ensure high quality patient care and a sustainable, affordable publically funded system. To meet these goals NH has developed a strategic priority to integrate and improve access to health services. Included as one of the key strategic objectives within the plan is the intention to establish and implement plans for surgical services in each Health Services Delivery Area (HSDA), including working to reduce wait times with particular focus in 2009/10 on orthopaedic surgery.

The Service Plan Performance Measurement #2: access to surgery in priority areas demonstrates NH is committed to working toward established surgical waitlist targets by collaborating with surgeons to reduce surgical waits through capacity enhancement and more active waitlist management. A two-pronged approach is being undertaken to address waitlist performance issues over a two year period, while continuing to strive to meet the overall target of less than 10% of patients waiting longer than 26 weeks from decision for surgery. In 2009/10 it is expected that the percentage of patients waiting longer than 26 weeks for hip/knee replacement surgery will drop from greater than 60% to less than 45%, with further reductions expected in 2010/11.

In order to meet the planning commitment, Barber Management Consulting was engaged to support Northern Health by exploring the current service delivery model and defining options for enhanced regional surgical services in the Northwest Health Services Delivery Area (NWHSDA). This foundational document explores both the NWHSDA governance and service delivery models currently in place and identifies opportunities for improvement through a set of recommendations that will support the delivery of high quality sustainable surgical services to the NWHSDA population. The project approach and process of engagement with key NH interdisciplinary stakeholders and the analysis undertaken has been grounded in principles of continuous quality improvement. The cornerstone of this approach has been a commitment to embracing the NH guiding principles of working collaboratively in partnership, treating others with respect, compassion & empathy, while demonstrating integrity, stewardship and keeping the outcomes focussed on quality and patient safety.

Founded in 'gap analysis' between the current and future state of regional service delivery, the analysis of NWHSDA surgical services explores service approaches and service levels across the NWHSDA sites. The recommendations focus on governance and service delivery in order to bridge gaps and are proposed and assessed on the basis of service delivery urgency, implementation feasibility, alignment with best and relevant practice as well as population health impact. This includes peer provincial health authorities' surgical programs and Accreditation Canada Guidelines. Finally, in order to facilitate implementation, this review report also identifies 'quick win' and 'high urgency' initiatives.

Key recommendations include:

- Development of a Regional Surgical Coordinating Committee, tasked with re-aligning the surgical services from five independent and autonomous sites to a more cohesive and collaborative systems model across the HSDA;
- Clear designation of each site in terms of service delivery, patient acuity and procedure complexity aligned with the BCTAC trauma designation;
- Creation of a Change Leadership position to lead the transition and support the Committee;
- Designation of a medical lead to provide medical leadership to the Change Leadership position and Committee;
- Development of a communication plan that includes community and physician engagement;
- Implementation of a population health planning model that supports the shifting demographics of the Northwest, is grounded in evidence and supported by robust data and information;
- Improvements to the health human resource planning across the NWHSDA ; and
- Site level quality improvement and assurance initiatives to improve the delivery of services.

A summary of the recommendation was developed and is presented in Table 12.

Introduction: History and Context

Background

During 2001 the previous 52 health regions merged to form a new governance and management structure around 16 health serviced delivery areas (HSDA), within five health authorities (HA). The new model realigned the governance to address both planning and coordination of services specifically to improve patient experience. The improvements aimed to ensure patient care was:

- more equitable, with access to a coordinated range of local, regional and provincial services for all British Columbians, regardless of where they live in the province;
- More effective and efficient, with all services coordinated/provided by a single, accountable agency, within regions large enough to recruit and retain health professionals, and achieve economies of scale;
- Governed by strong leaders, with board members chosen for their leadership skills, decision-making abilities and willingness to be accountable for desired outcomes; and
- More accountable, with regional performance contracts setting out in detail how patient needs will be met and clearly articulating expectations for all concerned.

Northern Health (NH), serving a population of 284,000 people, covers almost two-thirds of BC's landscape. It is divided into three operational HSDAs: the Northeast (NEHSDA), the Northern Interior (NIHSDA), and the Northwest (NWHSDA) and is structured to provide a greater degree of local operation and decision-making for health facilities across northern British Columbia.

The NWHSDA includes: Bulkley Valley District Hospital in Smithers (BVDH), Kitimat Hospital and Health Centre (KHHC), Mills Memorial Hospital in Terrace (MMH), Prince Rupert Regional Hospital (PRRH), Queen Charlotte Islands Hospital- Masset site, Queen Charlotte Islands Hospital- Village of Queen Charlotte site, Wrinch Memorial Hospital in Hazelton (WMH), a United Church Health Services in affiliation with Northern Health.

It is understood that while the reorganization of health services governance has occurred at the macro level a more localized review of services has been limited to provincial initiatives of surgical productivity reviews and waitlist management activities.

Moving Forward

The context for the provision of health care in rural BC requires consideration of a number of key issues: the geographic dispersity, the aging population, rising burden of chronic disease, human resource and health infrastructure challenges, as well as the socio-economic population profile.

Aligned with the Strategic Directions of Northern Health to provide integrated accessible health services, a focus on its people, a population health approach and high quality services, the review of the NWHSDA surgical services would provide a quantitative and qualitative perspective of the current service delivery, articulate a vision for the future and identify the gaps in meeting that vision. A review would focus on the service delivery required to improve patient care, provider experience and operational sustainability.

Approach

While continuous quality improvement was the impetus for the review, NH's principles of treating people with respect, compassion, empathy; while demonstrating integrity, stewardship and quality; in a spirit of collaboration and integrity was the cornerstone of the approach in the review.

Success on this initiative would result in the NWHSDA having a solid foundational document that identified both the governance and service delivery gaps required to deliver high quality sustainable surgical services to the Northwest population.

A broadly supported analysis of Northwest's surgical services included engagement of NHA's Surgical Council, Medical Advisory Committees, and representatives from medicine, nursing and other clinical areas as well as administration through a Steering Committee for the project effort.

A cursory literature review was conducted to inform the approach, to leverage previous reviews thus avoiding redundancies and to provide evidence from other jurisdictions.

Founded in the "gap analysis" between the current and future state of service delivery at the region's hospitals, the review examined service approaches and service levels at the key NWHSDA sites. The recommendations focus on both the governance and service delivery in order to bridge gaps and were proposed and assessed on the basis of service delivery urgency, implementation feasibility, alignment with best and relevant practice and population health impact.

Finally, in order to precipitate implementation, the surgical services review identified "quick win" and "high urgency" initiatives.

Framework

The Northern Health Strategic Plan: 2009-2015 was the impetus for the project.

Our approach included a review of the 2009-2015 Strategic Plan which identified *Integrated Accessible Health Services* as one of its four priorities. One of the initiatives identified to meet the objectives of the Strategic Plan was the *establishment and implementation plans related to surgical services in each HSDA, including working to reduce wait times with a particular focus in 2009/10 on orthopaedic surgery*[i].

The review does focus specifically on that initiative. However, the review's approach does address the broader strategic priority areas and objectives by paying close attention to:

- *Delivery of high quality surgical services within a culture of continuous quality improvement and patient safety;*
- *The review of leadership, collaboration, and strategic human resource management; and*
- *Identifying improvements to measurement and monitoring of service delivery, process management and outcomes management.*

A population health approach was employed to guide the health service planning and resource allocation for this project and our recommendations include improvements to staff and physician engagement, leadership development and recruitment strategies.

Current State Review and Analysis

The current state review and analysis addresses both the high level strategic context as well as site level services. The consultants relied on literature, data and interviews to understand the context and articulate the current state. The interviews were conducted across the Region and a summary is included in the appropriate sections below. Both site level and Regional level answers to questions were solicited and are presented below where appropriate. The more detailed site by site interview summaries are provided in Appendix A -Detailed Summary of Site Visit Interviews.

Strategic Context

Our approach included a review of the 2009-2015 Strategic Plan which identified *Integrated Accessible Health Services* as one of its four priorities. Within this priority the key objectives include:

- *Building efficient and effective secondary and specialty services which are aligned with the "Primary Care Home" and designed to meet the needs of northern populations;*
- *Develop and implement strategies that improve service provider collaboration;*
- *Measurably improve satisfaction with the health services provided by Northern Health.*

One of the initiatives identified to meet these objectives was the *establishment and implementation plans related to surgical services in each HSDA, including working to reduce wait times with a particular focus in 2009/10 on orthopaedic surgery*[iii]. Other relevant objectives included:

- *Delivery of high quality surgical services within a culture of continuous quality improvement and patient safety;*
- *The review of leadership, collaboration, and strategic human resource management; and*
- *Identifying improvements to measurement and monitoring of service delivery, process management and outcomes management.*

Within its 2009/10-2011/12 Service Plan, Northern Health has set a number if targets for its performance, as shown in the following tables:

Table 1 - NH Performance Targets

Performance Measure	2008/09* Actual	2009/10 Target	2010/11 Target	2011/12 Target
Sick Leave: sick leave hours as a percent of productive hours	5.2%	Improvement over previous year	Improvement over previous year	Improvement over previous year
Vacancy Rates: vacancies in "difficult to fill[1]" positions, nurses and allied health professionals	Nurses: 8.9% AHP: 16.0%	Improvement over previous year	Improvement over previous year	Improvement over previous year

(AHP)				
Overtime: overtime hours as a percent of productive hours, nurses and allied health professionals	Nurses: 3.9% AHP: 3.5%	Nurses: maintain or below 5% AHP: maintain or below 3.5%	Nurses: maintain or below 5% AHP: maintain or below 3.5%	Nurses: maintain or below 5% AHP: maintain or below 3.5%

Data Source: Health Sector Compensations Information System (HSCIS). Provided by Management Information Branch, Health System Planning Division, Ministry of Health Services.
* Data reported by 2008 Calendar year. Vacancy rates data as reported at quarter 4 (January 1 to December 31).

The targets set for human resource management are, as expected, in-line with the other Health Authorities in BC. However, while the actual sick time and overtime are similar to other HA's (IH sick=5.7%, VIHA sick=5.8% and IH overtime=4.7%, VIHA overtime=6.1%) the difficult to fill position show a five-fold difference for nursing and a nine-fold difference for allied health over IH and 13-fold difference for nursing and a 16-fold difference for allied health over VIHA.

Table 2 - Access to Surgery in Priority Areas

Performance Measure	2007/08 Baseline	2008/09 Actual	2009/10 Target	2010/11 Target	2011/12 Target
Waiting times for surgery: a) Percentage of hip replacement cases waiting longer than 26 weeks	48%	62%	10%	Maintain at or below 10%	Maintain at or below 10%
b) Percentage of knee replacement cases waiting longer than 26 weeks	61%	65%	10%	Maintain at or below 10%	Maintain at or below 10%
c) Percentage of hip fracture fixation completed within 48 hours	89%	94%*	95%	Maintain at or above 95%	Maintain at or above 95%
d) Percentage of cataract surgeries waiting longer than 16 weeks	55%	60%	10%	Maintain at or below 10%	Maintain at or below 10%

Data Source: SWIFT, Management Information Branch, Health System Planning Division, Ministry of Health Services
Hip fracture fixations: Discharge Abstract Database, Management Information Branch, Health System Planning Division, Ministry of Health Services.

* 2008/09 partial year data based on the March 2009 tape from CIHI.

While the actual performance for electives are much lower than other Health Authorities, with large proportions of rural populations (IH a=23%, b=35%, d=30%; VIHA a=18%, b=24%, d=15%), the delivery of timely hip fracture surgery are actually better (IH c=91; VIHA c=92). The Northern Health Service Plan identifies a commitment to working toward established surgical waitlist targets. The document further articulates specific activities to reach these targets including active engagement with surgeons for capacity enhancements and more active waitlist management.

Although the target for 2009/10 was set at 90% of cases meeting target, the document itself acknowledges that the target will not be met. However, it is expected that the percentage of patients waiting longer than 26 week for hip/knee surgery will drop from greater than 60% to less than 45%, with further reductions expected in 2010/11.

Interviewees were aware of the targets, but little understanding of the efforts underway to improve the data or performance were noted.

Site Governance and Program Management

Regional Centres and Other Acute Care Facilities

> *The provision of surgical care is particularly important. Surgical services are acutely needed in certain situations, when patients may be too ill to be safely transferred. The presence of a surgical service can help support other rural programs, such as obstetrics, and encourage recruitment and retention of family physicians who wish to work with some "back-up"*[iii]

Our observations regarding individual sites were derived from a cursory review, limited to feedback obtained from onsite tours and by medical, clinical and administrative staff interviews. Appendix A -Detailed Summary of Site Visit Interviews captures a summary of the detail from each site.

There are five acute-care sites in the NWHSDA providing surgical services:

- Bulkley Valley District Hospital (BVDH)- Smithers;
- Wrinch Memorial Hospital (WMH)– Hazelton;
- Mills Memorial Hospital (MMH)– Terrace;
- Kitimat Hospital and Health Centre (KHHC);
- Prince Rupert Regional Hospital (PRRH).

They operate under a distributed model as autonomous facilities, an operational style that historically was well suited to the geographically isolated environments in which they are located. A consequence we observed as a result of that isolation, however, is that there is disconnectedness between and among sites that does not lend itself to a system view of surgical services. At present, inter-site relations occur largely on an ad hoc basis, with the exception of making arrangements for planned patient visits to and from diagnostic centres.

Only Mills and Prince Rupert have true ICU and ED capacity. The other sites rely on ER to triage and transport critically ill patients.

All sites rely to varying degrees on itinerant surgeons to provide service to residents of their communities. Bulkley Valley District Hospital has developed an entirely itinerant surgeon model supported by local GP surgeons and GP anaesthetists – see the Human resources section for a more detailed discussion of this model.

Trauma or Emergent Surgery

The impact of emergent surgery on the elective slates is well documented in the literature and was identified as a major contributing factor in OR delays, cancelations, hospital flow and increased staff overtime. The small volumes, distribution of facilities, and the limits of surgical specialties has contributed to a dispersed model of care for the NWHSDA. The best example of this is the region emergency call for General and Orthopaedic Surgery.

Shared regional calls exist for orthopaedics (KHHC & PRRH) and General Surgery (MMH, KHHC & PRRH). While the shared call is required to manage the call burden for the individual surgeons, the model does create issues such as constraints on beds and misalignment with diagnostic equipment (CT available in MMH) and ICU/CCU (MMH & PRRH) access. Moreover, the call is based on each surgeons availability rather than using a systems approach to coordinate services and other resources.

Interviewees indicated that confusion remains for who is on call, although when pressed for further information it was revealed that this was predominately directed at orthopaedic call.

A recent study (in pre-publication) was completed to explore the impact of this distributed trauma service in the NW. The lead author of the study, Dr. Richard Simons[iv], was interviewed and indicated that the core goal for any trauma program is reduction of preventable mortality and morbidity. He went on to say that to meet this goal the following should be met:

- Clear designation of trauma sites, with required services, equipment and staff;
- Call schedule aligned with provider and site services;
- Improved activation of LLTO

Dr. Simons study and a trauma services review completed by Sierra Systems in 2008 indicated that the current structure of trauma services was sub-optimal. Designation of sites and efforts to coordinate services were identified as key priorities. In short the ability to respond in a life or limb threatening situation must be maintained - need a minimal base of equipment and manpower competency across the region with clear plan for escalating care needs in a focused site.

A summary of elective and urgent/emergent data were not readily available for this review.

Elective Surgery

In contrast to trauma services, which require a higher level of service, specialized equipment and staff and resources available on a 24 hour basis, the evidence in the literature is quite clear on the benefits of maintaining local elective surgical services in rural communities[v]. Maintenance of elective slates in all sites was also noted during the site interviews. In fact, the smaller sites indicated that there was capacity to perform additional elective cases within the existing physical resources.

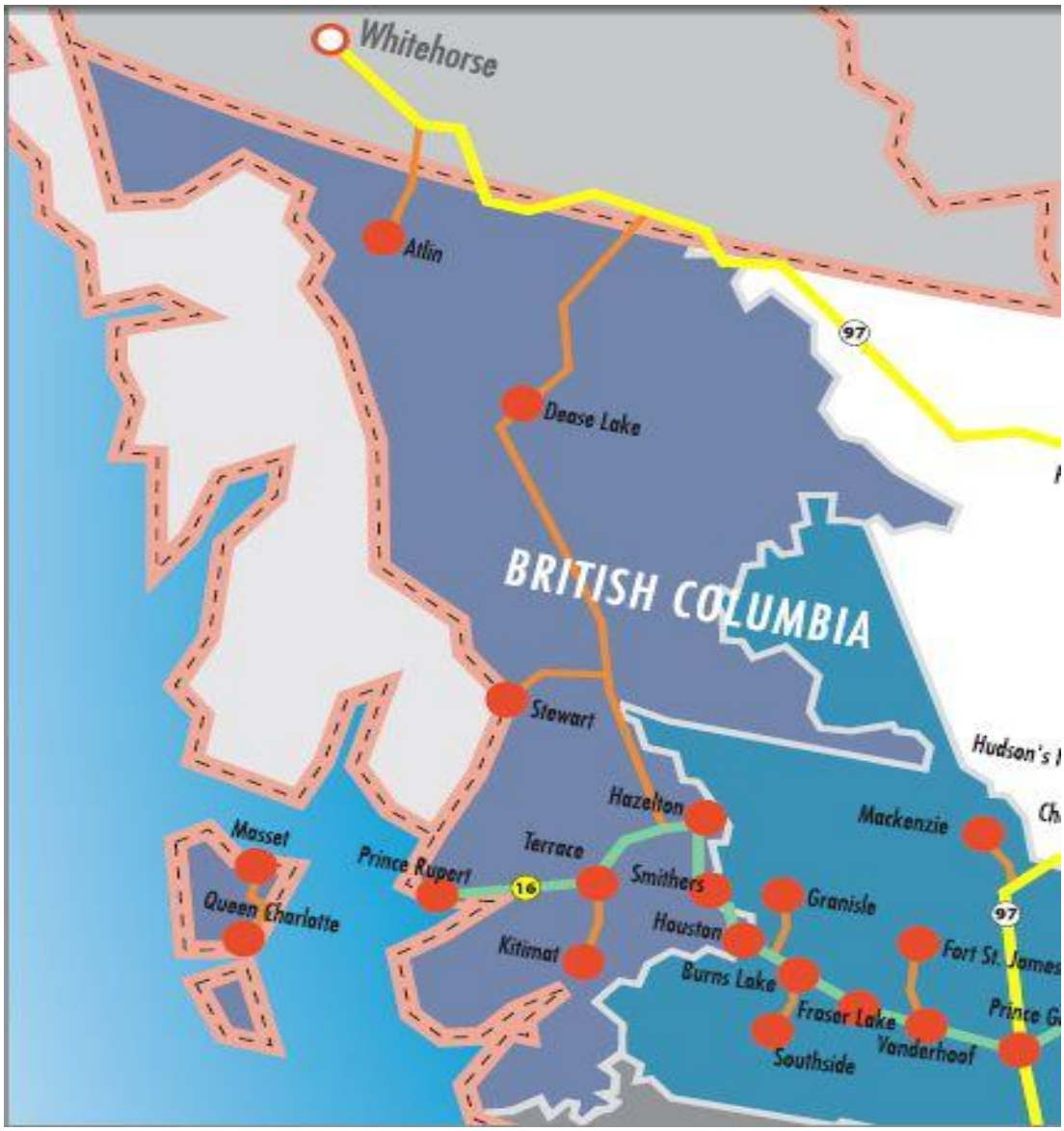
Maintaining local surgical services provides improved access for patient closer to home and benefits the broader service delivery for the local sites. For example, maintaining anaesthesia coverage for elective surgical services facilitates maintenance of obstetrical programs (operative anaesthesia as well as elective regional (epidural) analgesia) and ER (IV sedation and airway management). While consolidation of major services is required basic secondary local services must remain sustainable.

Further, maintaining a critical balance between recruitment, retention and skills maintenance for medicine, nursing, allied health and support staff relies on a broad set of services including surgery.

Population Profile

The NWHSDA is comprised of five acute care sites providing surgical services and a number of smaller communities with acute and community services from Atlin and Dease Lake in the north to Houston in the south to Masset and Queen Charlotte City in the west. The acute sites include Bulkley Valley District Hospital (Smithers), Kitimat Hospital and Health Centre, Mills Memorial Hospital (Terrace), Prince Rupert Regional Hospital, Queen Charlotte Islands Hospital- Masset site, Queen Charlotte Islands Hospital- Village of Queen Charlotte site, Wrinch Memorial Hospital (Hazelton, United Church Health Services in affiliation with Northern Health).

