



Whitehorse General Hospital Expansion Project

NEEDS ASSESSMENT REPORT

June 11, 2014

DATE MODIFIED	KEY CHANGES	AUTHOR
June 11, 2014	Final Document	Karen Mills

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EXECUTIVE SUMMARY

The Whitehorse General Hospital (WGH) Expansion Project Needs Assessment has been developed as a companion document for the WGH Expansion Project Business Case to address the question of what is 'driving' the need for this project.

Population and health status data as presented in the Department of Health and Social Services' (H&SS) recently released Clinical Services Plan, indicates population increases between 13.7 and 22.8% over the next ten years, with greater growth in persons aged 65 and older. The provision of hospital care to this population is also becoming increasingly complex and with this comes greater demand on WGH's existing Emergency Department (ED), Intensive Care Unit (ICU) and inpatient infrastructure both from a volume and qualitative care perspective. Service delivery data for WGH's ED, ICU and new Magnetic Resonance Imaging (MRI) program form the basis for this analysis. Included is the Project's Functional Program and supporting planning documents.

Key findings from the ED analysis include:

- Since 2011, the number of ED visits has increased across all age groups with the greatest growth seen in persons aged 20-55 years.
- 80% of total patients are coming to ED with lower acuity needs (CTAS 4 –less-urgent and CTAS 5 – non-urgent).
- Patients aged 65 and older have a longer average length of stay (ALOS) when visiting ED and represent 45% of individuals who present with higher needs (CTAS 1 – resuscitation).
- Using 2012/13 data, Resource Planning Group (RPG) projects the highest rate of increase in volume to be among most acute patients (CTAS 1 –Resuscitation) at an 89% increase by 2030.
- When RPG ED visit projections are compared to H&SS Yukon Clinical Services Plan and Sterling Planning Alliance's projections, suggested growth was varied into 2024. Using the planning assumption of 1500 visits annually per treatment space, the projected treatment spaces also varied ranging from 34-18 spaces.
- While Patient Experience Survey data has shown a 95% positive rating of the ED overall, the most common patient complaint of a lack of confidentiality may relate to the proximity and openness of treatment spaces.
- According to the Canadian Standards Association (CSA), numerous standards for the design and construction of health care facilities are not being met by WGH's current ED.
- Successive recommendations by Accreditation Canada have mirrored that the physical layout poses a risk to timeliness of care and patient safety.

- A self-assessment by Yukon Hospital Corporation's (YHC) compliance with infection control standards in ED indicates that 9 of 13 standards have been partially or not met.
- Despite community efforts to address issues related to intoxicated persons and mental health patients, ED continues to see increases in acuity (CTAS 2 and 3 - emergent and urgent care) for these populations.
- Provisions for optimal decontamination, mass casualty preparedness and security are all sub-standard according to CSA.

An assessment of ICU needs indicates:

- From 2009-2013 patient volumes for the current 3 bed ICU have increased proportionately by age by 26%.
- During the same period, the ALOS for ICU beds decreased slightly from 1.8 to 1.5 days with close to 42% of ICU cases being less than 24 hours; the ALOS was closer to 45 hours for patients aged 60 and older.
- According to most recent CIHI data, WGH is exceeding the optimal bed occupancy of 50 to 60% for smaller community hospital ICUs .
- Utilization data indicates that there are a significant number of critically ill patients as well as a high number of patients who require observation/monitoring while waiting for a treatment decision or post-operative recovery.
- Rough projections support the likelihood of 92% occupancy by 2019 for the current 3 bed unit if no changes are made to the ICU service delivery model.
- Other considerations such as patient flow, patient experience and staffing factors greatly into the overall quality of care provided by existing ICU beds.

An analysis of MRI needs includes:

- Yukon's Insured Health Services currently pays for 500-600 MRIs for Yukon residents outside of the territory each year and it is estimated that 95% of these could be done at WGH.
- Based on actual counts of MRIs funded in Yukon in 2012-13, the Yukon rate was at approximately 16 per 1,000 population significantly lower compared to BC's rate of 34 and Alberta's rate of 46 respectfully.
- If Yukon's MRI utilization rate was the same as Alberta's, the anticipated volume of MRIs that could be done in Yukon by 2024 would still be well within the stated capacity for a Yukon MRI (3,000 MRIs/year) at 1876 MRIs/year.