Figure 1 - NWHSDA Map



The population in the NWHSDA is estimated at just under 75,000 people[vi], with a 51:49 male to female split and approximately 11% of the population 65 years of age or older. With the exception of the NEHSDA this is the lowest proportion of elderly in the province.

Table 3 - Population

Health Service Delivery Area		Year	Gender	0-1	1-17	18-64	65-90	Total
51	Northwest	2008	M	444	9,188	24,800	3,968	38,400
51	Northwest	2008	F	454	8,495	23,580	3,959	36,488
51	Northwest	2008	T	898	17,683	48,380	7,927	74,888

Table 4 - Population Projections

PEOPLE 34 Projections	Kitimat	Nisga'a	Prince Rupert	Queen Charlotte	Smithers	Snow Country	Stikine	Telegraph Creek	Terrace	Upper Skeena	TOTAL
2009	10162	1867	14285	4817	15861	520	1079	642	20195	5394	76831
2015	9874	1884	14313	4925	16398	538	1264	710	19715	5534	77170
2020	9716	1900	14426	4972	16756	545	1286	716	19682	5638	77657
2025	9592	1926	14488	4965	17111	542	1257	734	19781	5706	78127

Stikine, Telegraph Creek and Smithers show the largest growth (17%, 14% 8% respectively) while Upper Skeena Queen Charlotte and Nisga'a show moderate growth (6%, 3% and 3% respectively). Prince Rupert's population is projected to remain relatively flat while population reductions are expected in Kitimat and Terrace (-6% and -2% respectively).

While the population growth is expected to be minimal the aging of the population, although not as profound as more urban settings, continues to exert pressure on the system.

Table 5 - Aging of Population from 2003 to 2008

Local Health Area	Year	0-17	18-64	65-74	75-84	85-90	Total
Queen Charlotte	2003	1190	3180	234	108	37	4749
Queen Charlotte	2008	1086	3238	292	139	45	4800
Snow Country	2003	176	550	38	9	1	774
Snow Country	2008	123	334	51	12	2	522
Prince Rupert	2003	4275	9873	810	442	116	15516
Prince Rupert	2008	3480	9266	929	472	142	14289
Upper Skeena	2003	1737	3436	287	121	24	5605
Upper Skeena	2008	1499	3328	339	169	38	5373
Smithers	2003	4728	10379	774	411	109	16401
Smithers	2008	4099	10193	940	486	160	15878
Kitimat	2003	2910	7480	680	264	41	11375
Kitimat	2008	2223	6831	733	367	62	10216
Stikine	2003	258	784	79	19	14	1154
Stikine	2008	212	674	84	42	7	1019
Terrace	2003	5633	13034	1117	537	122	20443
Terrace	2008	5141	12966	1369	656	172	20304
Nisga'a	2003	625	1231	82	43	10	1991
Nisga'a	2008	537	1156	100	50	16	1859
Telegraph Creek	2003	210	411	29	13	6	669
Telegraph Creek	2008	181	394	39	9	5	628

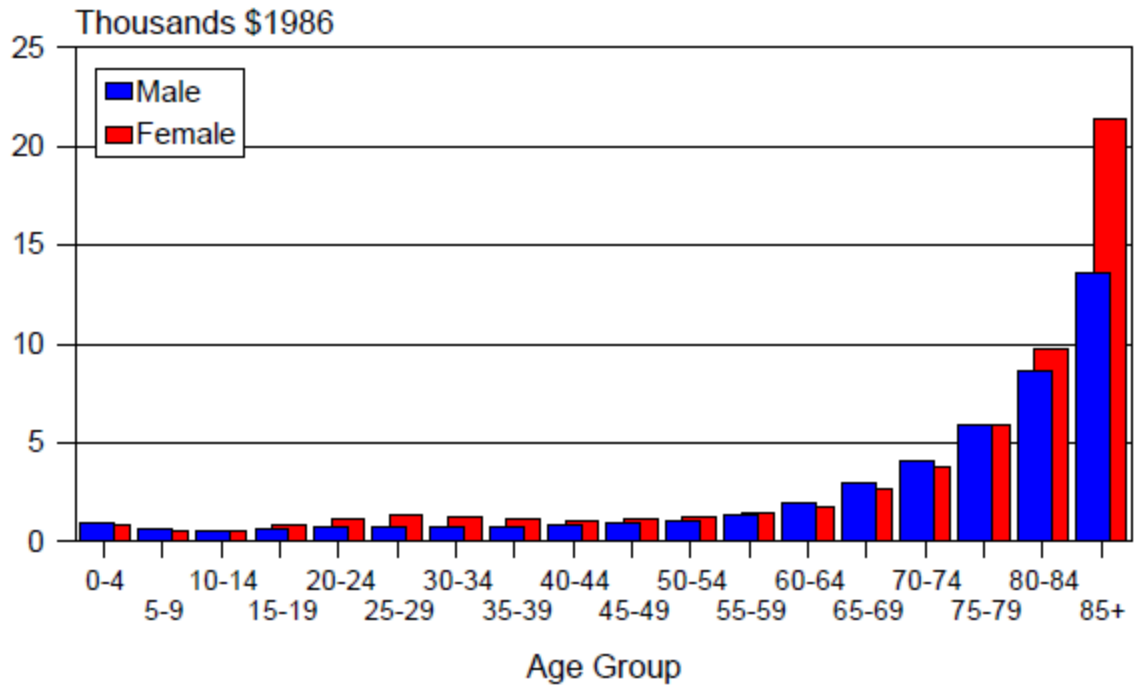
The most significant declines in the proportion of the population has been seen in the 0-17 age groups, while the 65-74 age group has witness the largest growth as a proportion of the overall population. Between 2003 and 2008 the 65+ age cohort has grown to represent 11% (up from 8%) of the overall population in the NWHSDA – this is a 21% growth in the proportion of the population.

British Columbia's elderly population is the fastest growing in Canada. Population projections predict that by 2020 the province will have fewer school age children than people over 65.

Northern Health will be significantly challenged by the pending growth of the northern British Columbia seniors' population. Although the percentage of seniors in the region's general population is currently the smallest of all the health regions (approximately 10%), the seniors population is expected to grow quickly over the next 15 years – an average rate of 4.8% increase per/year (the highest growth rate of all the health authorities) – doubling by 2023[vii].

The aging population is a significant demand driver of health care because the need for health services rises dramatically with age. Figure 2, although based on old data, demonstrates the per capita rates by age group.

Figure 2 - Per Capita Health Care Costs 1990/91- BC Stats



More recent data paints the same picture - While 65- to 74-year-olds consumed $6000 per capita, 75- to 84-year-olds consumed $11 000 per capita, and 85-year-olds (and those older) consumed $21 000 per capita, on average. In comparison, per capita health care spending among those age 1 to 65 was approximately $1700.[viii]

Per Capita Utilization Rates and Referral Rates

Per capita utilization rates provide a high level view of access to service by various levels of geography. The rates are based on a patient's residence rather than where they receive services. Although insufficient to explain all variation between sets of geographies, per capita utilization rates do control for the age of the population and therefore are good predictors of relative access.

Table 6 - Age-Standardized Acute Utilization Rates

Surgical Care	Total		Local Rate/1000		HSDA Rate/1000		BC Rate/1000		Reg. Rate as a % of HSDA		Reg. Rate as a % of BC	
	Cases	Days	Cases	Days	Cases	Days	Cases	Days	Cases	Days	Cases	Days
HSDA Totals and Rates	9,075	51,005	121	681	121	681	83	563	100%	100%	146%	121%
050 Queen Charlotte	785	4,718	164	983	121	681	83	563	136%	144%	198%	175%
051 Snow Country	46	433	88	830	121	681	83	563	73%	122%	106%	147%
052 Prince Rupert	1,777	9,682	124	678	121	681	83	563	102%	100%	149%	120%
053 Upper Skeena	865	3,939	161	733	121	681	83	563	133%	108%	194%	130%
054 Smithers	1,768	8,428	111	531	121	681	83	563	92%	78%	134%	94%
080 Kitimat	1,330	7,896	130	773	121	681	83	563	107%	114%	157%	137%
087 Stikine	97	636	95	624	121	681	83	563	79%	92%	114%	111%
088 Terrace	2,118	13,406	104	660	121	681	83	563	86%	97%	125%	117%
092 Nisga'a	254	1,562	137	840	121	681	83	563	113%	123%	165%	149%
094 Telegraph Creek	35	305	56	486	121	681	83	563	46%	71%	67%	86%

Overall the NWHSDA has higher standardized acute utilization rates than NH (29% higher) and BC (46% higher) with the exception of Diseases and Disorders of the Female Reproductive System (16% below BC – not shown in table).[ix] It is expected that in rural and remote communities, access to community-based services is more limited than in larger centres and therefore utilization of hospital services tend to be higher[xxi]. As such, it is reasonable to expect higher per capita utilization in NWHSDA communities. However, it has been shown that for cases that can be treated out of hospital, the shift to community based programs benefit the patients, acute care resources and improve provider satisfaction, resulting in, amongst other services, increased surgical services. [v]

In patient surgery and surgical day care (SDC) utilization rates are a measure of relative access for elective and emergent surgical cases performed with and without the need for overnight stays in an acute care ward, respectively. These rates provide a high level view of relative access to services. **Error! Reference source not found.** provides a summary of the inpatient and day procedure surgical utilization rates for residents of the Local Health Area (LHA).

Table 7 - Age-Standardized Surgical Day Care Utilization Rates

Geographic Area	Population	Cases	Days	RIW+	Case Rate	Day Rate	RIW+ Rate
050 Queen Charlotte	4,800	584	1404	595.1	118.0	355.6	147.9
051 Snow Country	522	84	194	74.4	140.9	512.5	179.8
052 Prince Rupert	14,289	2263	3193	1510.0	152.3	222.7	103.3
053 Upper Skeena	5,373	723	847	378.7	136.3	157.2	70.9
054 Smithers	15,878	2214	2734	1303.5	135.2	170.0	80.1
080 Kitimat	10,216	1747	2202	941.1	155.0	221.1	90.9
087 Stikine	1,019	127	268	112.0	113.1	293.3	182.6
088 Terrace	20,304	2861	2920	1296.2	134.0	140.4	61.1
092 Nisga'a	1,859	258	271	133.3	138.3	171.8	80.0
094 Telegraph Creek	628	79	67	34.6	140.1	112.6	55.7
Rural	299,154	38483	51125	23144.1	115.6	154.0	69.3
Semi-Urban/Rural	1,357,983	167669	243733	109290.2	102.5	142.6	64.3
Urban	2,724,466	271163	456395	185742.1	88.5	143.1	59.5
BC Total	4,381,603	478741	755492	319700.9	94.7	143.7	61.8

Referral rates provide a snapshot of where patients travel to receive services. Although it is expected that in rural communities communities patients with high care needs will receive services beyond their local hospital, referral rates can also be an in dicator be an indicator of relative access to services.

Table 8 provides referral rates – i.e. the percent of cases from each Local Health Area (LHA) by where they received care excluding newborns.

Table 8 - Referral Rates (as measured by self-sufficiency)

2007/2008	Case Count by Area of Hospitalization										
Patient LHA	050 Queen Charlotte	052 Prince Rupert	053 Upper Skeena	054 Smithers	057 Prince George	080 Kitimat	088 Terrace	Vancouver	Other NHA	Other Places in BC	Out of Province
050 Queen Charlotte	65%	10%	0%	0%	1%	1%	3%	10%	0%	9%	0%
051 Snow Country	0%	13%	0%	6%	2%	15%	45%	11%	0%	4%	4%
052 Prince Rupert	0%	79%	0%	0%	2%	1%	2%	8%	0%	6%	1%
053 Upper Skeena	0%	1%	79%	2%	4%	2%	5%	4%	0%	2%	0%
054 Smithers	0%	3%	2%	60%	9%	2%	6%	9%	1%	5%	1%
080 Kitimat	0%	6%	0%	0%	2%	72%	8%	8%	0%	2%	1%
087 Stikine	0%	1%	0%	3%	9%	1%	12%	15%	1%	12%	45%
088 Terrace	0%	2%	8%	0%	4%	4%	65%	10%	0%	4%	1%
092 Nisga'a	0%	4%	0%	0%	6%	2%	73%	12%	0%	2%	0%
094 Telegraph Creek	0%	1%	3%	4%	19%	9%	42%	12%	1%	0%	7%

The acute care rates show a significant variation in referral, as expected, from a high of 40% in Smithers (60% of patients receive acute services in Smithers) to a low of 21% in Prince Rupert (79% of patients receive acute services in Prince Rupert) and Hazelton (Upper Skeena). This is likely explained by the availability of adjacent services (or not in the case of Prince Rupert) and the self sufficiency of Hazelton. As expected Terrace residents travel to Kitimat and Prince Rupert for orthopaedics (service level data not shown in table).

Data showing the volume of surgical services provide to residents of NWHSDA residents by LHA and where they receive the services was requested, but not available at time of this report.

Waitlists and Time

For the most part, individual surgeons decide patient priority and book their own cases. Operating room (OR) time is based on historical allocations which may have been influenced by waiting list length. Surgical Patient Registry data is typically submitted by the OR or OR Booking clerks.

In BC, like other jurisdiction in Canada, waitlists are maintained from the time the decision for surgery is made until the date of surgery. There are of course delays from referral from a GP to initial consultation by the surgeon which remain largely unmonitored, but may contribute significantly to the overall patient wait. The delay between

GP and surgeon is referred to as a consultative gap. Moreover, under reporting of cases referred, but not yet booked or surgeons not taking referrals under represents the extent of need.

When local surgeons were asked to describe the nature of the waitlists they expressed concerns. These concerns varied by surgical specialty, procedure type and site. Examples given are summarized below:

- Smithers: excessive delay of 3 months for procedures such as T&As result in progressively sicker child by the surgical date;
- Hazelton: 6-8 month wait time - 75% of procedures are endoscopes (primarily colonoscopies);
- Kitimat: Consultative gaps; general orthopaedic cases wait less than 2 months with arthroplasty having the longest waits of up to a year for consultation; This is even more pronounced when looking at the SPR waitlist data that indicates a 60+ week wait following decision for surgery;
- Terrace: Consultative gaps from 1-2 months;
- Prince Rupert: primary wait is for consultation for arthroplasty patients (up to two years) and will be exacerbated with the surgeon's upcoming education leave.

The sites also vary in how they deal with elective case postponements because of pre and peri-operative inefficiencies (no-shows/cancelations, case start times, etc) and the requirements to complete emergent cases. These are summarized below:

- Smithers: Add on cases are managed at the end of the slates when possible (unless urgency dictates immediate surgery). Urgent cases booked while visiting surgeon on site;
- Hazelton: Emergent c-sections will bump elective cases. Urgent cases are booked while visiting surgeon is on site; slate may be adjusted to accommodate a postponed elective case only within scheduled day in order to minimize OT;
- Kitimat: postponements are accommodated on the following day's slate when possible;
- Terrace: postponements are accommodated on the following day's slate when possible;
- Prince Rupert: Site has an OR adds classification system (copy provided) but elective surgical cases have not been postponed for add on cases until recently. Late starts and bed availability are major reasons for postponed surgery.

Table 9 - NW HSDA Cases Completed Wait Times from January 1, 2008 to September 15, 2009

Facility Description	Specialty Description	# Surgical Cases	Weeks since Booking Received
Bulkley Valley District Hospital	General Surgery	60	31
	Gynecology Surgery	9	33
	Oral Maxillofacial Surgery - Dental Surgeon	6	24
	Orthopedic Surgery	16	22
	Otolaryngology Surgery	7	32
	Urology Surgery	54	32
	TOTAL	152	30
Kitimat General Hospital	General Surgery	1	50
	Orthopedic Surgery	14	61
	Urology Surgery	2	70
	TOTAL	17	62
Mills Memorial Hospital	Ophthalmology Surgery	2	16
	TOTAL	2	16
Prince Rupert Regional Hospital	General Surgery	15	18
	Gynecology Surgery	25	23
	Orthopedic Surgery	47	13
	TOTAL	87	16
Wrinch Memorial Hospital	General Surgery	1	1
	Oral Maxillofacial Surgery - Dental Surgeon	2	17
	Urology Surgery	1	19
	TOTAL	4	13
NWHSDA TOTAL		262	27

Anecdotally the sites did not feel that surgical waitlists were a significant issue but rather that the consultative gap was driving patient waits. However, looking at the most recent SPR data for completed cases and Service Plan data there continues to be significant issues with wait times. This is most pronounced in Kitimat were the cases completed in the first 8 months of the calendar year waited on average 62 weeks. However, without completing an audit of the data the full impact on wait time cannot be measured. Moreover, maintaining waitlist data which excludes the consultative gap fails to represent the true wait for the patient, especially when majority of the wait is for the consultation.

The use of data and analysis has not been built into the day to day management structures. In addition, those interviewed were not aware of Ministry of Health Services communiqués on wait list management – specifically the requirements for:

- Annual waitlist audit and quarterly reviews;
- Patient unavailable information;
- Government Letters of Expectation (GLE) monthly target reports and indicator reports;
- NH Error Management;
- Physician Engagement/Communication activities.

Referencing the cases specifically reviewed provincially as part of the GLE (Hip/Knee & cataract), NH, with the exception of fractured hips (emergent cases) are not meeting target. In fact, over 60% of patients are waiting in excess of the targeted wait time for priority procedures (16 weeks for cataract and 26 weeks for hip and knee arthroplasty)[xii]. Comparing the NH experience to the NWHSDA data, specifically for arthroplasty, the average waits for patients completed from January 1, 2008 to September 15, 2009 was over 60 weeks in Kitimat and 10 weeks in Prince Rupert. As mentioned previously this does not include the consultative wait, which may exceed the wait for surgery. As such any conclusion based on this level of data would be misleading. A further review of the data and booking process is required to determine the actual wait for patients.

Currently over 4400 (6300 cases annualized) patients are entered into the SPR awaiting surgery in NWHSDA facilities.

Health Human Resources

In recent years British Columbia (BC) health professionals and health workers have seen significant expansion in the education and training programs. However, Health Human Resourcing (HHR) remains a challenge. This is in part caused by rising demand for services and an aging workforce resulting in heavy competition for a finite resource. This is further confounded by NH's rural setting and remote locations and the loss of resource based jobs in NH communities, which makes it more difficult to recruit and retain professionals whose spouses also require employment.

Continued development of educational opportunities delivered within NH communities, such as partnerships with community colleges and UNBC must be supported.

Physicians

The NWHSDA is currently experiencing resource challenges with physician recruitment and itinerant surgeons and where possible are securing locum practitioners to meet patient needs. Terrace and other facilities have demonstrated success in recruitment and retention through partnerships with the UNBC and UBC medical programs. However, the Prince Rupert physicians reported being unable to accommodate medical students or residents due to manpower issues.

Physician resource plans do not exist at the NWHSDA level. However, site specific plans were discussed during the interviews – see

Table 10.

Sites described frustration with recruitment lags, particularly for foreign trained physicians.

A broad range of visiting or itinerant surgeons augment the surgical care provided by GP surgeons at the smaller surgical sites. This program has been particularly successful in providing local care in Smithers, following their lengthy and unsuccessful attempt to recruit a permanent General Surgeon.

The model that was established in Smithers has provided improved care to the residents of the community as was expressed by clinical, administrative and medical staff (both local GP's and the visiting surgeon himself).

Appendix C - Detailed Summary of Smithers' Itinerant Surgeon Model provides a summary of the innovation.

Anaesthesia remains the most significant challenge for all areas. This is expected to worsen as recruitment of Anaesthesiologists proves difficult due to the case mix/volumes and call requirements, fewer medical students opting to study anaesthesia as part of their Family Practice training, while current practicing FPs have identified the following barriers: expense associated with remaining skilled in advanced procedural areas; lack of access to locum relief to attend educational sessions; lack of flexible options for education; and initial time commitments (12 months). Moreover, the skills maintenance would likely require annual travel out of the home community.

Nursing

OR and PAR areas throughout the NWHSDA are staffed by peri-operative registered nurses and meet minimum national staffing standards (ORNAC and NAPAN) of 2 per theatre and 2 RNs immediately available for recovery. For caesarean sections, a registered nurse is also provided to care for the newborn. Due to the size and structure of the peri-operative programs, these nurses are cross trained for OR and PAR as well as function in other areas such as emergency and day care surgery pre and post care. They may also perform room turnovers, case picking and material services ordering.

For the majority of sites, on-call coverage is scheduled with appropriate response time requirements. Hazelton does not have scheduled on-call coverage but OR staff are placed on-call when a labouring mother presents. For sites such as Smithers, the call schedule can be very demanding due to a shortage of peri-operative nursing staff.

The numbers of casual staff vary by site and overall, are minimal. When all avenues to secure OR coverage, such as overtime, are unsuccessful, the sites have resorted to the use of agency nurses to supplement their staffing coverage.

RN recruitment has been facilitated by the UNBC satellite programs within the HSDA.

There has been no formal work force planning for staff at either the HSDA or site level. Retirements are generally well known in advance and other forms of attrition are managed on a reactionary basis by working short, incurring overtime or hiring agency nurses for longer term vacancies. There were no over-hire or permanent relief positions.

OR LPNs are not currently part of the OR staffing complement and given the multifunctional nature of the RNs combined with the limited back up options for recovering patients in co-locations where there are additional RNs

to ensure standards are met, this is appropriate. Hazelton utilizes one LPN but the primary role of this individual is scope processing as opposed to direct patient care.

It was noted that all five sites perform dental surgery and the dental surgeons are accompanied by their office dental assistants. These dental assistants are not employees of the NH and therefore pose a potential liability risk by providing direct patient care without appropriate WorkSafe BC coverage, background checks or credentialing/privileging.

Central Sterile Reprocessing (CSR)

All sites have certified reprocessing technicians who typically work week days to support the elective slates. Off hours, nursing staff that are called in for emergency cases disassemble and soak/spray instrumentation for reprocessing and leave for the technicians to complete when they return to work. Casual staff is limited in numbers.

Overall leadership of standards is provided regionally by Penny Brawn and direct reporting is to the OR managers.

The CSR staff at Prince Rupert echoed the frustrations of the OR staff and surgeons regarding the case delays (see below). The processing shifts are not staggered and with slate overruns due to late starts, a great deal of instrumentation processing is delayed or overtime is incurred.

Education for processing staff is limited with regional travel not supported due to budgetary constraints. Sites such as Hazelton support their staff to attend CSA educational offerings.

Patient Flow

OR Booking

The OR Booking office staff are very knowledgeable and maintain positive rapport with the surgeons and OR staff. There are no written NH or NWHSDA booking guidelines. There was an awareness of the Surgical Patient Registry processes but at the time of the site visits, staff were unaware of the increased requirements for waitlist management and auditing through the MoHS.

The practice of scheduling of patients varies slightly across the sites. While the majority of the booking and scheduling is handled by the OR booking offices, in Prince Rupert, the surgeons' offices book all procedures and provide the lists to the OR.

There was some concern raised by the GP Surgeons in Smithers related to their elective surgery schedules. OR time is allocated primarily on historical practices.

Due to a lack of a surgical information management system, all processes are manual and efficiency data cannot be easily extracted. Kitimat and Smithers maintain manual statistics or one-off reports on indicators such as average case duration/procedure per surgeon, first case start times, and as a result a robust system with timely data is not possible.

Pre-Surgical Screening

There were no formal pre-surgical screening clinics throughout the HSDA with the exception of Kitimat. The OR Booking Clerks review the patient booking packages and flag those cases that require an anaesthetic consult. The local orthopaedic surgeon in Kitimat has established a prehabilitation/surgical optimization clinic for arthroplasty patients. This is commendable and could be explored as an option for expansion within the HSDA to benefit all arthroplasty patients.

There was an HSDA-wide desire for the creation of a standardized pre-surgical screening process that would allow all elective patients to be screened via telephone or clinic visit and be based on criteria established in collaboration with anaesthesiologists. Such a program could include the ability for reciprocity of pre-surgical assessment using standardized tools and guidelines at the nearest facility to the patient and the assessment provided to the operating facility.

Day Care Surgery

All sites have day care surgery areas in the immediate proximity of, or within, the OR/PAR areas. These areas provide preoperative assessment and preparation as well as phase 2 and 3 recovery for both OR and endoscopy patients. Site marking is completed and all consents are confirmed with the patients or their decision makers. In Kitimat, patient flow is interrupted when the Switchboard operator takes breaks and there is no one to register the patient preoperatively. This delays the preoperative preparation process and delays the OR.

Operating Rooms

Surgery and endoscopy procedure patients are cared for within the OR structure. Time-outs procedures are routinely conducted and the majority of the sites are routinely utilizing the WHO surgical safety checklist throughout the operative phase. All documentation (e.g. case records) are completed manually and as a result, all efficiency indicators such as first case starts, turnover times, elective room utilization, etc must be done manually by the managers/supervisors.

Frustration was expressed at the start up efficiency of the Prince Rupert surgical cases each day with staff describing delays of up to 2-3 hours for patient preparation (insertion of lines and/or epidurals in PAR where the needed supplies, equipment and trained staff are not consistently available.

All sites identified concerns with the need to update operative equipment (anaesthetic machines, video systems) and instrumentation (scopes, sentinel node technology) to improve patient care. This was also identified a key factor in physician recruitment and retention.

The NWHSDA participates in the larger NH capital acquisition processes. Smithers, in particular, has been very successive, through their Operation Keyhole strategy, to secure community support and funding to upgrade the minimally invasive equipment - of note, there was general satisfaction with the regional purchasing practices.

Regional clinical practice standard development is underway with Gil Lainey as the lead. The majority of sites in the NWHSDA participate in this process - although Smithers did not indicate that they have representation. This is commendable from both a standardization point of view but also allows the sites to share their challenges and innovations and learn from each other. Competencies are maintained through the provision of in-services as well

as attendance at Perioperative Registered Nurses of BC (PRNBC) chapter events and provincial meetings as funding allows.

All sites indicated that they have some form of OR management committee with multidisciplinary representation and typically with physician linkage to the LMACs and RMAC. As statistical indicators are not easily available due to a lack of a standardized surgical information system, efficiency and effectiveness monitoring was said to be difficult.

Mortality and morbidity rounds are not consistent and access to information regarding surgical site infections varied across sites. Some sites expressed a desire to increase the emphasis on quality improvement.

PAR

The post anaesthetic recovery areas are small but well equipped. Phase 1 recovery for elective patients is generally provided by the OR/PAR RNs on a rotational basis to maintain skills and competencies. Emergency case recovery is completed by the two RNs on call for the OR and in the event that the case can be managed without overnight admission, the patients are discharged from the PAR which is an efficient use of resources.

Surgical Inpatients

Bed capacity issues were noted at Kitimat, Terrace and Prince Rupert. Surgical postponements are not uncommon due to a lack of beds.

The physicians at Kitimat indicated considerable frustration with their ability to provide surgical services when alternate level of care (ALC) patients were occupying acute care beds. They described scenarios when orthopaedic trauma patients received surgical intervention and phase 1-2 recovery and then were immediately transported back to their home facility for recovery. This practice should be reconsidered in light of the impairment of continuity of care and the potential clinical risks associated with dislocation during transport, post operative emergencies such as venothromboembolism, etc.

The ability of refer elective cases to facilities outside the NWHSDA is impaired by receiving site occupancy issues (PGRH was cited) and other restrictions such as the refusal to take additional arthroplasty referrals. The sites rely on BC Bedline to assist in securing accepting sites and surgeons for their patients as needed. This access can be hampered by the rural and remote nature of the HSDA and the need to wait for fixed wing or ground support.

Seasonal closures (Christmas, spring break and summer) occur in all sites and may take the shape of full day or length of slate reductions. Incidental reductions occur primarily in response to work force shortages.

Call Coverage

Overall, there is satisfaction with the general surgery coverage and communication. There was less satisfaction with the orthopaedic coverage which was characterized as “hard to access” and with “inadequate communication” as to which site was providing the call.

Caesarean section coverage is typically coordinated at the site level or between facilities as needed.

CSR

The processing areas within Smithers and Hazelton are small and face some structural challenges for best flow and work design. The staff are very dedicated to their work and it is clear that, in collaboration with Penny Brawn, a great deal of standardization and attention to achieving standards has occurred. The sites have had two reprocessing audits completed as part of the provincial reprocessing work.

All sites have minimized their flash sterilization although Prince Rupert continues to open pan flash sterilization cystoscopes – as this is not in accordance with national standards and sterility is exceedingly difficult to maintain without a flash pack, it is suggested that the equipment in question be reviewed to determine if the issue is that of limited resource, inability to process or other rationale that could be mitigated. In follow-up it was understood that this issue has been reviewed by Penny and modifications to practice have been made.

There are no management information systems for the reprocessing areas but the manual system in place at all sites is comprehensive and ensures traceability in the event of a recall.

Information Management / Information Technology

Improved integration between Surgeons' office systems and hospital based information systems was raised as an issue and creates a barrier to improved efficiencies. Specifically, the central dictation system, available within the hospital platform, is not connected to physician offices, nor is the office-based dictations available within the hospital EHR.

Broader implementation of Physician Information Technology Office (PITO – a BCMA initiative) supported Electronic Medical Records (EMR) across the NWHSDA may improve the flow of data, but work to date has been slow and uptake minimal.

Data for analyses, management and evaluation of Continuous Quality Improvement (CQI) initiatives is limited and proved to be difficult to extract and disseminated for this project. This was echoed in the interviews that the data was not readily available across the Region.

Future State Review and Closing the Gaps

The surgical services review focused on both the strategic context such as vision, governance and planning and the operational context, such as access, efficiency, sustainability and quality of care.

Where insufficient evidence was made available during the review or where more stakeholder input was required and a clear recommendation was not obvious the report provides options that, if explored, could provide solutions in the short to medium term, while development of longer term solutions or additional evidence was examined.

Where data was not made available during the project, the report attempts to describe the type of analysis that would support the recommendations and options.

The recommendations attempt to strike a balance between the desired state and what could reasonably be supported by the realities at the local level. While much of the change required to improve the delivery of surgical services in the NWHSDA is within management control, the significance of resource constraints (human, financial, capital, physical space and equipment), the will of the internal stakeholders and the support of the communities must not be underestimated. The level of commitment from all stakeholders to the implementation of change will determine the degree of success.

Closing the gaps are presented at both the regional level as well as the site level, where appropriate, and follows the framework set out in the current state analysis.

Strategic Context

Guiding Principles

The development of a robust surgical program in the NWHSDA should be grounded in a set of basic principles, be driven by a common vision for service delivery, aligned with broader corporate strategies and be true to the realities present. Aligning the planning from both a strategic perspective (i.e. planning based on a vision and set of guiding principles) and a pragmatic perspective (i.e. planning around existing structures and adjacent programs) is essential. Misalignment may result in competing priorities of the organisation or the inability to overcome health human resource supply and physical space and surgical equipment constraints.

Pollett, et al. In their 2002 paper: *The future of rural surgical care in Canada: a time for action,* created a set of principles as follows:

- All Canadians have a right of access to essential surgical services;
- Surgical services, particularly of an urgent or emergent nature, should be available within a reasonable distance of patients' homes;
- Surgical services should conform to a uniformly high standard of care;
- Surgeons who provide these services and the nursing staff who assist them must be appropriately trained and credentialed;
- Surgeons must be committed to the maintenance of professional competence and progressive continuing education;
- Surgeons must have sufficient support to perform these duties, including physical resources, colleagues and opportunities for personal and professional development.

They went on to say:

> *In a country as large and disparate as Canada there are difficulties and conflicts in adhering to all of these principles. In particular, it may not be possible in remote areas to sustain the necessary infrastructure and ancillary support to provide selected specialty surgical services close to home*[xiii].

We recommend adopting a set of guiding principles, such as those presented by Pollett to guide the development work. The guiding principles would allow clear articulation of the end goal and would assist in the decision making required during the planning phase.

Vision

Creating a common vision would provide a platform to communicate the desired future state. During the interview process, participants were asked what they envisioned as the future state of the NWSHDA surgical services. The following articulates those responses:

> *To effectively manage the emergent, urgent and elective surgical cases in a coordinated and efficient manner; maintaining appropriate access to services which does not place an unreasonable burden on patients or care providers; optimizing physical space and equipment in a sustainable manner.*

It is recommended that NWHSDA adopt a common vision at the onset of the planning for surgical services that aligns with the overall NH vision as noted in the NH Vision – A Picture of 2015.

Strategic Alignment

It is imperative to ensure alignment of the surgical services redesign with the Strategic Directions of NH. *Integrated Accessible Health Services* is addressed under the Governance heading, while *Population Health Approach* is addressed under its own heading. *A Focus on Our People* and *High Quality Services* are imbedded as part of the overall redesign initiatives and articulated under multiple headings.

Governance

The governance of the surgical services must align with the strategic vision developed for the HA and respect the constraints of the geography and service realities. Recommendations are presented under separate heading below.

Systems Model

The most obvious gap noted in the existing structure is the absence of a cohesive and collaborative service delivery model. The current model of five independent and autonomous sites is not sustainable from a number of perspectives including: human resources, physical space and equipment limitations and financial and operational viability.

It is recommended to re-align surgical services from five independent and autonomous site model to a more cohesive and collaborative systems model with a common vision, consistent policies and practices, and a standard set of clinical practice guidelines.

The benefits of a single program with multiple sites improve the coordination of care and allows for improved distribution of resources. For example, the lack of availability of resources for elective surgery in the larger sites whose mandate was to maintain emergent capacity was identified as a quality of care issue in the same way as providing emergent care in the absence of the appropriate backup resources in smaller centres.

A more cohesive and collaborative model was articulated as a desired future state by both clinical and administrative participants. While concerns were raised around potential loss of services at the smaller sites, it was clear that there would be support for a well designed system of care which aimed to optimize each site's scope of practice.

Creation of a program management model of care delivery across NWHSDA for all surgical specialties is warranted. Although this is obvious for urology and ENT given the distribution of surgeons, it is as important to coordinate into a single program the orthopaedic and general surgery programs for both elective and emergent trauma care.

In order to support this new model it is recommended that a Regional Surgical Coordinating Committee (RSCC) be constituted with representation from key stakeholders such as surgeons, anaesthesiology, nursing, and administration. Allied health (OT/PT, pharmacy, diagnostics, etc) and support services (CSD, housekeeping, purchasing, etc) could attend by invite as required. The committee would link to the NH Surgical Council, other HSDA executive and medical committees and to site-level structures such as OR committees and LMACs. The goal of the committee would obviously be to improve the standard of care and the coordination and collaboration between sites. This would be accomplished by: developing and reviewing policies, guidelines and service levels at each site; providing input into the annual operating and capital budget processes; reviewing the financial and operational performance of each site; reviewing and managing waitlist and access issues; providing oversight for research, teaching and new innovations; providing input into and reviewing supply purchasing decisions; and to communicate program goals and successes to external stakeholders. Overlaps with NH Surgical Council should be managed by designating representatives from the committee as opposed to duplicating effort.

Planning and Site Designation

A decision on what type of surgery is done at which sites is critical to ensuring a robust and viable program. The improvement in the coordination and consolidation of medical and surgical services, both elective and emergent, across the NWHSDA, was suggested in the interviews as well as previous studies[xiv,xv,xvi].

Maintaining local surgical services provides improved access for patient closer to home and benefits the broader service delivery for sites. For example, the presence of a vibrant surgical program enables the site to maintain other critical services such as anaesthesia which further facilitates maintenance of obstetrical programs (operative anaesthesia as well as elective regional (epidural) analgesia) and ER (IV sedation and airway management). This breadth of service in turn contributes greatly to attracting and retaining a multidisciplinary clinical team.

Therefore, it is recommended to clearly designate each site in terms of service delivery, patient acuity and procedure complexity. This includes designating what procedures are done by local surgeons (GP-S or Fellow-trained), the capacity for itinerant surgeons and the support for pre and post surgical coordination and intervention in the home community for patients who must travel to receive service. Moreover, these role descriptions should set out the expectations for services that would be provided at all times and those that would be available periodically.

Detailed and robust data and information, which was not available during this project, is required to complete this work.

It is recommended to task the Regional Surgical Coordinating Committee to make the designations.

It is further recommended that the RSCC align with the trauma site designation. This will not only facilitate medical call coordination and ensure critical mass for emergent service delivery, but also optimize surgical and diagnostic equipment and space requirements, while maintaining low-risk elective procedures closer to the home of the patients. Appendix D – BCTAC Level 3 Designation Summary of Requirements highlights the requirements for level 3 designation by the BC Trauma Advisory Committee (BCTAC). Input from Dr. Simons indicated that it is reasonable to expect that the NWHSDA would be best served by consolidating trauma services around a single level 3 site in the northwest.

It is further recommended that the RSCC consider: using clinical decision support tools for predicting risk, such as the American Society of Anesthesiologists (ASA) score; reviewing the current supply of medical, nursing and allied health staff; and examining the allocation of diagnostic and surgical equipment in its deliberations.

This improved coordination of services is most profound for Kitimat and Terrace given their proximity and potential consolidation and sharing of catchment areas. This would benefit both the operation of the sites and access to services for the communities. For example consolidation of orthopaedics would allow KHHC to focus on the high volume low risk elective cases (given the lack of an ICU, diagnostic equipment and staff and bed pressures) while MMH, with its ICU and expanded lab and DI, could focus on the multi-system trauma and more intensive elective cases. Currently, of the 300-400 orthopaedic surgeries completed in Kitimat roughly 80% of them were admitted directly as elective surgery while 20% were admitted through the ER. The future model could maintain much of the existing elective cases in Kitimat (avoiding potential cancelations due to emergent cases)

while completing the higher complexity cases (multi-system trauma or high co-morbid elective patients) in Terrace. Of course this model is predicated on the assumption that the surgeons would participate in multiple site service delivery, a practice that is currently happening to some degree.

It is further recommended that the program plan be supported by an impact assessment of the physical plant, medical and surgical equipment and supportive services. Moreover, development of staffing models (MD, RN, Allied Health) and bed management models based on existing practice standards is warranted.

Leadership

The efforts required to lead the changes suggested cannot be accomplished without dedicated resources. Management of the process redesign, site level changes and change management activities requires a resource with strong clinical and administrative qualities and the ability to engage medical, clinical and administrative leaders. The individual should also possess the ability to communicate effectively with community leaders and understand the importance of monitoring and evaluation.

It is recommended that the NWHSDA create a Change Leadership position to lead the transition. It is further recommended that this individual report directly to the Chief Operating Officer. This resource would also facilitate and support the RSCC. For this position to be effective dedicated business support resources should be allocated to facilitate the data analysis and budget development.

It is further recommended that a Medical Co-leader also be dedicated during the transformation. This role would require less than 1 FTE of effort including Chairing the RSCC. The capacity could be generated by focusing existing administratively paid physicians to this task. However, clear delineation around tasks and time commitments is essential.

Communication

To support the amount of change proposed it is recommended to clearly communicate the vision and direction of the surgery services to internal and external stakeholders. Development of a communication plan through NH's Communication Department is recommended.

Community engagement sessions with Senior Administration and local representation should be utilized to ensure consistent messaging is provided throughout the planning, implementation and review processes.

Population Health Perspective

Although the population of the NWHSDA is expected to remain relatively flat with only a slight 2% growth over the next 15 years, the aging of the population is significant – see Table 4 and

Table 5.

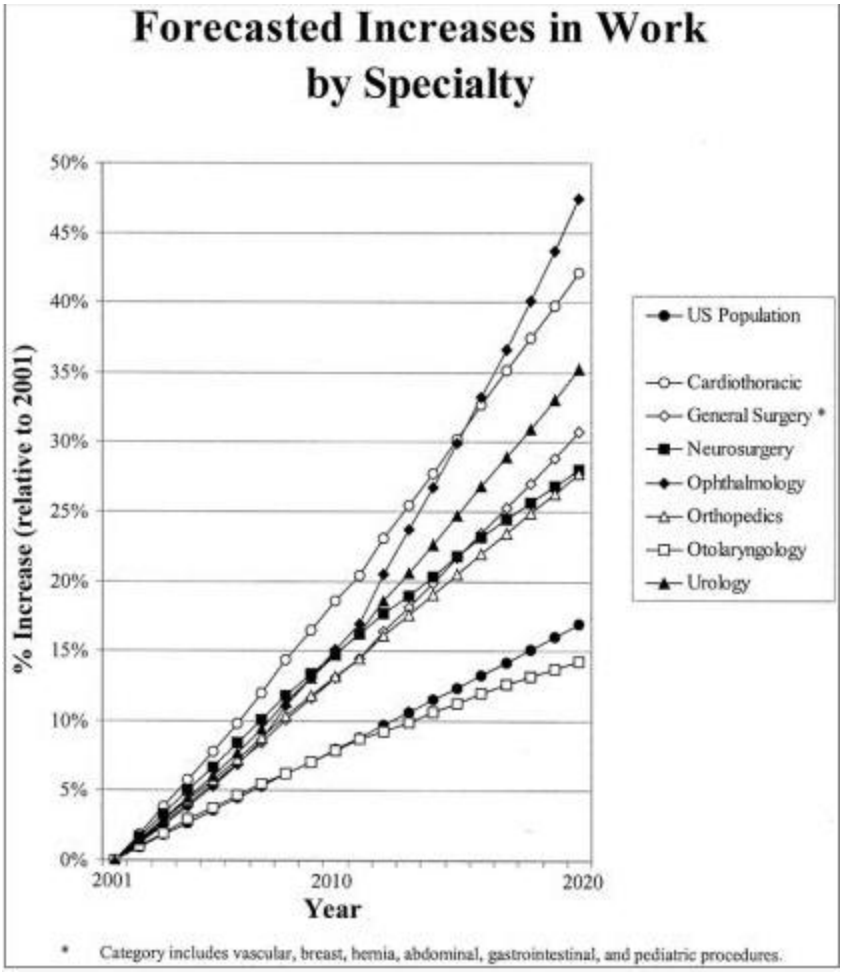
It is recommended that the surgical program develop predictive models for the surgical services based on evidence presented in the literature. The simplest model is to look at existing utilization controlling for age and gender and predicting for a future cohort based on population changes. This method is not without error given that the known factors for current utilization are influenced by supply variables such as surgeon, OR, staff and bed availability, financial constraints and substitutions, when elective cases are diverted to accommodate an emergent case. However, the ability to do simple demand modeling based on historical utilization provides a starting point for planning, while the capacity to do this level of modeling currently exists within NH.