- In consideration of the increasing rate of MRI across Canada, protocols for appropriate use of MRI technology has been identified by YHC to support proper utilization.
- Through community support in only two years, the Yukon Hospital Foundation raised \$2 million of a shared \$4 million goal with Yukon Government to purchase a new MRI, equipment, and meet specific staffing and facility requirements.
- The business case for implementation of the new MRI program concluded improved access to appropriate diagnostic imaging services, enhanced capacity among clinicians, higher standard of care, and improved wait times for MRI.

An analysis of inpatient bed utilization showed:

- Higher costs for very elderly patients at an estimated \$5,062 per capita acute care inpatient cost, while the average cost for all age groups was \$616.
- While YHC's target has been to maintain occupancy below 80% for all inpatient beds, it has historically fluctuated between 75-90% which includes ICU and maternity units which if excluded would raise the overall rate.
- Length of stay was higher than expected for births and lower than expected for mental health patients.
- Alternative level of care accounts for close to 25% of adult and children patient days.
- 80% of hospitalizations for Yukon residents were provided at WGH
- Yukon is most self-sufficient for birthing at close to 91% and least self-sufficient for surgery with approximately 58%.

A key assumption in developing this report is that WGH is a part of the broader community primary care response to address higher volume and acuity demands over time. This assessment cannot be viewed in isolation and must be considered within the greater context of ongoing health system change and coordinated efforts to address population need into the future.

An investment in a new ED, Observation Beds, MRI Equipment and Program, expanded Energy Centre and a new Data Centre are recommended to effectively meet the future hospital care needs of Yukoners. In addition, it is recommended that appropriate mechanisms are identified to support greater strategic and systems coordination across primary care community.

INTRODUCTION

The Needs Assessment for the Whitehorse General Hospital (WGH) Expansion Project has been prepared by the Yukon Hospital Corporation (YHC) as an important companion document for the Expansion Project Business Case.

The primary intent of this assessment is to analyze and directly address the questions of what is ‘driving’ the need for this work and how equipped is existing WGH infrastructure to effectively meet future hospital care delivery demands. The Needs Assessment has also been prepared to support answers to other key questions identified in the Business Case:

1. Why should this project be approved?
2. Why is now the right time to proceed with this project?
3. How will this project support the Yukon Government (YG)’s and Yukon Hospital Corporation’s goals and objectives?
4. How will this project support programs and service delivery?
5. What are the key details of this project, e.g. scope, capital cost, schedule, etc.?

PURPOSE AND APPROACH

The purpose of this needs assessment is to accurately identify and quantify the needs of patients receiving emergency critical care through WGH. To reduce duplication of effort and to define the health needs of the community, the Needs Assessment has incorporated demographic and health status data presented in the Department of Health and Social Services (H&SS) recently released Clinical Services Plan. Utilization data available from CIHI for both the Emergency Department (ED) and Intensive Care Unit (ICU) has also been analyzed for current utilization and projected against the most current population projections available from the Yukon Bureau of Statistics. Qualitative data is also included from a variety of sources including, but not limited to, previous Patient Experience Surveys, Accreditation Canada reports, patient complaints, etc. Informant interviews have not been conducted, but clinical and administrative stakeholders were consulted in the development of the Project’s Indicative Design.

SCOPE

The scope of this Assessment focuses primarily on available volume and usage data (both historical and current) and other qualitative data related to WGH’s ED, ICU and a new MRI program. While some consideration has been given to future inpatient needs and where possible other community care initiatives have been noted, this report does not account for greater system changes which may offset or divert demand on WGH into the long term. An

important assumption in preparing this document is that WGH is part of a broader continuum of care and that other initiatives - including a new long term care facility, medical detox, transition supports and extended after hours care -, will also impact future demand for hospital services.

PART 1 POPULATION NEED¹

DEMOGRAPHICS

The population of Yukon is primarily concentrated in distinct communities. Eighteen (18) communities have been identified in population estimates for the Territory. The largest community is Whitehorse, the capital, with over three quarters (76%) of the Territory's population. Dawson City and Watson Lake are next largest communities, with 5% and 4% of the population, respectively. The fifteen other communities comprise the remaining 14% of the population.