Simply based on the assumption that age-specific per capita use remains constant, it is reasonable to expect significant increases in the magnitude of 15–50% in demand for surgical service over the next 5-10 years. These increases will obviously vary widely by specialty.

A US study[xvii] (using 2001 as a baseline) predicted that this population aging will have a profound impact on the utilization of surgical resources.

Of the surgical specialties examined in the US study, ophthalmology was predicted to have the largest forecasted increase in work (15% by 2010; 47% by 2020). Orthopaedics and urology were predicted to increase by 28% and 35%, respectively, by 2020. Orthopaedics surgery was predicted to have smaller gains than urology as a result of the significant number of procedures performed in patients under the age of 45.

Figure 3 - Forecasted Increases in Surgical Work by Specialty



It is recommended that the planning for surgical services pay particular attention to the ophthalmology, urology and orthopaedics services.

Per Capita Utilization Rates Waitlists and Referral Rates

Limitations in the data that were made available prevented detailed evaluation of opportunities for repatriation. However, further analysis could provide opportunities to improve the referral process and allow for improved distribution and repatriation of cases.

It is recommended that as part of the planning phase the NWHSDA incorporate referral analysis and waitlist data into their volume predictions. This is best done by estimating the degree to which repatriation can be expected. For example, estimating the volume of elective surgery that could be managed closer to home - i.e. repatriating the majority of cases for elective procedures that are currently performed in the NWHSDA or site. This requires data at the procedural level including fields that indicate where the cases were performed and where the patient resides.

Looking at the longest waits (as captured in the SPR data which does not include the consultative wait), the greatest opportunities exist to explore service improvements for residents of Kitimat and Smithers waiting for General Surgery, Orthopaedics and Urology procedures. Waits for residents of Smithers may be a function of the visiting surgeon schedule.

It is recommended that the planning phase of the surgical services redesign address historical access issues as documents in the waitlist data. Recommendations relating to the data collection and management are offered in the section Monitoring Performance Improvements and Patient Safety (QA/CQI)

Waits for residents of Kitimat, (and beyond for those not registered on the SPR system) were attributed to availability of Surgeons, beds and cancelations due to emergent procedures. Recommendations are presented in the Governance section.

Health Human Resources

Health human resources were examined specifically within the review. This included both medical and clinical staff mix as well as standards in training and assessment. Site level vacancies and workforce planning activities were examined for physicians and nursing. It is recommended that a more detailed review of allied health and support service staff would be recommended as part of the impact analysis during the program planning phase.

Physicians

Recruitment of additional surgeons is critical to the enhancement and sustainability of the surgical program in the NWHSDA. For example, data from the Canadian Institute for Health Information indicates that Canada has 3.7 orthopaedic surgeons per 100,000 population, less than the Canadian Orthopaedic Association recommendation of 4.5 orthopaedic surgeons per 100,000 people to meet the needs of the population in a timely manner. Using the current population of the NWHSDA, one would expect to have 2.8 to 3.4 FTEs orthopaedic surgeons. Although use of physician to population ratios has been called into question for rural or regional workforce planning because services are often obtained outside the geographic region they continue to provide a benchmark for comparison.[xviii]

Although current site-level vacancy lists exist, it is recommended that a robust physician resource plan for the NWHSDA be developed in concert with NH as a whole. Leveraging expertise and resources from Corporate Medical Administration, along with local community leadership is required. Moreover, it is recommended that the itinerant surgeon model developed in Smithers should be examined for other like communities – see Appendix C - Detailed Summary of Smithers' Itinerant Surgeon Model

Further, it is recommended that the recruitment efforts be better coordinated. For example, the recruitment visits should be coordinated within NH allowing all 3 HSDA's an opportunity to meet and tour candidates. The biggest cost, especially for International Medical Graduates (IMG's), are the flights to NH. Once in NH, ensuring all candidates experience many communities, within reason, increases the probability that they will select NH to practice, even if the preconceived location was not a fit.

The projected vacancies per location, at the time of the report, are presented in

Table 10. It is recognized that these are fluid and may not represent current needs.

Table 10 - Physician Resource Plans

Facility	Specialty
Bulkley Valley District Hospital (Smithers)	• ENT • Urology
Wrinch Memorial Hospital (Hazelton)	• Family Practice (1-2) • Anesthesiology
Kitimat General Hospital (Kitimat)	• Anesthesiology
Mills Memorial Hospital (Terrace)	• ENT • Urology • Radiology • Anesthesiology
Prince Rupert Regional Hospital (Prince Rupert)	• Family Practice (5) • Anesthesiology

Consideration of team based training over individual Continuing Medical Education (CME) should be explored by the surgical and anaesthesia staff.

The RSCC should review the reverted CME money available in the communities and consider leveraging it to bring training exercises into the communities which would benefit the whole surgical team. The utilization of training mannequins may be available through UNBC or one of the local community colleges to facilitate this training. Coordination with Vancouver General Hospital's Center of Excellence for Simulation Education and Innovation (CESEI) would also provide opportunities to explore improved surgical training, education and skills assessment and maintenance. It is recommended that the RSCC explore opportunities to partner with the local academic institutions and CESEI.

Nursing Staff

Vacancies for peri-operative/peri-anaesthesia nursing staff during the site visits are reported in Table 11

Table 11 - RN Vacancies by Site

Facility	Specialty
Bulkley Valley District Hospital (Smithers)	• 3 OR/PAR RNs
Wrinch Memorial Hospital (Hazelton)	• None
Kitimat General Hospital (Kitimat)	• None
Mills Memorial Hospital (Terrace)	• 2 OR/PAR RNs (one position frozen)
Prince Rupert Regional Hospital (Prince Rupert)	• None

The centers such as Terrace or Prince Rupert, with a larger staffing pool organizationally, could explore the potential to add OR LPNs to the staffing complement. The NWHSDA has a good supply of LPNs through local colleges and OR LPN training could be brokered through Grant MacEwan (Alberta) or SIAST (Saskatchewan). This could be supported in a manner similar to the current OR RN education which is provided through Grande Prairie Regional College and supported by the NH Professional Practice Office (PPO).

The NWHSDA should consider requiring enrolment in formal training of all peri-operative and peri-anaesthesia personnel through educational institutions to avoid the potential weaknesses incurred with internal or "train-on-the-job" experience.

To plan for the future, the NWHSDA should to consider rolling workforce planning exercises that delineate the historical data around attrition, examine current age distribution of staff, project need in the upcoming 5 years, and develop actions plans to manage future demand.

Dental Staff

The use of non-NH staff for dental surgery requires review.

PGRH has addressed this issue in past by hiring all dental assistants as HEU employees which addresses liability issues but creates issues of additional cost and logistical management of the on- and off-staffing of these individuals. A second option would be to develop a contract with the dental surgeons which outlines the requirements they must meet for their employees. This could be developed in collaboration with Ruby Fraser, NH Quality and Risk Manager and implemented as part of the annual credentialing process.

Central Sterile Reprocessing (CSR)

The NWHSDA currently employs only certified CSR technicians which should be maintained in the future. As part of the workforce planning exercise that is updated annually, the issues of human resource planning should encompass CSR personnel.

A process review of CSR using tools such as value stream mapping is recommended. Processing activities and scheduling hours would be examined for all sites but in particular for PRRH. There may be opportunities to

minimize overtime and improve workflow and coverage through the staggering shifts of CSR positions in this facility.

Patient Flow

OR Booking

The OR Booking areas are well run but may benefit from the establishment of NWHSDA or NH-wide booking guidelines to formalize expectations and provide some continuity in structure between sites. An ad hoc OR Booking working group or subcommittee of the RSCC should be established for the NWHSDA to aid in the development of the proposed guidelines as well as promote communication and planning for a variety of tasks including standardized seasonal closures, collaboration in planning for unexpected surgeon vacancies or managing MoHS policies such as the latest waitlist management and auditing requirements.

An electronic booking and scheduling system would greatly assist in the management of peri-operative services, waitlist management and auditing as well as provide a mechanism to generate meaningful and easily accessible data. Coordination with IMIT strategic and tactical plans should be examined.

Pre-Surgical Screening

It is recommended that a standardized pre-surgical screening process throughout the NWHSDA be created. This would provide a mandate to screen all elective patients via telephone or clinic visit and be based on criteria established in collaboration with anaesthesiologists, surgeons and nursing staff. OR Booking Clerks would preliminarily review the patient booking packages and flag those cases for which the pre-surgical nurses should review for a determination of screening type. Ideally this process should be electronic and linked to the OR booking system. Such a program could include the ability for reciprocity of pre-surgical assessment using standardized tools and guidelines at the nearest facility to the patient and the assessment provided to the operating facility.

The established prehabilitation/surgical optimization clinic for arthroplasty patients at Kitimat should be formally evaluated with a view to any improvements and expansion to other orthopaedic sites such as PRRH or MMH should orthopaedics be consolidated within these sites. Prehabilitation or surgical optimization clinics could also be managed within the presurgical screening process as long as it is recognized that the significant difference for optimization involves the assessment and decision for surgery coordinated at the point of GP and early enough to allow patient and support system time to partake of education and lifestyle changes that contribute to a high quality surgical outcome (weight reduction, smoking cessation, etc).

Day Care Surgery

The RSCC should review the surgical data to ensure optimization of day care surgery. This data was not made available during the review and therefore a baseline is not included in the report.

It is recommended that a review of patient flow in Kitimat be conducted to improve coverage when the Switchboard operator takes breaks as this currently delays the preoperative preparation process and delays the OR.

Operating Rooms

All documentation (e.g. case records) was completed manually and as a result, efficiency indicators such as first case starts, turnover times, elective room utilization, etc were compiled manually by the managers/supervisors.

Opportunities for electronic OR systems should be explored as part of the Information Management and technology strategic and tactical plan.

It is recommended that a process review and value stream map[1] for Prince Rupert surgical cases be completed to eliminate delays of up to 2-3 hours for patient preparation (insertion of lines and/or epidurals in PAR where the needed supplies, equipment and trained staff are not consistently available.

It is recommended to standardize the capital equipment list and processes for review by the RSCC, sites and RHDs.

Continue efforts on Regional clinical practice standard development with Gil Lainey as the lead.

Maintain competencies through the provision of in-services as well as attendance at Peri-operative Registered Nurses of BC (PRNBC) chapter events and provincial meetings as funding allows. Alternatively, OR staff may work in another surgical facilities (e.g. Hazelton nurses work in Smithers) to enhance and maintain skills and competency.

Seek opportunities for team-based training with physician colleagues.

Increase the emphasis on quality improvement through improved mortality and morbidity rounds, access to information regarding surgical site infections and other standard surgical quality measures (eg, low mortality CMGs, etc.).

Wrinch Memorial Hospital provided a summary of recommendations, which can be found in Appendix F - Wrinch Memorial Hospital Proposed Innovations

[1] A sophisticated flow charting method that uses symbols, metrics, and arrows to help visualize processes and track performance. This method helps determine which steps add value and which do not.

PAR

Work towards fully cross trained staff in all sites so that coverage of OR, PAR and DCS departments is seamless. Similar to the OR standards development, the NWHSDA may wish to consider the development of a working group responsible for the development of PAR specific standards of care.

Surgical Inpatients

Bed capacity issues were noted at Kitimat, Terrace and Prince Rupert – see Performance Improvements and Patient Safety (QA/CQI) section below.

Reconsider the practice in KHHC of transporting orthopaedic trauma patients, immediately following phase 1-2 recovery, back to their home facility for recovery.

CSR

The processing areas within Smithers and Hazelton are small and face some structural challenges for best flow and work design. Any renovations or redevelopment of these or other surgical areas must include the involvement of the processing staff and NH practice leader to ensure that these areas meet standards now and for the future.

It is recommended to review the practice of open pan flash sterilization of cystoscopes in Prince Rupert as this is not in accordance with national standards – it is understood through follow-up that this has occurred, but an on-site review has not been conducted.

Call Coverage

Improve communication regarding orthopaedic coverage which was characterized as "hard to access" and with "inadequate communication" as to which site was providing the call. This will obviously be improved through consolidation of trauma services.

Physical Site

The review did not include an architectural or engineering assessment. However, there have been previous physical space reviews of the MMH site recently (reports not made available for this review) that indicate the requirement for major renovation or replacement of the site to accommodate increased service volumes and programs. In our physical tour of the site it is clear that renovations and maintenance of the existing surgical areas is required. Specifically, modifications were noted to improve surgical flow for obstetrics patients and to accommodate expansion or enhancement of other specialties as necessary in MMH. Architectural design work has been commissioned and the OR has been slated for renovation but the work has yet to be started.

Expansion of services would require a redesign of existing space in the physical OR of MMH. This would encompass removal of walls to increase the size of the OR suites to improve flow and accommodate equipment intensive orthopaedic surgery. Currently standards for the size of OR suites range from 630 ft^2 to 725 ft^2. However, depending on the age of the equipment being used there may be requirements for larger ORs to accommodate the older and presumably larger equipment (carts, trays and C-arm).

It is recommended that an architectural or engineering assessment of the sites, especially MMH, be completed as part of the impact analysis for redesign.

An alternative, that should be investigated further, is the purchase of portable OR suites that can be attached to the exterior of the current site. Not only does this provide immediate (operational within 6-9 months of order) OR physical capacity, but can serve as a main OR during the renovations of the existing space. The availability of a portable OR also enables NH to relocate it in the future if it is no longer needed at the MMH site.

For example, solutions such as Mobile Medical's Mobile Surgery Unit™ offer: (http://www.mobile-medical.com/mobilemedical-pdf/MSU.Brochure.300106.pdf)

- Operating room designed to meet or exceed U.S. healthcare standards
- Pre-op / post-op areas with capacity for two or three patients (depending upon configuration) Centralized nurses station designed for easy visual and electronic monitoring of all systems
- Soiled utility room designed separate from the "clean" area
- Clean utility room designed to maintain proper sterilization of instruments
- Integrated medical gases zoned for activation with required shut-off valves

This option can be secured for between $2.5M and $3M, depending on configuration, and would provide flexibility for NH in the future – see Appendix E - Mobile Medical International Corporation's Mobile Surgery Unit.

Monitoring Performance Improvements and Patient Safety (QA/CQI)

During the information gathering phase for this project, it became evident that extracting data was a difficult task. Few persons know whether certain data existed or, if it did, how to query databases to extract it. As a first step, NH should document the process that enabled retrieval of the data requested by BMCi for this report. Following that, effort should be directed to determine data to be captured for current and future requirements in support of the RSCC. Data collection and dissemination solutions would then be adapted for both current (manual) and future (electronic) processes. Internally, itemized data requirements for surgical program development, impact assessments and monitoring can be solicited from the RSCC the NH Surgical Committee, MACs, etc, and producers of the annual Region or Authority reports.

NH may want to select a set of indicators that demonstrate progress toward Accreditation Canada readiness, to inform itself, its staff and the public of its efforts and successes. Indicators to support future programming and resourcing needs might also be sought. Agencies to be consulted in the development of a set of indictors include Provincial Surgical Councils and Expert Groups, other Health Authorities, the Ministry of Health, and vendors of surgical services information systems and admission-discharge-transfer systems.

Scheduled (elective) and unscheduled (emergent, urgent) surgical cases compete for the same resources. When demand is high, elective surgeries are cancelled or postponed. Although not entirely predictable, the use of historical utilization data of emergent cases by time of day, day of week and seasonal variation should be used to improve the planning of elective slates. This requires:

- Collecting accurate data on demand for scheduled and unscheduled surgery;
- Collecting accurate data on the volume and arrival patterns of patients representing different components of unscheduled surgical demand: emergent, urgent, semi-urgent, and non-urgent surgeries;
- Determining the average waiting times that would be tolerated for each type of unscheduled surgical demand (e.g., average waiting time for emergent surgeries should not exceed 20 minutes);
- Applying queuing theory to determine the number of OR hours needed for unscheduled demand, based on the average waiting times for different levels of urgency (emergent, urgent, etc.);
- Using information about scheduled case demand, duration, turnover times, and the prime time to estimate the number of OR hours needed for scheduled surgeries.

It is recommended that predictive models be developed to assist in the planning and management of surgical services.

Quality reviews should be formalized with a case review schedule rather than continue in the current ad hoc fashion. Region-wide surgical rounds are encouraged. Case reviews should be planned to extend beyond MMH to all sites that provide surgical services.

Focus on continuous learning and quality improvement should be the goal rather than review of incidents or near misses.

Standardized terms of references for OR Management Committees should be established with input from the RSCC. These committees should be multidisciplinary in nature and provide a forum for planning of equipment needs, slowdowns, manpower management and clearly establish lines of communication between site, HSDA and NH surgical and medical structures.

Improvements to secure data flow between the hospital-based systems, the Surgeons' offices and the Family Practice offices should be explored and work plans developed.

Summary of Recommendations

Table 12 - Summary of Recommendations provides a summary of the recommendation in the report and attempts to assign timelines to the activities (urgency) and the relative risk or impact on stakeholder (low impact would provide quick wins).

Table 12 - Summary of Recommendations

Heading	Recommendation	Timeline	Impact		
			Financial	Site	Comm.
Strategic Context	The review focused on a high level summary of the programs as they stand. It was clear that they continue to operate as 5 independent entities. The key to success going forward is to realign the program to leverage the resources you currently have, align services by balancing the concentration of services for emergent/trauma care while maintaining local elective surgery. A detailed allocation of services at a procedural level is warranted. However the availability of data hindered this level of planning during the study period. We continue push for access to data and until such a time as we have surgical procedural data in hand we must rely on higher level recommendations.				
1. To begin with we recommend that the program be structured around an agreed upon set of principles and a common vision	The development of a robust surgical program in the NWHSDA should be grounded in a set of basic principles, be driven by a common vision for service delivery, aligned with broader corporate strategies and be true to the realities present	Q3 2009/10	Low	High	High
	It is recommended that NWHSDA adopt these as a foundational set of principles to guide their development work.	Immediate	Low	Low	Low
	It is recommended that NWHSDA adopt a common vision at the onset of the planning for surgical services.	Immediate	Low	Low	Low
2. the surgical program be patient centric and include all aspects of the	We recommend that the foundation of the surgical program be supported by a base of primary care community services.	Q4 2009/10	Low	Medium	Medium

patient journey from pre, peri and pos operative. Utilization of tools and techniques such as patient mapping and process mapping was outside the scope of this study, but would be a significant tool for use in planning	It is recommended that a detailed program planning and impact analysis be conducted and incorporate the patient journey through pre, peri and post operative components	Q4 2009/10	Low	Low	Low
	Detailed process reengineering techniques such as value stream mapping, will assist the design of the program	January, 2010	Low	Medium	Low
	Expertise in process design should be sought to lead this initiative.	January, 2010	Low	Low	Low
3. Strike a regional coordinating committee	It is recommended to re-align surgical services from five independent and autonomous sites to a more cohesive and collaborative systems model with a common vision, consistent policies and practices, a standard set of clinical practice guidelines.	Q4 2009/10	Medium	High	High
	In order to support this new model of surgical services it is recommended to strike a Regional coordinating committee with representation from key stakeholders such as surgeons, anesthesiology, nursing, and administration	Immediate	Low	Low	Low
4. Designate sites – use of BCTAC would be most desirable. We have included a summary of the std's in appendix D for level 3 designation – this is likely the highest designation practical for NW given services and resources and would likely only be sustainable at a single site.	It is recommended to clearly designate each site in terms of service delivery, patient acuity and procedure complexity.	January, 2010	Medium	Medium	Medium
	It is recommended to task the Regional Surgical Coordinating Committee to make the designations	January, 2010	Low	Low	Low

	It is recommended that the site designation align with the trauma designation.	January, 2010	Medium	Medium	Medium
4b The RSCC could also use risk tools to identify surgical cases performed at each site – for example limiting ASA 1 and 2 to sites without ICU's	It is further recommended that the RSCC consider: using clinical decision support tools for predicting risk, such as the American Society of Anesthesiologists (ASA) score; reviewing the current supply of medical, nursing and allied health staff; and examining the allocation of diagnostic and surgical equipment in its deliberations.	January, 2010	Low	Low	Low
5. create a change leadership position to lead the transition.	It is recommended that the NWHSDA create a change leadership position to lead the transition.	January, 2010	Medium	Low	Low
6. assign a Physician Co-leader who could act as chair of the RSCC and provide medical Oversight for the transitions.	It is further recommended that a Medical Co-leader also be dedicated during the transformation.	January, 2010	Medium	Low	Low
7. This being said we also recommend that a formal communication plan be developed early in the process to disseminate information to medical, clinical and administrative staff at the sites as well as community stakeholders	It is recommended to clearly communicate the vision and direction of the surgery services to internal and external stakeholders.	Q4 2009/10	Low	Medium	Medium
	Development of a communication plan as part of the planning process must include	January /February, 2010	Low	Medium	Medium

	community engagement. Community engagement sessions with Senior Administration and local representation should be utilized to ensure consistent messaging is provided throughout the planning, implementation and review processes.	January /February, 2010	Low	Medium	Medium
Population Health Perspective					
The rest are tactical level recommendations to support the strategic context. Obviously decision at the strategic level must be made before completing the detailed tactical plans	It is recommended that the surgical program develop predictive models for the surgical services based on evidence presented for the literature	Q4 2009/10	Medium	Low	Low
	It is recommended that the planning for surgical services pay particular attention to the ophthalmology, urology and orthopaedics services.	Q4 2009/10	Low	Low	Low
	It is recommended that as part of the planning phase the NWHSDA incorporate referral analysis into their volume predictions.	January, 2010	Low	Low	Low
	It is recommended that the planning phase of the surgical services redesign address historical access issues as documents in the waitlist data.	January, 2010	Low	Low	Low
Health Human Resources					
	It is recommended that a more detailed review of allied health and support service staff would be part of the impact analysis during the program planning phase.	Q4, 2009/10	Low	Medium	Low
	It is recommended that a robust physician resource plan for the NWHSDA should be developed in concert with NH as a whole.	Q4, 2009/10	Medium	Low	Low
	It is recommended that the itinerant surgeon model developed in Smithers should be examined for other like communities.	January, 2010	Low	High	High
	It is recommended that the recruitment efforts be better coordinated	Immediate	Medium	Medium	Medium
	Consideration of team based training over individual Continuing Medical Education (CME)	Immediate	Medium	Medium	Low

	should be explored by the surgical and anaesthesia staff.				
	The RSCC should review the reverted CME money available in the communities and consider leveraging it to bring training exercises into the communities that would benefit the whole surgical team.	Q4, 2009/10 - Q1, 2010/11	Low	Medium	Low
	It is recommended that the RSCC explore opportunities to partner with the local academic institutions and CESEI.	Immediate	Medium	Medium	Low
	The centers such as Terrace or Prince Rupert, with a larger staffing pool organizationally, could explore the potential to add OR LPNs to the staffing complement	Immediate	Low	Medium	Low
	The NWHSDA should consider requiring enrolment in formal training of all peri-operative and peri-anaesthesia personnel through educational institutions to avoid the potential weaknesses incurred with internal or "train-on-the-job" experience	Q4, 2009/10	High	Medium	Low
	To plan for the future, the NWHSDA may wish to consider rolling workforce planning exercises that delineate the historical data around attrition, examine current age distribution of staff, project need in the upcoming 5 years, and develop actions plans to manage future demand.	Q1, 2010/11	Medium	Medium	Low
	As part of the workforce planning exercise that is updated annually, the issues of human resource planning should encompass CSR personnel	Q1, 2010/11	Low	Low	Low
	A process review of CSR using tools such as value stream mapping is recommended.	Immediate	Medium	Medium	Low
	Processing activities and scheduling hours would be examined for all sites but in particular for PRRH.	Immediate	Medium	Medium	Low
	The use of non-NH staff for dental surgery requires review.	Immediate	Low	High	Low
	option 1 - hiring all dental assistants as HEU employees		High	High	Low
	option 2 - contract with the dental surgeons and specifically outline the requirements they must meet for their employees		Low	Low	Low
Patient Flow	***OR Booking***				
	The OR Booking may benefit from the establishment of NWHSDA or NH-wide booking guidelines	Q1, 2010/11	Low	Medium	Low
	An ad hoc OR Booking working group or subcommittee of the RSCC could be established for the NWHSDA to aid in the development of the proposed guidelines as well as promote communication and planning	Q4, 2010/11	Low	Medium	Low

An electronic booking and scheduling system would greatly assist in the management of peri-operative services, waitlist management and auditing as well as provide a mechanism to generate meaningful and easily accessible data. Coordination with IMIT strategic and tactical plans should be examined.	Fiscal 2010/11 Immediate	High Low	High Low	Low Low
Pre-Surgical Screening				
It is recommended that a standardized pre-surgical screening process throughout the NWHSDA be created.	Q1, 2010/11	Medium	Medium	Medium
The established prehabilitation/surgical optimization clinic for arthroplasty patients at Kitimat should be formally evaluated with a view to any improvements and expansion to other orthopaedic sites	Q1, 2010/11	Medium	Medium	Medium
Day Care Surgery				
The RSCC should review the surgical data to ensure optimization of a day care surgery	Immediate	Low	Medium	Low
Improve patient flow in Kitimat when the Switchboard operator takes breaks and there is no one to register the patient preoperatively	Immediate	Low	Medium	Low
Opportunities for electronic OR systems should be explored as part of the Information Management and technology strategic and tactical plan.	Fiscal 2010/11	High	High	Low
It is recommended that a process review and value stream map for Prince Rupert surgical cases be completed to eliminate delays of up to 2-3 hours for patient preparation	January, 2010	Medium	High	Medium
Operating Rooms				
It is recommended to standardize the capital equipment list and processes for review by the RSCC, sites and RHDs.	Immediate	Low	Low	Low
Continue efforts on Regional clinical practice standard development with Gil Lainey as the lead	Ongoing	Low	Medium	Low
Maintain competencies through the provision of in-services as well as attendance at Peri-operative Registered Nurses of BC (PRNBC) chapter and provincial meetings as funding allows	Ongoing	Medium	Medium	Low
Seek opportunities for team-based training with physician colleagues.	Q1, 2010/11	Medium	Medium	Low

	Increase the emphasis on quality improvement through improved mortality and morbidity rounds, access to information regarding surgical site infections and other standard surgical quality measures (eg, low mortality CMGs, etc.).	Q4, 2009/10	Medium	Medium	Low
	PAR				
	Work towards fully cross trained staff in all sites so that coverage of OR, PAR and DCS departments is seamless.	Ongoing	Medium	Medium	Low
	Consider the development of a working group responsible for the development of PAR specific standards of care.	Immediate	Low	Medium	Low
	Surgical Inpatients				
	Reconsider the practice in KHHC of transporting orthopaedic trauma patients, immediately following phase 1-2 recovery, back to their home facility for recovery.	Immediate	Medium	High	Medium
	CSR				
	Any renovations or redevelopment of these or other surgical areas must include the involvement of the processing staff and NH practice leader to ensure that these areas meet standards now and for the future.	Ongong	Medium	Medium	Low
	It is recommended to review the practice of open pan flash sterilization of cystoscopes in Prince Rupert	Immediate	Low	Medium	Low
	Call Coverage				
	Improve communication regarding orthopaedic coverage which was characterized as "hard to access" and with "inadequate communication" as to which site was providing the call.	Ongoing	Low	Low	Low
Physical Site					
	It is recommended that an architectural or engineering assessment of the sites, especially MMH, be completed as part of the impact analysis for redesign. An alternative, that should be investigated further, is the purchase of portable OR suites that can be attached to the exterior of the current site.	Q1, 2010/11 Q1, 2010/11	Medium High	Medium High	Low Low
Monitoring Performance Improvements and Patient Safety (QA/CQI)					

NH should document the process that enabled retrieval of the data requested by BMCi for this report.	Immediate	Low	Low	Low
Effort should be directed immediately to determine data to be captured for current and future requirements in support of the RSCC	Immediate	Medium	Low	Low
NH may want to select a set of indicators that demonstrate progress toward Accreditation Canada readiness, to inform itself, its staff and the public of its efforts and successes	Q1, 2010/11	Low	Low	Low
It is recommended that predictive models be developed to assist in the planning and management of surgical services.	Q4, 2009/10	Low	Low	Low
Quality reviews should be formalized with a case review schedule rather than continue in the current ad hoc fashion	Q1, 2010/11	Medium	Medium	Low
Case reviews should be planned to extend beyond MMH to all sites that provide surgical services. Focus on continuous learning and quality improvement should be the goal rather than review of incidents or near misses.	Q1, 2010/11 Ongoing	Medium Medium	Medium Medium	Low Medium
Improvements to secure data flow between the hospital-based systems, the Surgeons' offices and the Family Practice offices should be explored and work plans developed.	Ongoing	Medium	Medium	Low

Appendix A -Detailed Summary of Site Visit Interviews

Smithers (Bulkley Valley District Hospital)

Health Human Resources (at time of review)

1. Number and skill mix of staff and physicians:
    - **Nursing**
        - All RN staffing covering OR, PAR and DCS – 2 RNs per OR or endoscopy suite
        - On call (with full staffing) is covered by RNs one week at a time; response time is approximately 15 minutes (on call staff stay within a 15 km chain)
        - 6 permanent RN positions in total; 4 casual nurses
        - No OR LPNs as RNs need the flexibility to cover OR/PAR/ER and DCS
        - No Pre Surgical Screening clinic – done informally through consults
        - Dental assistant is employed by dentist and attends all dental surgery in the scrub role with RN circulating
        - C sections are managed by 2 OR/PAR nurses as well as 1 nurse to care for the new born
    - **Physicians**
        - 25 family practice physicians for population base of 5000 (3 clinics, 1 walk in); also serve Burns Lake and Hazelton depending on their ability to provide surgical services due to manpower
        - 3 GP anaesthetists (1 week of call, 2 off)
        - 4 gp surgeons (c sections including high risk and twin deliveries, tubal ligations, T&As, appendectomies, etc)

2. Current vacancies by department
    - **Nursing**
        - 3 OR/PAR RN vacancies
    - **Physicians**
        - 1 ENT surgeon (Itinerant)
        - 1 urology surgeon (near future)

3. Itinerant Surgeons:
    - 2 gynaecologists
    - 3 general surgeons (lap choleys, hernias, mastectomies, hemorhoidectomies, vein stripping, no major abdominal surgery as no critical care services in-house)
    - 2 orthopaedic surgeons
    - 1 internal medicine
    - 1 rheumatoid arthritis
    - 1 paediatrician
    - 1 urology surgeon
    - 1 dentist

4. Demographics re age, attrition, education:
    - 1 OR/PAR RN near retirement age
    - Have used GPRC for perioperative education (through Norma Johns, PPO) while practicum arranged externally at RIH (Kamloops, Duncan or Prince Rupert) (PGRH unable to accommodate as they run an internal program).

5. HHR Projections
    - No formal analysis completed but due to small number of staff, overall awareness of upcoming attrition
    - Existing local or visiting physicians who plan to leave arrange to secure a replacement physician and have been able to manage this through a process of self referral. It was noted that the UNBC medical program also assists with this.

6. Gaps in Service/Seasonal Slowdowns
    - 2 week closure planned for Christmas
    - 2 weeks over past summer with no on call due to nursing shortage

7. Competency Management
    - BVDH policies in place
    - Staff attend regular education (BCLS, ACLS, NRP)as well as available in servicing
    - Current staff have been trained internally (experienced nurses training new staff)and are supernumerary during orientation

8. Management of staff shortages
    - Use of agency nurses to cover OR/PAR vacancies
    - Summer closure due to shortage

Administration

Leadership and Governance

1. Effectiveness of Administrative, Clinical and Medical Structures
    - **OR Committee** – meets on an ad hoc basis and membership includes the director of nursing, health service administrator, nursing and processing staff, chief of surgery and anaesthesia, booking staff and members of surgery and anaesthesia. The Committee is chaired by the OR manager and functions include review of waiting lists, new equipment (or requests) or information, OR allocation and staffing issues.

2. Minutes/Supporting Documentation
    - Three year Accreditation noted, no specific recommendations known for surgical by staff or physicians
    - Reprocessing audits provided
    - Minutes of OR Committee meetings provided

Organization

1. Linkages to regional supports
    - Linkages to NHA Professional Practice Office for perioperative education support
    - Attend local BCORNG meetings
    - Some concerns expressed re ability of PGRH to meet referral needs (specifically PG orthopods are not accepting elective arthroplasty referrals)
    - Northern Connections bus system in place and utilized
    - Not aware of regional surgical clinical standards (through Gil Lainey, PGRH)
    - Effective working relationships with regional processing leader, Penny Brawn
    - Good working relationships with regional purchasing – no concerns re recent MedBuy conversions, ability to access specific surgical products

2. Current Booking Practices
    - Slates are stopped for c sections (4-6/month out of 200 deliveries annually)
    - Itinerant surgeons' clinic visits and slates are managed by OR Booking and a Clinic clerk who were described as highly organized and efficient
    - Booking packages include booking form, history & physical, SPR assessment tool and are entered into an Excel spreadsheet to produce the slate. OR charge nurse reviews slates and prioritizes with surgeons as needed.
    - Special equipment/loaners are noted on a white board and arranged to arrive 48 hours in advance with associated processing instructions
    - Visiting surgeon wait lists are managed by scheduling the patients booked for surgery for the upcoming visit. Urgent cases are booked while the visiting surgeon is on site and sites does not book surgical cases on the Friday to order to ensure continuity of care can be managed post op
    - SPR assessment scores are entered into system and error management is maintained

3. Bed Allocation
    - 18 beds which includes 4-5 maternity beds, 24/7 ER and no critical care unit
    - Anecdotally note that occupancy is low and access to beds for surgical patients is not an issue

4. OR Allocation
    - 2 ORs, one of which functions as endoscopy (diagnostic and interventional, no ERCP)
    - Elective surgery operates Tuesday – Friday (0800 – 1300), 80% of surgical case load is endoscopy and is completed between scheduled OR cases
    - Some confusion over notice of established slate days for local surgeons.
    - General surgery has two weeks per month with local surgeons taking the Fridays of these weeks.

5. Standardized processes and procedures
    - Efficiency
        - Changeovers between cases is extended as nursing staff perform the majority of the case turnover and patient recovery
        - Endoscopy patients are managed by GP anaesthetists using Propofol or Midazolam
        - ALC numbers for inpatient beds is not a concern. Rare to have slate postponements due to bed access issues
        - Average of 1 surgical admission per day
        - Add on cases are managed at the end of the slates when possible (unless urgency dictates immediate surgery)
    - Safety
        - Initiated the practice of surgical time outs, site marking and the surgical safety checklist processes 2 months ago
        - Processing audits completed and recommendations have been well managed and implemented (receive dental equipment day prior to surgery for in-house processing and sterilization)
        - Prophylactic antibiotics not required for majority of site cases
    - Quality
        - Receive regular positive public feedback on services – when change was needed, physicians and staff worked closely with community leaders to facilitate the culture shift, fund-raise, etc.
    - Wait List Management

- Some concern by local surgeons regarding waitlist of up to 3 months for procedures such as T&As (child sick by the time date of surgery arrives)
- Urgent cases are completed on the same day as decision for surgery
- Cases are booked by urgency
- Informal guidelines in place (e.g. 3 strike rule for refusal of surgery dates); unaware of MOHS Communiqué re Waitlist management expectations as yet

Collaboration

1. Coordination and effectiveness of services between sites and services
    - Experience some issues with access to beds in Prince Rupert. First call when a patient requires transfer is to BC Bedline. It was noted that there is a variable response to LLTO cases and Prince George is often unable to assist due to capacity challenges.
    - Transport arrangements are primarily ground although air support is occasionally available.

2. Structures to facilitate collaboration
    - Local MAC – has surgical representation and addresses quality assurance issues, this committee reports through to the North West Regional MAC.
    - Regional Surgical Committee – has representation from some of the itinerant surgeons

3. Function of Shared Call
    - Physicians expressed overall satisfaction with the surgical call system
    - Visiting surgeons indicate that they have experienced nominal call when present in Smithers
    - Orthopedic call for the NW is a concern – it is known that bed access for Prince Rupert is an ongoing issue and generally transfer is not attempted there.

Information Systems and Statistics

1. Statistics
    - ALOS – noted that T&A cases are completed as DCS unless they are over 16 years of age
    - Referral and utilization patterns – not provided
    - Same Day Surgery, clinic and MNRH data – surgeons do prefer to provide vasectomy procedures in OR as opposed to ER or office as physicians find the latter conditions less than ideal
    - Surgical Site Infections – no information available but planned for spring, 2010

2. Quality Measures
    - No formal process for internal indicators
    - Risk issues are dealt with on an ad hoc basis through Ruby Fraser (NHA Quality & Risk) and tends to be an incident event driven process
    - Participate in the MoreOB program

3. Efficiency Measures
    - The surgeons demonstrated an awareness of the need to minimize overtime and assess their patients accordingly; manage to complete between 12-16 procedures per day (combined OR and endoscopy case)
    - Currently no formal presurgical screening program. Anaesthesia will assess patients as identified by surgeon consult or co-morbidities/abnormal lab results flagged by the OR booking clerk
    - Monitor timeliness of access for c sections (completed manually)
    - Have monitored first case start times in past but not recently

4. Information Management
    - Cerner provides basic EMR capability (no surgical capacity at present); can generate basic statistics out of the Excel spreadsheets.
    - Relatively new implementation – statistics are not easy to produce from system and appear to need face validation checks for accuracy and reasonableness
    - Patient Safety Learning System has been implemented.

5. Information Systems and Effectiveness
    - Visiting surgeons do not have remote access to preview their slates but do use Cerner system and have access to PACS
    - Slates are produced manually (no scheduling software)

Budget

1. Current Operating budget (annual) – not provided
2. Capital budget (historical expenditures) – not provided
3. Capital equipment
    - Satisfaction expressed with existing equipment although some concern expressed related to age of anaesthetic equipment (serviced by NHA Biomed)
    - Noted that most equipment is supported by donation rather than through the regional authority structures. Operation Keyhole was a significant success and ensures that the community was aware that the funds remained local.
    - Would like to see a rolling replacement cycle in place for equipment so that end-of-life is not reached without replacement funds appropriated
4. Capital construction
    - BVDH scheduled for replacement in 2015/16

Resources

1. Assessment of resources for program sustainability
    - Human – currently the biggest concern is OR nursing and in particular the amount of on call performed by the nursing staff. Were interviewing an experienced OR nurse on the day of site visit.
    - Financial – no concerns indicated although budget pressures are always present
    - Structural – facility is older but adapted to needs; visiting clinic space in immediate adjacency to booking and surgical area is optimal. It was noted that there is not adequate physical separation between processing areas and OR areas but this has been requested.
    - Information systems – Cerner in place for basic EMR but there is no regional system for surgical services (scheduling, case records, preference cards, etc)

2. Desired changes or areas of pride
    - Surgeons (local and visiting) are very proud of the services provided (surgical tourism was a phrase in reference to the model) and believe that the model should be one replicated through the North West. It is successful through the dedication of physicians, nursing and processing staff and takes the pressure off the flagship/regional referral centers.
    - Feel that program could be expanded to additional DCS procedures and build on success of funding for equipment (e.g. Operation Keyhole)
    -

Potential Opportunities:
Standardize perioperative nursing education for all future OR/PAR staff to NHA standard of Grande Prairie Regional College
Consider yearly staff visits to larger, high volume OR/PAR for opportunities to experience a broad range of surgical experiences and competency consolidation
There may be opportunity for the addition of OR LPNs to assist with OR vacancies although the shared OR/PAR coverage will limit the efficacy of this staff mix as two RNs are required for the recovery of phase 1 surgical patients and the OR/PAR staff also cover ER. This could be mitigated by the co-location of post op patients in an adjacent staffing department such as ER.
Provision of a surgical template and assigned dates for local and visiting surgeons to maximize local surgeons' ability to plan office and OR days.
Consider risk issue of non employee/credentialed dental assistants providing direct patient care in OR. Options may include hiring assistants as casual (organizational expense) or developing a contract in collaboration with Risk Management to ensure appropriate coverage (WSBC, licensure, etc) is maintained by dentist.
Consider development of a NHA or NW pre surgical screening program with standardized assessment (telephone or visit) in collaboration with anaesthesia
Increase linkages with regional surgical structures by participating in clinical standards development sessions (when staffing levels allow)

Hazelton (Wrinch Memorial Hospital)

Health Human Resources (Staff and Physicians are employees of United Church)

1. Number and skill mix of staff and physicians:
    - **Nursing**
        - All RN staffing covering OR, PAR and DCS – 2 RNs per OR or 1 RN/LPN endoscopy suite
        - No on call rotation – OR staff are placed on call when a labouring patient present to site. No concerns raised with this process.
        - 1 LPN (primarily for endoscope processing)
        - No Pre Surgical Screening clinic – done informally through consults
        - Dental assistant is employed by dentist and attends all dental surgery in the scrub role with RN circulating
        - C sections are managed by 2 OR/PAR nurses as well as 1 nurse to care for the new born
        - Housekeeping assists with room turnovers
    - **Physicians**
        - 7 family practice physicians for population base of 7000 plus 1 private, fee-for-service family practice physician. Currently recruiting 1.7 – 2.0 additional physicians.
        - Serve 7 First Nations communities and experience significant transportation issues
        - 1 GP anaesthetist with a second GP currently away to take anaesthesia training
        - 1 gp surgeon (c sections are low risk, tubal ligations, T&As, appendectomies, carpal tunnel releases, breast biopsies, cystorectocele repairs)
    - **Processing**
        - 2 processing technicians (certified)

2. Current vacancies by department
    - **Nursing** – none currently
    - **Physicians**
        - Currently recruiting 1.7 – 2.0 additional physicians
        - Dr. Mike Whitehead (recently retired from Kamloops) may do locums
        - Require additional anaesthetic coverage

3. Itinerant Surgeons:
    - 1 ENT (starting in October)
    - 1 dentist (accompanied by dental assistant)
    - 1 gp surgeon
    - 1 respirologist (bronchoscopies)
    - 1 obs/gyne (no minimally invasive procedures)
    - Clinical and Anatomical Pathologist starting soon (thyroid biopsies)

4. Demographics re age, attrition, education:
    - Have used GPRC for perioperative education (through Norma Johns, PPO)
    - Facilitate up to 60 student placements per year including nurse practitioners, family practice and nursing. LPN and care aide students are accommodated from the local First Nations College

5. HHR Projections
    - No formal analysis completed but due to small number of staff, overall awareness of upcoming attrition
    - Presence of local community college and participation in student placement greatly assists in recruitment

6. Gaps in Service/Seasonal Slowdowns
    - Will occasionally have to restrict admissions due to staffing levels

7. Competency Management
    - Current staff have been trained internally (experienced nurses training new staff) as well as formally and are supernumerary during orientation
    - 2 of the OR staff also pick up work in Smithers to increase skill consolidation and experience (4-8 days/month)
    - Participate in regional teleconferences on surgical standard development monthly
    - CSR techs participate in CSA education offerings

8. Management of staff shortages
    - Use of agency nurses and overtime to cover OR/PAR vacancies
    - Can reduce ability to admit if staffing levels are inadequate
    - Overtime is minimized (have second lowest weighted case costs in BC

Administration

Leadership and Governance

1. Effectiveness of Administrative, Clinical and Medical Structures
    - No formal structures in place but team works well together
    - Credentialing is through the NHA structure

2. Minutes/Supporting Documentation
    - Three year Accreditation noted, not aware of specific recommendations for surgical
    - Reprocessing audits done – no records provided
    - No minutes of OR Committee meetings provided

Organization

1. Linkages to regional supports
    - Linkages to NHA Professional Practice Office for perioperative education support
    - Some concerns expressed re ability of PGRH to meet referral needs
    - Northern Connections bus system in place and utilized
    - Participates in regional surgical clinical standards (through Gil Lainey, PGRH)
    - Effective working relationships with regional processing leader, Penny Brawn
    - Good working relationships with regional purchasing – no concerns re recent MedBuy conversions, ability to access specific surgical products

2. Current Booking Practices
    - Slates are stopped for c sections (4-6/month out of 200 deliveries annually)
    - Booking packages include booking form, history & physical, SPR assessment tool and are entered into an Excel spreadsheet by the OR Booking clerk to produce the slate. The clerk screens the surgical bookings and OR nurses call the patient to determine if an anesthetic consult is needed. This clerk also books physicians' clinics and consults in a paper based system
    - Visiting surgeon wait lists are managed by scheduling the patients booked for surgery for the upcoming visit. Urgent cases are booked while the visiting surgeon is on site and sites does not book surgical cases on the Friday to order to ensure continuity of care can be managed post op
    - SPR assessment scores are entered into system

3. Bed Allocation
    - 10 beds which includes 2 maternity beds, 24/7 ER and no critical care unit
    - Anecdotally note that occupancy is low and access to beds for surgical patients is not an issue
    - ALOS is well below averages
    - ALC rates are low but noted that there is a lack of home support resources

4. OR Allocation
    - 2 ORs, one of which functions as endoscopy (diagnostic and interventional, no ERCP)
    - Elective surgery operates 0900 - 1500, majority of surgical case load is endoscopy and is completed between scheduled OR cases

5. Standardized processes and procedures
    - Efficiency
        - Endoscopy patients are managed by GP anaesthetists using Propofol or Midazolam
    - Safety
        - Initiated the practice of surgical time outs, site marking and the surgical safety checklist processes
        - Processing audits completed and recommendations have been well managed and implemented (receive dental equipment day prior to surgery for in-house processing and sterilization)
        - Received funding to discontinue practice of reprocessing critical single use devices
    - Quality
        - Conduct regular mortality and morbidity rounds
        - Do not receive regular infection control reports or statistics
        - Risk issues are coordinated in a one-off manner through NHA Risk Management
    - Wait List Management
        - Currently a 6-8 month wait time of which 75% is endoscopes (primarily colonoscopies)
        - Cases are booked by urgency

Collaboration

1. Coordination and effectiveness of services between sites and services
    - First call when a patient requires transfer is to BC Bedline for LLTO cases or cases that cannot be managed on site.
    - Transport arrangements are primarily ground although air support is occasionally available. Road conditions such as fog can be an issue. It would be helpful to have Medevac stationed in the North.
    - There are occasions where physicians may drive to a site to assess a patient and then return while on call.

2. Structures to facilitate collaboration
    - Structures have been informal

3. Function of Shared Call
    - Physicians expressed overall satisfaction with the general surgical call but were concerned that sometimes expected call coverage was not there for ortho. Ortho bed access is another concern as PGRH cannot be relied on due to capacity issues and therefore BCBedline must coordinate.
    - Another concern was the changeover of radiology call at noon and having to restart to get films, etc read. It was suggested that there should be a consistent handover between specialists on call.

Information Systems and Statistics

1. Statistics
    - ALOS – noted that ALOS is well below average
    - Referral and utilization patterns – not provided
    - Same Day Surgery, clinic and MNRH data – not covered
    - Surgical Site Infections – no information available

2. Quality Measures
    - No formal process for internal indicators (first case starts, turnovers, etc)
    - Risk issues are dealt with on an ad hoc basis through Ruby Fraser (NHA Quality & Risk) and tends to be an incident event driven process
    - Participate in the MoreOB program
    - Site does not flash sterilize

3. Efficiency Measures
    - The surgeons demonstrated an awareness of the need to minimize overtime and assess their patients accordingly;
    - Currently no formal presurgical screening program. Anaesthesia will assess patients as identified by surgeon consult or comorbidities/abnormal lab results flagged by the OR booking clerk
    - Monitor timeliness of access for c sections (completed manually)
    - Have monitored first case start times in past but not recently

4. Information Management
    - Cerner provides basic EMR capability (no surgical capacity at present)
    - Relatively new implementation – statistics are not easy to produce from system and appear to need face validation checks for accuracy and reasonableness
    - Patient Safety Learning System has been implemented.

5. Information Systems and Effectiveness
    - Visiting surgeons do not have remote access to preview their slates but do use Cerner system and have access to PACS
    - Slates are produced manually (no scheduling software)

Budget

1. Current Operating budget (annual) – described as a current challenge for the site
2. Capital budget (historical expenditures) – not provided
3. Capital equipment
    - Satisfaction expressed with existing equipment but funding is an issue as the community as a whole has experienced severe economic downturns due to a ten year loss of industry base
    - Noted that equipment is supported by donation as well as the regional authority structures.
    - Would like to see the introduction of an automated scope flusher (Scope Buddy), minimally invasive equipment and a SterisOne sterilizer
    - Scope repairs are managed on an ad hoc basis as the site has Pentax equipment and the rest of the health authority has standardized to Olympus and are able to take advantage of the NHA negotiated third party contract
    - Flash sterilization is not done
4. Capital construction
    - Scheduled for replacement in 2016/17

Resources

1. Assessment of resources for program sustainability
    - Human – concerns center primarily around recruitment of additional family practice physicians and ability to manage anaesthetic coverage
    - Financial – no specific concerns
    - Structural – facility is older but adapted to needs; visiting clinic space in immediate adjacency to booking and surgical area is optimal.
    - Information systems – Cerner in place for basic EMR but there is no regional system for surgical services (scheduling, case records, preference cards, etc)

2. Desired changes or areas of pride
    - Feel that there is time and space available so that the surgical program could be expanded to additional DCS procedures (ortho and cataract surgery) as well as repatriate local residents who have undergone arthroplasty post op day 3-5 and manage mobilization locally.
    - Very proud of site staff and their commitment to delivering high quality patient care. It was noted that the staff and physicians go to great lengths to deliver this care.

Potential Opportunities:
Consider yearly visits for all OR staff to larger, high volume OR/PAR for opportunities to experience a broad range of surgical experiences and competency consolidation
Consider risk issue of non employee/credentialed dental assistants providing direct patient care in OR. Options may include hiring assistants as casual (organizational expense) or developing a contract in collaboration with Risk Management to ensure appropriate coverage (WSBC, licensure, etc) is maintained by dentist.
Consider development of a NHA or NW pre surgical screening program with standardized assessment (telephone or visit) in collaboration with anaesthesia
Consider formalization of OR management structure with linkages for formal MAC and RMAC structures to monitor quality, indicators, etc.
Consider development of a specialist handover to ensure that there is sharing of information.
Explore site suggestion of more formalized meeting with Smithers physicians to address call concerns

Kitimat (Kitimat General Hospital)

1. **Health Human Resources (**Number and skill mix of staff and physicians):
   - **Nursing**
     - All RN staffing covering OR, PAR and DCS – 2 RNs per OR or endoscopy suite. Six nursing staff including the OR charge nurse. Run 1 OR Monday to Friday as well as endoscopy, all other times, staff on call. Patients are admitted and discharged through PAR (no formal DCS area).
     - OR RNs on call rotate to ensure 24 hour coverage.
     - Pre Surgical Screening clinic – done through consults, telephone and visit screening and standardized diagnostics orders pre operatively.
     - Conduct a Joint Optimization Clinics (prehab) for arthroplasty patients which is attended by a multidisciplinary group for education purposes
     - Dental assistant is employed by dentist and attends all dental surgery in the scrub role with RN circulating
     - C sections are managed by 2 OR/PAR nurses as well as 1 nurse to care for the new born
     - Housekeeping assists with room turnovers
   - **Physicians**
     - 1 orthopedic surgeon (hip, knee and shoulder arthroplasty serving Terrace & Kitimat)
     - 1 gp anaesthetist (provides pain management services as well)
     - Family practice physicians provide low risk c sections
     - Total of 6 physicians
   - **Processing**
     - 1 CSR technician (works Monday to Friday) and 1 casual. HSA indicated that staffing levels for CSR could be improved (demand of emergency add on work).
   - **Rehab Staffing**
     - 1 FTE of PT and OT as well as a physio assistant

2. Current vacancies by department:
   - **Nursing** – none currently
   - **Physicians**
     - Require additional anaesthetic coverage

3. Itinerant Surgeons:
   - 1 dentist (accompanied by dental assistant)
   - 1 urologist (from Terrace)
   - 1 general surgery (from Terrace)
   - 1 anaesthesiologist (from Terrace)

4. Demographics re age, attrition, education:
   - Community as a whole is seeing more retirements in situ rather than relocating to other communities. The community is characterized by a fairly significant number of transient workers and the HSA is working with community leaders (e.g. Alcon) to facilitate communication.

5. HHR Projections
   - OR staff as a whole are relatively young in age and many have originated from the Philippines
   - No formal people planning has occurred for the site

- Utilizes regional NHA recruitment strategies (both internal and externally)
- Physicians would like to see an additional orthopaedic surgeon recruited to assist in the on call burden. It is recognized that access to inpatient beds would be an access but they would be open to discussions around the transfer of residents back to their home facilities (e.g. Smithers, Burns Lake, Hazelton)

6. Gaps in Service/Seasonal Slowdowns
   - Planned slowdown of 2 weeks over Christmas season – information will be taken to the local meeting on October 8th. Will also be considering other slow downs in order to manage maintenance needs of surgical area.

7. Competency Management
   - Current OR staff have been primarily trained out of country and provided orientation upon arrival
   - Participation in regional teleconferences on surgical standard development monthly – to be confirmed

8. Management of staff shortages
   - Use overtime or work short to cover OR/PAR vacancies
   - Exploring the concept of cross training OR staff to areas outside the OR (not a popular subject) as per the 2008 operational review recommendations.

Administration

Leadership and Governance

1. Effectiveness of Administrative, Clinical and Medical Structures:
   - Local MAC meets once a month
   - Mortality and Morbidity rounds are regularly conducted
   - OR Utilization meets once per month to discuss closures and specific concerns. Could incorporate quality assurance into these processes
   - Medical staff meetings are held separately

2. Minutes/Supporting Documentation:
   - Three Year Accreditation noted, not aware of specific recommendations for surgical
   - Reprocessing audits done – no records provided
   - No minutes of OR Committee meetings provided

Organization

1. Linkages to regional supports:
   - Linkages to NHA Professional Practice Office for perioperative education
   - Some concerns expressed re ability of PGRH to meet referral needs and delays in accessing critical care beds through BC Bedline
   - Northern Connections bus system in place and utilized
   - Effective working relationships with regional processing leader, Penny Brawn
   - Good working relationships with regional purchasing – no concerns re recent MedBuy conversions with the exception of the Covidien mesh contract, able to access specific surgical products

2. Current Booking Practices:

- Booking packages include booking form, history & physical, SPR assessment tool and are entered into an Excel spreadsheet by the OR Booking clerk to produce the slate. Based on surgeon's requests for anaesthesia consults, phone or visits are arranged with patients
- SPR assessment scores are entered into system but no error management is occurring. The assessment tools are batched and are entered when there is time as opposed to the date received.
- System is managed through a homegrown system in Excel and bookings are done well in advance. Available time created by surgeon vacancies is distributed by length of waiting list to available surgeons.
- The full time booking clerk has manually calculated case duration times as well as average turnover times (17 minutes) and uses this information to ensure that slates are booked accurately. She also follows a three strike rule for when patients are refusing 3 surgical dates without valid reason. Not aware of the recent MOHS Communiqué regarding wait list management.
- When there is a need to slow the OR, slates are scheduled to end at 1400 hours. Slowdowns are historically not scheduled for summer or spring break.

3. Bed Allocation
    - 18 med/surg beds & 2 maternity, 24/7 ER and no critical care unit. There is a close observation area within these beds but surgical beds are not protected and ALC occupancy rates are high which create bed access issues (lack of alternate care facilities). The site tries to plan in advance and preserve the slate.
    - ALOS is a concern – there may be a practice where surgeons retain patients in hospital and discharge in time for a fresh post op as a way of protecting beds. Discharge planning meetings are held 3 times a week. Home care resources in place and currently recruiting a social worker to augment this work.
    - The surgeons and anaesthesia would like to see one bed preserved each weekday to accommodate the slate

4. OR Allocation
    - 2 Ors and a room between the OR and ER that functions as endoscopy (diagnostic and interventional, no ERCP)
    - Elective surgery operates 0900 - 1500, majority of surgical case load is endoscopy and is completed between scheduled OR cases
    - The OR Manager, clerk and surgeons collaborate for planning the next day's slate
    - OR time has been allocated based on historical patterns and surgeons trade days and time to meet their needs.
    - Visiting surgeons will communicate specific needs in advance of arrival (e.g. loaner sets)

5. Standardized processes and procedures:
    - Efficiency
        - Endoscopy patients are managed by GP anaesthetists using Propofol or Midazolam
        - Plans to collect utilization and ALOS data and review at OR committee/MAC committees
        - Due to budgetary restrictions, pre op patients are unable to be processed during the time that Switchboard staff are on break. This delays the PAR's ability to prepare patients for their surgery and may contribute to slate overruns and overtime. Health Records personnel covered Switchboard breaks in the past but can no longer provide this.
    - Safety
        - Initiated the practice of surgical time outs, site marking and the surgical safety checklist processes

- Processing audits completed and recommendations have been well managed and implemented (receive dental equipment day prior to surgery for in-house processing and sterilization)
- Using Patient Safety Learning System
- Physicians described process whereby patients are received from facilities for surgery and then are immediately transferred back to their home facility once phase 1 recovery is complete. There is a concern that having to make these decisions because of a lack of inpatient beds forces a "nightmare of risk assessment" and potentially compromises the continuity of care.

- Quality
  - HSA would like to create a consultative quality program in collaboration with the frontline staff and physicians. Physicians were clear that they supported the development of a quality assurance system for surgical services – ideally with one individual coordinating for the NW region. It was noted that capacity within the Cerner system should be expanded so that statistics can be captured and comparisons between variables possible.
  - Risk issues are coordinated in a one-off manner through NHA Risk Management; alerts and recalls are handled through NHA Quality structure.

- Wait List Management
  - HSA indicates that the current wait time is primarily between gp referral and surgeon decision for surgery rather than on actual surgical wait list. Any current wait list is due to the breakdown of the endoscopy tower. The orthopaedic surgeon indicated that his joint patients wait approximately one year from the decision for surgery but feels that all other waitlists are less than 2 months. He currently does 2-3 joint procedures/week.
  - Cases are booked by urgency; postponements are accommodated on the following day's slate when possible
  - Site is unaware of the recent MOHS Communiqué on wait list management but feel that they are meeting GLE targets for arthroplasty wait times and volumes. Hip fracture surgery time frames vary based on where the patients are transferred from, bed availability, etc.

Collaboration

1. Coordination and effectiveness of services between sites and services:
   - First call when a patient requires transfer is to BC Bedline for LLTO cases or cases that cannot be managed on site.
   - Biomed provides support from Terrace
   - Would like to see a format pathway for arthroplasty patients. There are preprinted arthroplasty orders that clearly delineate the progression of patients.
   - Regional purchasing initiatives are increasingly understood and supported at the site level (understand the need for economies of scale due to economic downturns).
   - Role and responsibility of the chief of staff is unclear at the site level.
   - Would like to see increased education coordination handled from the NHA PPO office that is delivered inhouse rather than formal educational facility offerings. Envisions training based on staff needs assessments and online resources that could provide a single point of access.
   - Surgeons have expressed concern regarding ER staff coverage levels and have addressed letter to MMH administration and have had no response. Other correspondence has also been sent to the Terrace HSA responsible for KGH to express concerns over OR time reductions, bed and equipment concerns . Repeated expressions of frustration related to perceived lack of responsiveness from Terrace and NHA.

2. Structures to facilitate collaboration:

- Kitimat physicians sit on regional NW MAC as well as local MAC structures. There may be an opportunity to improve the flow of information between the two committees

3. Function of Shared Call
    - Concerned that sometimes expected call coverage was not there for ortho or not communicated. Concerns that orthopaedic surgeon from Prince Rupert is taking a 3 month leave for education purposes – Dr. D. Butcher (NHA Senior Medical Director) is working on locum coverage. Physicians expressed concern about the demands of ortho call on the surgeons (e.g. every other day is too much)
    - Ortho bed access is another concern as PGRH cannot be relied on due to capacity issues and therefore BCBedline must coordinate. Also have difficulty accessing critical care beds in province. There is no critical care resources at Kitimat and only have one ventilator for which long term ventilation cannot be sustained greater than 24-48 hours by anaesthesia (nurses are not trained in ventilator management).
    - Physicians state they are no longer proud of their local services. They described scenarios where patients have waited for surgery in their home facility for 4-5 days while awaiting a bed at KGH. The alternative (also described under safety) is where the surgeon elects to bring the patient to KGH, completes the surgery and transfers immediately back to the home facility when ready for transfer from PAR.

Information Systems and Statistics

1. Statistics
    - ALOS – noted that ALOS is above average and discharges may be delayed to protect the slates
    - Referral and utilization patterns – not provided
    - Same Day Surgery, clinic and MNRH data – not covered
    - Surgical Site Infections – physicians state that they receive reports by facility and there are no concerns regarding either surgical site infections nor incidence of MRSA

2. Quality Measures
    - No formal process for internal indicators (first case starts, turnovers, etc) but has been run in past by OR Booking Clerk
    - Risk issues are dealt with on an ad hoc basis through Ruby Fraser (NHA Quality & Risk) and tends to be an incident event driven process
    - Participate in the MoreOB program

3. Efficiency Measures
    - Noted that first case start times/cut times are delayed and may be attributed to anaesthetic delays. Cases are not postponed and overtime is incurred to complete the slates.
    - Have monitored first case start times in past but not recently

4. Information Management
    - Cerner provides basic EMR capability (no surgical capacity at present). Relatively new implementation – statistics are not easy to produce from system and appear to need face validation checks for accuracy and reasonableness
    - Patient Safety Learning System has been implemented.

5. Information Systems and Effectiveness
    - Visiting surgeons do not have remote access to preview their slates but do use Cerner system and have access to PACS
    - Slates are produced manually (no scheduling software) – would like to see a regional tie in to a surgical system.

Budget

1. Current Operating budget (annual) – $1.4 million annually; site has historically ran a deficit budget related to on call work, lack of monitoring of emergency cases and timing. Processes have been put in place so that HSA must review and approve each OT request and will refuse the OT if a case was poorly booked or managed. A memo outlining expectations around emergency add on cases and other OR principles has been circulated to the surgeons. OR Manager is held accountable to the operating budget and provided the support to make necessary changes. Physicians queried if funding follows patients that are managed at KGH due to lack of resources elsewhere.
2. Capital budget (historical expenditures) – not provided
3. Capital equipment
    - Significant concerns with aging equipment. The endoscopy video system had broken over the past weekend and had rendered the site unable to do endoscopy. It is hoped that funds from a private charity (Max Lange) will cover the replacement costs of the light source, processer etc but this will not cover the updates required to the accompanying scopes needed. Other priority is anaesthetic machines at the end of life (top of major capital equipment list).
    - Concerns expressed about the age of the orthopaedic equipment and suggested that there should be a regional standard for equipment.
    - Anaesthetic machines – one is new and one is a loaner
4. Capital construction – relatively new facility; concerns expressed about the small size of the endoscopy room.

Resources

1. Assessment of resources for program sustainability
    - Human – concerns center primarily around recruitment of additional family practice physicians and ability to manage anaesthetic coverage. Surgeons and anaesthesia would like a clear answer about future plans for orthopaedics (e.g. will it be consolidated at Terrace?). Staff indicated that there is good respect between the physicians and surgical staff.
    - Financial – historical budget overages related to on call work
    - Structural – facility is newer; OR/PAR in immediate adjacency to booking and surgical area is optimal.
    - Information systems – Cerner in place for basic EMR but there is no regional system for surgical services (scheduling, case records, preference cards, etc)

2. Desired changes or areas of pride
    - Feel that staffing levels are adequate but capital equipment concerns are most urgent.
    - Would like to see the void between administration and the surgeons narrowed that they can work in collaboration for patient care rather than HAS being seen as driven solely by the budget. Concerns that the surgeons are working in isolation – plans to work on physician engagement strategies through the NHA's organizational development program.
    - Surgeons would like to have one inpatient bed per day protected for the slate
    - Physicians are concerned about the delays in transferred critical care patients (particularly those who are ventilated) to a higher level of care. Nursing staff are not trained in ventilator management and while not specifically a surgical issue, it has ramifications as the responsibility to manage the ventilator falls to anaesthesia. The physicians would like to see nursing staff trained in ventilator management and have regular opportunities to maintain these skills through time spend in Terrace.

Potential Opportunities:
Consider yearly visits for all OR staff to larger, high volume OR/PAR for opportunities to experience a broad range of surgical experiences and competency consolidation
Consider further development of pre op assessment and optimization clinics with a NHA or NW pre surgical screening program with standardized assessment (telephone or visit) in collaboration with anaesthesia
Consider formalization of quality assurance process within the OR management structure with linkages for formal MAC and RMAC structures
Continue to explore strategies with Organizational Development to secure physician engagement in KGH surgical program decisions
Monitor impact of surgical patient flow due to delays in admission when Switchboard staff on break
Ability to access inpatient resources due to ALC and high occupancy rates must be reassessed in view of practice of sending fresh post operative patients back to home facilities for recovery.

Terrace (Mills Memorial Hospital)

1. **Health Human Resources (**Number and skill mix of staff and physicians):
   - **Nursing**
     - Seven nursing staff including the OR charge and assistant charge nurses – no casuals for OR. One PACU RN and one casual, 1 casual ophthalmology tech (scrubs for cataract cases), 2.4 FTE DCS RNs, 0.4 FTE PAC RN, 1 FTE booking clerk
     - OR RNs on call rotate to ensure 24 hour coverage – 5 minute response time and cover PAR post procedure.
     - No OR LPNs but would be interested in developing this role if orthopedics was to move to Terrace (consistency in managing specialty equipment)
     - Pre Surgical Screening clinic with formal funding allocated – done through consults, telephone and visit screening and standardized diagnostics orders pre operatively. Ne reciprocity of anesthetic consults between sites (from patient's home facility)
     - Dental assistant is employed by dentist and attends all dental surgery in the scrub role with RN circulating
     - C sections are managed by 2 OR/PAR nurses as well as 1 nurse to care for the new born
     - Housekeeping assists with room turnovers
   - **Physicians**
     - 2 general surgeons
     - 2 obs/gyne surgeons
     - 1 urologist (no laser or MIS)
     - 1 ophthalmologist (no retinal surgery)
     - 2 dental surgeons (bring own dental assistants and equipment – in advance as processes pre operatively)
     - 3 Anaesthesiologists and 1 gp anaesthetists
   - **Processing**
     - 2 CSR technicians

2. Current vacancies by department:
   - **Nursing** –
     - 2 OR RNs (1 frozen due to budget concerns)
   - **Physicians**
     - I ENT surgeon (former surgeon working 2 OR slates/month)
     - 1 urology surgeon (will not be replaced due to significant capital equipment investment required to recruit a new urology surgeon, cases will be managed at PGRH or lower mainland)
     - Part time radiologist (arriving Feb/2010)
     - 1 anaesthesiologist tentatively Dec/2010

3. Itinerant Surgeons:
   - Locums: Ob/Gyne, ENT and Anaesthesia

4. Demographics re age, attrition, education:
   - Staff ages range from 34 – 40s primarily
   - Trained internally initially, then BCIT and currently GPRC

5. HHR Projections
    - One retirement this fall
    - Based on NHA projections (report provided) and known attrition: 1 OR and 2 DCS RNs within 2-3 years and 1 CSR retirement
    - Nurse recruitment has become somewhat easier since UNBC nursing program has a satellite in the community

6. Gaps in Service/Seasonal Slowdowns
    - ENT only current gap – surgeon has relocated to Comox (actively recruiting); significant difficulties in securing the appropriate approvals for an ENT surgeon and were not able to secure funding to bring the surgeon for an interview and therefore have never met their new ENT surgeon.
    - Urologist is not replaced when away
    - One OR and/or ophthalmology may close seasonally – generally two weeks at Christmas
    - Pacemaker insertions are no longer implanted at MMH

7. Competency Management
    - New products and equipment in-serviced by company rep and then by charge nurse.
    - Staff attend yearly northwest chapter education day as well the biannual provincial OR conference and/or biannual national OR conference
    - New OR staff take the GPRC perioperative program within one year of hiring
    - Participation in regional teleconferences on surgical standard development monthly
    - Also have in-house specialty training
    - Physicians indicate that CMEs are up to date and they are on top of new technology/innovations.

8. Management of staff shortages
    - Used agency nurses for first time this year
    - In scope charge and assistant charge nurse are able to work in emergency situations and to replace staff (no casuals)

Administration

Leadership and Governance

1. Effectiveness of Administrative, Clinical and Medical Structures:
    - Surgical Committee meeting quarterly
    - Policy manual in place (endoscopy section needs updating)
    - Local MAC meets regularly, no quality program or Mortality/Morbidity rounds
    - Would like to see formalized leadership for endoscopy
    - May be an opportunity to improve the handling of Medical Quality and physician attendance – may present an opportunity for medical students to present to the group (having family practice residency students)

2. Minutes/Supporting Documentation:
    - Three Year Accreditation noted
    - Reprocessing audits done –records provided
    - Minutes of OR Committee meetings provided

Organization

1. Linkages to Regional Supports:
    - Linkages to NHA Professional Practice Office for perioperative education
    - Northern Connections bus system in place and utilized
    - Participates in regional surgical clinical standards/decision support, Infection Prevention and Control and Processes teleconferences
    - Effective working relationships with regional processing leader, Penny Brawn
    - Good working relationships with regional purchasing (prompt and responsive) – no concerns re recent MedBuy conversions with the exception of the Covidien mesh contract and the epidural trays (no communication of conversion to all members of Department of Anaesthesia)
    - Able to access specific surgical products as needed
    - Some concern with the organization of surgical supplies – OR charge nurse is responsible for the ordering and would like to see improvements.

2. Current Booking Practices:
    - Surgeons' office book slates and submit to OR 72 hours in advance for approval, typing and distribution. Out of town referrals are forwarded to the surgeons' offices. Cancellation protocols are in place. OR time is provided 4 months in advance.
    - Booking packages include booking form, history & physical, SPR assessment tool and are entered into an Excel spreadsheet by the OR Booking clerk to produce the slate. Based on surgeon's requests for anesthesia consults, phone or visits are arranged with patients.
    - There are minimal loaner set requirements.
    - SPR assessment scores are entered into system by 0.5 FTE ER clerk

3. Bed Allocation
    - Adjusts to wait list needs as necessary, usually have 1-2 post op admissions per day (often none)
    - Have had to postpone surgeries related to lack of access to inpatient beds
    - No bed utilization physician but do have discharge planning
    - Inpatient beds remain gender specific rather than coed
    - Do have access to critical care beds but area functions more as a close observation unit.
    - Sleep apnea patients are managed on the ward with pulse oximetry, no additional staffing (if concerned about sleep apnea management, will place in critical care overnight)

4. OR Allocation
    - OR time has been allocated for the past ten years by one of the general surgeons
    - One anesthetist divides and assigns the OR lists
    - Endoscopy and ophthalmology are physically located outside of the OR. Perform diagnostic and therapeutic endoscopy but not ERCP.

5. Standardized processes and procedures:
    - Efficiency
        - Endoscopy patients are managed by GP anesthetists using Propofol or Midazolam
        - Have access to weekly high level dashboard that reflects utilization and ALOS data and can be reviewed at OR committee/MAC committees
        - Currently there are no specific surgical indicators but are provided with an basic overall infection control report
        - Concerns with the ongoing slate under bookings and how additional anesthesiologist can been recruited in a possible Alternate Patient Plan arrangement when billings are down. The cause of the under booked slates is perceived to be a lack of a waiting list – demand of hysterectomy surgery is reduced due to changes in management.

- Safety
    - Initiated the practice of surgical time outs, site marking and the surgical safety checklist processes (lead by the circulating nurse)
    - Processing audits completed and recommendations have been well managed and implemented (receive dental equipment day prior to surgery for in-house processing and sterilization)
    - Using Patient Safety Learning System
    - Aldrete discharge score system is utilized in PAR to determine readiness for discharge from phase 1 recovery.
    - Anaesthesia has expressed concern with the physical separation of the labour and delivery unit to the OR (separate floors). Very concerned about the timeliness of response and the potential to be caught in an elevator with a labouring patient in fetal distress.

- Quality
    - It was noted that capacity within the Cerner system should be expanded so that statistics can be captured and comparisons between variables possible. The program, started in 2007, needs to have report requests generated so that relevant information is extracted.
    - Risk issues are coordinated in a one-off manner through NHA Risk Management; alerts and recalls are handled through NHA Quality structure.
    - Have managed one recall of internally processed items in Terrace

- Wait List Management
    - Current wait time is primarily between gp referral and surgeon decision for surgery rather than on actual surgical wait list (approximately 1-2 months).
    - Cases are booked by urgency; postponements are accommodated on the following day's slate when possible
    - Site is unaware of the recent MOHS Communiqué on wait list management but feel that they are meeting GLE targets for arthroplasty wait times and volumes. Hip fracture surgery time frames vary based on where the patients are transferred from, bed availability, etc.

Collaboration

1. Coordination and effectiveness of services between sites and services:
    - First call when a patient requires transfer is to BC Bedline for LLTO cases or cases that cannot be managed on site.
    - General surgeon indicates that gold standard of care for breast biopsies is the use of sentinel node technology and therefore this type of procedure should be centered in Terrance when they have the resources and technology.
    - Able to handle the higher level c sections (primips and twins) but must stabilize and transport as necessary as there is no nursery.

2. Structures to facilitate collaboration:
    - Kitimat physicians sit on regional NW MAC as well as local MAC structures. There may be an opportunity to improve the flow of information between the two committees

3. Function of Shared Call

- Concerned that sometimes expected call coverage was not there for ortho or not communicated. Physicians expressed concern about the demands of ortho call on the surgeons and feel that the ortho call is too fragmented and duplicative but there will be significant political hurdles to overcome.
- Ortho bed access is another concern as PGRH cannot be relied on due to capacity issues and therefore BC Bedline must coordinate. Also have difficulty accessing critical care beds in province. There is no critical care resources at Kitimat and only have one ventilator for which long term ventilation cannot be sustained greater than 24-48 hours by anesthesia (nurses are not trained in ventilator management).
- Have a no refusal policy and will cancel electively scheduled cases to accommodate add on cases. Physicians are aware of the impact that call can have on staff and will defer cases if assessed as not urgent.
- Anesthesia performs call on one out of every three weeks and find this onerous and fatiguing.

Information Systems and Statistics

1. Statistics
    - ALOS – noted that ALOS is above average and discharges may be delayed to protect the slates
    - Referral and utilization patterns – not provided
    - Same Day Surgery, clinic and MNRH data – not covered
    - Surgical Site Infections – physicians state that they receive reports by facility and there are no concerns regarding either surgical site infections nor incidence of MRSA

2. Quality Measures
    - No formal process for internal indicators (first case starts, turnovers, etc) but has been run in past by OR Booking Clerk
    - Risk issues are dealt with on an ad hoc basis through Ruby Fraser (NHA Quality & Risk) and tends to be an incident event driven process
    - Participate in the MoreOB program

3. Efficiency Measures
    - Noted that first case start times/cut times are delayed and may be attributed to anesthetic delays. Cases are not postponed and overtime is incurred to complete the slates.
    - Have monitored first case start times in past but not recently

4. Information Management
    - Cerner provides basic EMR capability (no surgical capacity at present). Relatively new implementation – statistics are not easy to produce from system and appear to need face validation checks for accuracy and reasonableness
    - Patient Safety Learning System has been implemented.

5. Information Systems and Effectiveness
    - Surgeons do not have remote access to preview their slates but do use Cerner system and have access to PACS
    - Slates are produced manually (no scheduling software) – would like to see a regional tie in to a surgical system.

Budget

1. Current Operating budget (annual) – not provided
2. Capital budget (historical expenditures) – not provided

3. Capital equipment
    - Significant concerns with aging equipment. In particular, the three anesthetic machines have reached end-of-life and are no longer supported by the vendor. They are slated for replacement in fiscal year 2010/11.
    - Concerns expressed about the age of the orthopedic equipment and suggested that there should be a regional standard for equipment.
    - Anesthetic machines – one is new and one is a loaner
4. Capital construction – Mills Memorial is scheduled for redevelopment in 2015/16.

Resources

1. **A**ssessment of resources for program sustainability
    - Human – both nursing and physician recruitment is a concern – particularly if a site cannot meet a surgeon they are recruiting internationally.
    - Financial – currently have OR RN posting on hold due to budget issues, overtime and its affect on nursing is a concern
    - Structural – an older facility that will need significant renovation or redevelopment if there is to be program expansions. The ORs are small, storage is limited and there is cross contamination potential as clean and soiled items travel in the same paths.
    - Information systems – Cerner in place for basic EMR but there is no regional system for surgical services (scheduling, case records, preference cards, etc)

2. Desired changes or areas of pride
    - Feel that that the surgical team is great and that the nurses are very committed. This was demonstrated by the return of an agency nurse who had enjoyed her previous placement experience at MMH.
    - Would suggest that Kitimat retain non minimally invasive procedures and day care surgery (approximately 90% of its current volumes) while Terrace could handle the MIS or high complexity cases where there is supportive resources of CT, nuclear medicine and critical care. This would allow general surgeons to maintain their skills and ensure appropriate patient safety.

Potential Opportunities:
Consider further development of pre op assessment and optimization clinics with a NHA or NW pre surgical screening program with standardized assessment (telephone or visit) in collaboration with anesthesia
Consider formalization of quality assurance process within the OR management structure with linkages for formal MAC and RMAC structures
Consider risk issue of non employee/credentialed dental assistants providing direct patient care in OR. Options may include hiring assistants as casual (organizational expense) or developing a contract in collaboration with Risk Management to ensure appropriate coverage (WSBC, licensure, etc) is maintained by dentist.

Prince Rupert (Prince Rupert Regional Hospital)

1. **Health Human Resources (**Number and skill mix of staff and physicians):
   - **Nursing**
     - All RN staffing covering OR and PAR (1 RN trained only to PAR) – 2 RNs per OR or endoscopy suite (includes ERCP). Run 1 OR Monday to Friday as well as endoscopy, all other times, staff on call. Patients are admitted and discharged through ACU/DCS which has 8 bays.
     - Run two ORs a day, OR RNs on call rotate to ensure 24 hour coverage.
     - Pre Surgical Screening clinic – done through consults, telephone and visit screening and standardized diagnostics orders pre operatively.
     - Dental assistant is employed by dentist and attends all dental surgery in the scrub role with RN circulating
     - C sections are managed by 2 OR/PAR nurses as well as 1 nurse to care for the new born
   - **Physicians**
     - 1 orthopedic surgeon (hip, knee and shoulder arthroplasty serving Prince Rupert & Kitimat)
     - 1 general surgeon (does c sections, only able to get one month of locum coverage(took eleven months to secure the locum) – does procedures including lap cholecystectomies, nissen fundiplication, thyroidectomies, parotidectomies, etc)
     - 3 gp anesthetist
     - 2 dental surgeons
     - Family practice physicians provide low risk c sections
     - Total of 6 physicians
   - **Processing**
     - 2 CSR technicians (works Monday to Friday) and 2 casuals. Staff are placed on call when ortho is on call
   - **Rehab Staffing**
     - 1 FTE of PT and OT as well as a physio assistant

2. Current vacancies by department:
   - **Nursing** – none currently
   - **Physicians**
     - 5 family practice physicians (so far recruitment unsuccessful – approximately 6000 patients are unattached)
     - 1 gp anesthetist

3. Itinerant Surgeons:
   - 1 ENT – coverage is problematic
   - 1 urologist from Terrace

4. Demographics re age, attrition, education:
   - Nursing staff receive perioperative training and experience prior to arrival in Prince Rupert; all but one are cross trained between the OR and PAR
   - Funding support is available from NHA PPO for training of staff from the med/surg areas and site is planning to train in advance of needs

5. HHR Projections

- OR staff as a whole are relatively young in age, were able to recruit two very experienced RNs from St. Pauls
- No formal people planning has occurred for the site
- Utilizes regional NHA recruitment strategies (both internal and externally) but concerns about lags in recruitment lags, particularly for foreign trained physicians.
- Medical students/residents can not be accommodated because of workload at the site
- Physician manpower plan was provided

6. Gaps in Service/Seasonal Slowdowns
   - Planned slowdown of approximately 10 days over Christmas season
   - Seems to be a communication breakdown between CSR and OR – historically there has been positive relations but this has been eroded over time.

7. Competency Management
   - Current OR staff have been primarily trained out of country and provided orientation upon arrival
   - Participation in regional teleconferences on surgical standard development monthly
   - OR staff meetings are regularly held to provide input and education
   - CSR staff have difficulty accessing education opportunities due to a lack of funding (conference held in Prince George and staff unable to travel)
   - Surgeons would like to see competency matching so that novice and expert nurses are paired to work together and support learning and efficiency

8. Management of staff shortages
   - Use agency nurses, overtime or work short to cover OR/PAR vacancies

Administration

Leadership and Governance

1. Effectiveness of Administrative, Clinical and Medical Structures:
   - OR Management committee meetings held regularly – anesthesia, CSR and nursing attend (minutes provided)
   - Local MAC does not meet – previous structure was highly competitive and dysfunctional with no rules
   - No Mortality and Morbidity rounds or quality structures in place
   - No Chief of staff in place

2. Minutes/Supporting Documentation:
   - Three Year Accreditation noted, not aware of specific recommendations for surgical
   - Reprocessing audits done –records provided
   - Minutes of OR Committee meetings provided

Organization

1. Linkages to regional supports:
   - Linkages to NHA Professional Practice Office for perioperative education
   - Some concerns expressed re ability of PGRH to meet referral needs and delays in accessing critical care beds through BC Bedline
   - Northern Connections bus system in place and utilized
   - Effective working relationships with regional processing leader, Penny Brawn

- Good working relationships with regional purchasing – some concerns re recent MedBuy conversion of custom packs and communication (ob/gyne refuse to use – thought it was a trial, not formal conversion)

2. Current Booking Practices:
   - Surgeon Office MOAs book the slate and submit the booking packages include booking form, history & physical, SPR assessment tool and are entered into an Excel spreadsheet by the OR Booking clerk to produce the slate. Based on surgeon's requests for anesthesia consults, phone or visits are arranged with patients
   - Slate is produced two months in advance and will be working towards four months. This will be coordinated by the surgeons.
   - Site has an OR adds classification system (copy provided) but elective surgical cases are not cancelled for add on cases.
   - SPR assessment scores are entered into system by OR clerk
   - System is managed through a system in Excel and bookings are done well in advance. Available time created by surgeon vacancies is distributed by length of waiting list to available surgeons. The surgeons had positive words for the OR booking clerk
   - Loaner equipment is ordered and received in a timely manner and with required instructions for processing.

3. Bed Allocation
   - Med/surg inpatient beds & 2 maternity beds, basic nursery, 24/7 ER and a critical care unit. The surgical beds are not protected.
   - No concerns re ALOS

4. OR Allocation
   - 2 ORs and an OR that functions as endoscopy (diagnostic and interventional, ERCP), hours of operation are 08 – 1600 with two staff working until 1800 hours to cover slate overruns.
   - General surgeon indicates that OR time is more than adequate for his current needs.
   - OR time has been allocated by the OR Anesthesia Committee. Additional time is offered to other specialties

5. Standardized processes and procedures:
   - Efficiency
     - Endoscopy patients are managed by GP anesthetists using Propofol or Midazolam, conducted with the OR setting and surgeons believe it is therefore not efficient due to nursing and anesthesia issues (everyone is multitasking, nursing staff are doing non nursing work or are not familiar with anesthetic needs for blocks in PAR pre op, and as a result, flow is not efficient)
     - Perception that throughput could be increased but there is little leeway within the OR due to "union rules". Case start times can be significantly delayed (start time was 2.5 hours after scheduled start for first ortho case while on site for interviews) and surgeons would also like to see nursing aide assistance for turnovers (significant loss of time)

   - Safety
     - General surgeon works without an assistant (does some highly complex surgeries)
     - Initiated the practice of surgical time outs, site marking and the surgical safety checklist processes

- Processing audits completed and recommendations have been managed and implemented although still receiving dental equipment day of surgery and it is not inhouse processed and sterilized.)
- One other concern – although CSR staff indicated that there was no flashing, OR staff indicate that the cystoscopes are open pan flashed every morning before use and are returned to their suitcases until next use
- Using Patient Safety Learning System
- Review completed by BCRCP (copy not obtained)

- Quality
  - Risk issues are coordinated in a one-off manner through NHA Risk Management; alerts and recalls are handled through NHA Quality structure.

- Wait List Management
  - HSA indicates that primary wait list concerns are the arthroplasty patients and will be exacerbated with the surgeon's upcoming education leave. 2008/9 joint volume target was 55 joints and year to date, he has already completed approximately 44 joints.
  - Orthopedic surgeon indicated that referral to decision for surgery is very long (approximately 2 years) and is attributable to the very different population that Prince Rupert serves (primarily First Nations). The time between decision for surgery and surgery is generally 2-3 weeks.

Collaboration

1. Coordination and effectiveness of services between sites and services:
   - First call when a patient requires transfer is to BC Bedline for LLTO cases or cases that cannot be managed on site. No specific concerns regarding this process
   - Regional purchasing initiatives are increasingly understood and supported at the site level (understand the need for economies of scale due to economic downturns).
   - Administrative support or Switchboard provides a daily on call sheet by service
   - ICU provides short term ventilation and has capability for sleep apnea management as well as c-pap and bipap

2. Structures to facilitate collaboration:
   - No formal structures described

3. Function of Shared Call
   - Surgeon finds call (15-19 nights a month) is onerous; call schedule is generated out of Terrace but is comfortable that everyone knows who is on call.
   - Provide permanent maternity services including c- section of the Queen Charlottes and also cover as far as Burns Lake or Stewart when weather interferes with other transfer arrangements
   - Staff from ICU/ER feels that the call system works well. The surgeons communicate when patients are being transferred to PRRH and while there is timely information, at times it adds workload as the patient requires workload preoperatively. ER does some conscious sedation for dislocations but most closed reductions are performed in the OR.

Information Systems and Statistics

1. Statistics

- ALOS – no specific concerns – ortho ALOS assessed by surgeon at 4-5 days and while there are no pathways, there are very regimented order orders.
- Referral and utilization patterns – not provided
- Same Day Surgery, clinic and MNRH data – not covered
- Surgical Site Infections –not provided

2. Quality Measures
    - No formal process for internal indicators (first case starts, turnovers, etc)
    - Risk issues are dealt with on an ad hoc basis through Ruby Fraser (NHA Quality & Risk) and tends to be an incident event driven process
    - Participate in the MoreOB program

3. Efficiency Measures
    - Noted that first case start times/cut times are delayed and may be attributed to anesthetic delays (regional blocks in PAR). Cases are not postponed and overtime is incurred to complete the slates.
    - Have monitored first case start times in past but not recently

4. Information Management
    - Cerner provides basic EMR capability (no surgical capacity at present). Relatively new implementation – statistics are not easy to produce from system and appear to need face validation checks for accuracy and reasonableness
    - Patient Safety Learning System has been implemented.

5. Information Systems and Effectiveness
    - Surgeons do not have remote access to preview their slates but do use Cerner system and have access to PACS
    - Slates are produced manually (no scheduling software) – would like to see a regional tie in to a surgical system.

Budget

1. Current Operating budget (annual) – not provided
2. Capital budget (historical expenditures) – not provided
3. Capital equipment
    - Concerns expressed that there needs to be a uniform policy that ensures that all facilities in NHA are provided with equivalent quality equipment for similar work. In particular, there are concerns regarding the laparoscopic instruments (? 25 years old), orthopedic equipment and endoscopes.
    - Prioritized capital equipment list (copy provided)
    - CSR and other staff and physician indicate that additional equipment inventory is needed to manage slates and add on volumes
4. Capital construction – relatively old facility; concerns expressed about the location of the endoscopy room within the OR and need for larger OR theatres.

Resources

3. Assessment of resources for program sustainability
    - Human – concerns center primarily around recruitment of additional family practice physicians and ability to manage anesthetic coverage. The surgical team seems to respect one and another despite efficiency and throughput frustrations

- Financial – historical budget overages related to on call work and staffing shortages
- Structural – facility is older, OR/PAR in immediate adjacency to booking
- Information systems – Cerner in place for basic EMR but there is no regional system for surgical services (scheduling, case records, preference cards, etc)

4. Desired changes or areas of pride
    - Would like to resolve issues such as manpower resources and call coverage
    - Would like to see a new Chief of Staff recruited

Potential Opportunities:
Consider further development of pre op assessment and optimization clinics with a NHA or NW pre surgical screening program with standardized assessment (telephone or visit) in collaboration with anesthesia
Consider formalization of quality assurance process within the OR management structure with linkages for formal MAC and RMAC structures
Continue to explore strategies with Organizational Development to secure physician engagement in KGH surgical program decisions
Confirm information on use of non site processed dental equipment and flashing of cystoscopes
May wish to consider process mapping surgical patient flow to identify reasons for last case starts
Consider risk issue of non employee/credentialed dental assistants providing direct patient care in OR. Options may include hiring assistants as casual (organizational expense) or developing a contract in collaboration with Risk Management to ensure appropriate coverage (WSBC, licensure, etc) is maintained by dentist.

Appendix B – List of Interviewees

Northern Health Corporate Services		***Availability***
	Dr. David Butcher, VP Medicine (ESC)	Y
Northwest HSDA		
	Marina Ellinson, Chief Operating Officer	Y
	Doug Phillips, Dir of Finance	Y
	Dr. Geoff Appleton, Medical Director	NA
Bulkley Valley District Hospital		
	Cormac Hikisch, Health Services Administrator – Smithers	NA
	Jerry Causier, Director of Care – Smithers	Y
	Dr. C Moisey, GP/O – Smithers	Phone Followup
	Dr. C Goddard, General Surgeon – Smithers	Y
	Dr. F Strauss, GP/S – Smithers	Y
	Dr. I Pretorius, GP/S – Smithers	Y
	Sandy, OR RN – Smithers	Y
	Dr. Schafer, GP/A – Smithers	Y
	Dr. M Smialowski, GP/S – Smithers	Y

	Rita White – Smithers	Y
	Becki, – Smithers	Y
	Monica Sargant – Smithers	Y
	Kathleen, OR Clinical Booking – Smithers	Y
Wrinch Memorial Hospital		
	Sharon Robertson, COO – Hazelton	Y
	Tracey Canvel, Clinical Care Coordinator– Hazelton	Y
	Kim Tremblay, OR RN – Hazelton	Y
	Dr. C Eckfeldt, GP/A CoS – Hazelton	Y
	Dr. Kim, Obs/GS – Hazelton	Y
	Hospital Board Chair – Hazelton	Y
Kitimat General Hospital		
	Jonathan Cooper, Site Manager – Kitimat	Y
	Dolly House, OR Manager – Kitimat	Phone follow up
	Kim Tremblay, OR RN – Kitimat	Y
	Dr. D Carstens, GP/A CoS– Kitimat	Y
	Dr. B. Van Wyk, GP/A – Kitimat	Y

	Dr. W. Lombard, GS – Kitimat	Y
	Dr. I. Van Der Merwe, Ortho – Kitimat	Y
Mills Memorial Hospital		
	Marie Nygaard, H S A – Terrace	Y
	Marnie Matheson, Nurse Manager – Terrace	Y
	Dr. W. Lombard, GS – Terrace	Y
	Dr. J Dunfield, GS – Terrace	Y
	Dr. W. Evans, GS – Terrace	Y
	Dr. F Osei-Tutu, Urology – Terrace	Y
	Dr. D Strangway, Urology – Terrace	Y
	Alice Moszczynski, OR RN	Y
Prince Rupert Regional Hospital		
	Sheila Gordon-Payne, Health Services Administrator – Prince Rupert	Y
	Jane Wilde, Director of Care - Prince Rupert	Y
	Dr. P Nel, GS – Prince Rupert	Y
	Dr. A Smith, Ortho - Prince Rupert	Y
	Ruth Giordano, CSR – Prince Rupert	Y

	Chris, RN - Prince Rupert	Y
	Martha, CSR – Prince Rupert	Y
	Cleo Carlos, OR Manager- Prince Rupert	Y
	Frank, OR RN - Prince Rupert	Y

Appendix C - Detailed Summary of Smithers' Itinerant Surgeon Model

The current Smithers visiting surgeon structure evolved following significant attrition of well established surgeons in the Smithers community. The community felt strongly that their surgical program should be preserved and initial focus was on replacing the lost surgeons. This recruitment drive was unsuccessful and through hard work, dedication and collaboration by the administrative, physician and nursing leaders with key community leaders, the key focus became timely access to elective surgical services by bringing the surgeons to the community rather than forcing the local residents to travel to surgeons. The community was largely galvanized by this new initiative which lead to the development of Operation Keyhole - a successful funding drive to raise donations for the purchase of minimally invasive equipment and instrumentation which would be used locally and was needed to attract and retain the visiting surgeons. Currently, the site plans to further engage the community through the re-establishment of the Operation Keyhole drive in order to raise more awareness and funding for needed equipment and instrumentation.

It was noted that financial and in-kind support for the surgeons was a crucial component to facilitating realignment of surgical resources. Visiting surgeons now come on a regular basis supported by Northern and Isolation Travel Assistance Outreach Program (NITAOP) funding and use the NH Health Information System (Cerner), office and examination space critically co-located beside the program's clerical support, OR Booking and surgical suites. This allows the visiting surgeons to maintain flexibility in assessing patients, completing surgical or endoscopic procedures as well as providing call coverage to stabilize and transport trauma patients as needed. As a rule, patients seen during one visit will have their procedures scheduled and completed for the same surgeon's next visit. Urgent patients are scheduled while the visiting surgeon is on site being careful to schedule any major or inpatient cases (those requiring incision) early enough in the week to ensure that the patient's recovery and discharge can be managed by that surgeon. Accommodation is provided through an NH owned house in the community and travel expenses are covered.

The visiting surgeon interviewed during the site visit conveyed a great deal of personal and professional satisfaction in this arrangement. Although, he commented that remote access to view slates, etc once the surgeon returns to his/her primary work would be appreciated. Kudos were expressed for the high functioning GP anaesthesia support. He concluded by indicating that the program keeps the pressure off the flagship facilities while providing a high standard of care and competency.

Currently, succession planning is managed by the surgeon or physician securing an equivalent replacement prior to departure and is facilitated through the partnerships with UNBC medical student placements with the Smithers physicians. Due to the success of this surgical structure and positive feedback from the community, there are few physician vacancies and it was noted that there are physicians self referring themselves as candidates for the program. While there are no "lifers", the dedication of the staff and community coupled with the work life balance opportunities has been successful and the wait list for opportunities for physician is now described as 6-12 years long.

Appendix D – BCTAC Level 3 Designation Summary of Requirements

While not reviewed specifically in this review, the guidelines recommend that for a level 3 site designation the following requirements must be met:

- Trauma/General Surgeon available within 20 minutes at ER bedside;
- Orthopaedic Surgeon available on-call.

The following are desired surgical support:

- Gynaecology & Obstetrics;
- Ophthalmology;
- Otolaryngology;
- Dental / OMFS.

Required non-surgical Specialties for care of the trauma patient include:

- Anaesthesia;
- Radiology;
- Critical Care;
- Internal Medicine;
- Emergency Medicine;
- Social Work;
- Diagnostic and Interventional Radiology including:
    - Immediate plain film radiography (in-house tech)
    - Technologist on Call with 30 min response
    - Ultrasonography (excluding FAST)
    - CT Technologist on Call with 30 min response
- Blood Bank and Laboratory available on site 24 hours per day including:
    - Blood bank system capable of providing unmatched blood within 10 minutes;
    - Accredited by Canadian Blood Services and Labs.

Appendix E - Mobile Medical International Corporation's Mobile Surgery Unit

LICENSING AND ACCREDITATIONS of MMIC's MSU™ was strategically designed to comply with issues of life safety, quality patient care, and compliance with state licensing guidelines and Medicare certification requirements from its inception.

Licensing & State Regulations

To be recognized and operational, healthcare facilities must be:

State licensed; a process whereby designated state employee/consultants tour the physical plant and review the policies and procedures that govern every activity of the facility in detail

Surveyed by the Centers for Medicaid and Medicare Services (CMS), formerly HCFA, to ensure compliance with its policies and procedures

MMIC received CMS approval in October 1997. In March 1998, California officially licensed the first Mobile Surgery Unit™ as a freestanding ambulatory surgery center (ASC); the first time in the history of U.S. healthcare that a Mobile Surgery Unit™ was licensed as a freestanding surgery center.

Since then, Florida has passed legislation allowing Mobile Surgery Units™ to be licensed for use in their Department of Corrections and Virginia now has two operational units. Other states have either reviewed or are in the process of reviewing applications for their specific requirements.

Accreditation for Quality

For further quality assurances, MMIC undertook and passed two national inspections to obtain full healthcare accreditation. The benchmarks that MMIC has achieved for highest quality U.S. standards in mobile facilities include:

Joint Commission on Accreditation of Healthcare Organizations (JCAHO)

Accreditation Association for Ambulatory Health Care (AAAHC)

Appendix F - Wrinch Memorial Hospital Proposed Innovations

Medical and Administrative staff at Wrinch Memorial Hospital proposed innovations to manage patients in Hazleton. The proposals included both opportunity for OR time as well as bed availability for the most elective procedures performed on patients without co-morbidities and a location for post recovery convalescence and rehab for Upper Skeena resident treated at other hospitals . Specifics include:

1. Endoscopies: with 2 upper and 2 lower GI scopes, available nursing staff and clinic space for surgeons to see patients between procedures the site could perform 9-10 procedures per day.
2. Orthopaedics: the site maintains basic orthopaedic instruments and a drill for K-wire percutaneous pinning. Taking advantage of the orthopaedic surgeon who travels to Smithers every 4-6 weeks, minor procedures such as pin and plate removals and carpal tunnel releases could be performed on local and surrounding patients.
3. ENT: Visiting surgeons could benefit by providing access for local and distant patients.
4. Pathology: A relocation of a pathologist has created an opportunity for frozen sections and other anatomical procedures to be performed at WHM.
5. Maternity: outreach to communities such as Dease Lake, Iskut and Telegraph Creek would not only provide options for resident of those communities but would benefit staff with increases in the volume and mix of patients at WMH.
6. Ophthalmology – noting that the residents are underserved for diagnostic and interventional ophthalmology, the Wrinch Memorial Hospital expressed an interest in offering these services to their local area.

References

[i] NH 2009-2015 Strategic Plan

[ii] NH 2009-2015 Strategic Plan

[iii] Iglesias, *S CJRM* 2006;11(3):207-17

[iv] Interview with Richard K Simons MB, BChir, FRCS, FRCSC, FACS; Associate Professor, Department of Surgery, UBC; Medical Director, Trauma Services, Vancouver Coastal Health

[v] Iglesias, *S CJRM* 2006;11(3):207-17

[vi] PEOPLE 34: revised (July 2009), population estimates, BC Stats. http://www.bcstats.gov.bc.ca/

[vii] PEOPLE 34: revised (July 2009), population estimates, BC Stats. http://www.bcstats.gov.bc.ca/

[viii] Canadian Institute for Health Information. Hospital trends in Canada—Results of a Project to Create a Historical Series of Statistical and Financial Data for Canadian Hospitals Over Twenty-Seven Years. Ottawa: CHI; 2005.

[ix] Healthideas: HOSPITAL SERVICE CATCHMENT PATTERNS

[x] Chen LW, Zhang W, Sun J, Mueller KJ. J Public Health Manag Pract. 2009 May-Jun;15(3):216-22. The magnitude, variation, and determinants of rural hospital resource utilization associated with hospitalizations due to ambulatory care sensitive conditions.

[xi] Lishner DM, Amundson BA, Hart LG. J Rural Health. 1991 Fall;7(5):492-510. The WAMI Rural Hospital Project. Part 2: Changes in the availability and utilization of health services.

[xii] NH 2009-2015 Service Plan

[xiii] Pollett, W. G., et al. Canadian Journal of Surgery, Vol. 45, No. 2, April 2002.The future of rural surgical care in Canada:a time for action.

[xiv] Berland, A. Linking the Northwest Orthopaedic Chain 2006.

[xv] Barber, C. Transforming NHA toward BCTAC Trauma Accreditation

[xvi] Interview with Richard K Simons MB, BChir, FRCS, FRCSC, FACS; Associate Professor, Department of Surgery, UBC; Medical Director, Trauma Services, Vancouver Coastal Health

[xvii] Etzioni, D, et al. Ann Surg. 2003 August; 238(2): 170–177. The Aging Population and Its Impact on the Surgery Workforce.

[xviii] Pong R.W., Pitblado J.R. Don't Take 'Geography' for Granted! Some Methodological Issues in Measuring Geographic Distribution of Physicians. *Canadian Journal of Rural Medicine.* 2001;6(2):103.