The population of Yukon Territory, as of June 2013, was 35,526, an increase of 664 (1.9%) over one year (35,862 in June 2012). Approximately 28,000 live in Whitehorse and approximately 8,600 of the territorial population live in small, remote communities with limited services. The two next largest communities are Dawson City (approximately 2,000) and Watson Lake (approximately 1,500), while the remaining 14 communities range in population size from approximately 40 to 900 people.

Comparing June 2003 to June 2013, Yukon's total population increased by 6,550, or 21.8%. During those 10 years, the population of Whitehorse has increased by 5,648, or 25.4%; Dawson City has increased by 222, or 12.6%; and Watson Lake has decreased by 71, or 4.6%.

Yukon's population declined steadily between 1997 and 2001, and then fluctuated around 30,000 between 2001 and 2003. Since 2004, the population has been increasing at a steady pace. Successive new highs within most quarters have been set since the second half of 2008, the most recent being May 2013 at 36,816 (Figure 1).

June 2013 figures show:

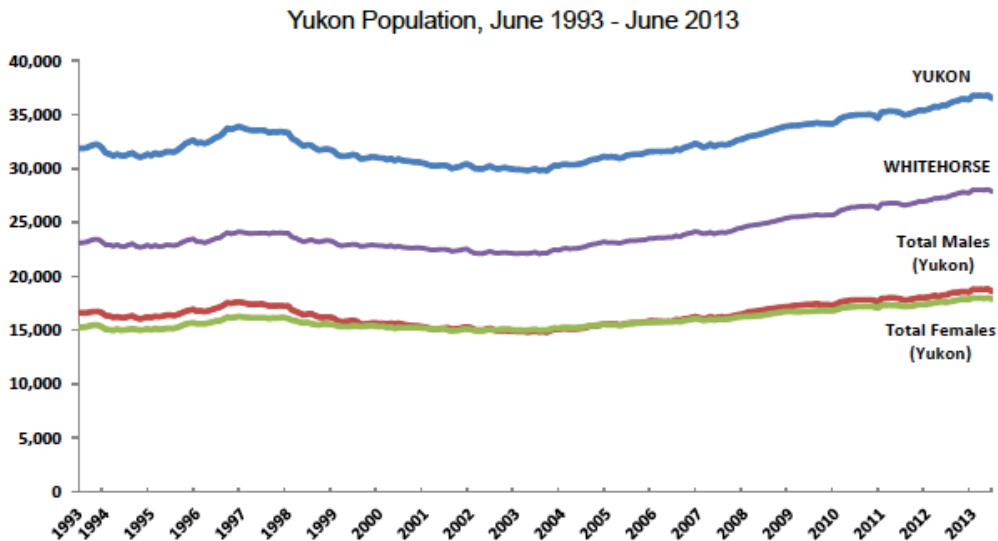
- Yukon's population consisted of 18,624 males (51.0%) and 17,902 females (49.0%). In June 2003, there was less of a gender gap: males comprised 49.7% of Yukon's population; females 50.3%.
- 15.8% of Yukon's population was under 15 years of age, 74.0% was between 15 and 64 years, and 10.1% was 65 years of age or older. In June 2003, 19.9% of Yukon's

¹ Part 1 was referenced from "DEVELOPING A CLINICAL SERVICES PLAN, DATA ANALYSIS: CURRENT STATE & ENVIRONMENTAL SCAN"

population was under 15 years of age, 73.5% was between 15 and 64 years, and 6.5% was 65 years and over.

Figure 1: Monthly Yukon Population Estimates

Monthly Yukon Population Estimates



The 2011 Census results indicated that:

- Yukon's population growth between 2006 and 2011 was 11.6%, the highest of any province or territory;
- Approximately 80% of census families were couple-families;
- Of the population aged 15 and older, 54.4% were either married or in common law partnership;
- 49.4% of couple families had children;
- Private dwellings increased by 12% from 2006, showing the highest growth among provinces and territories; and,
- The average household size was 2.4 persons, compared to 2.5 in Canada.

The Yukon Bureau of Statistics prepares population projections for the Territory. Projections by age-gender cohort have been created for 2012 through 2037. The data are provided at the community level. For this analysis, the focus will be on a ten-year horizon, from 2014 to 2024.

The process of preparing the projections has been described as follows:

“The projections were prepared based on the June 2012 population, and observed population changes over the previous 10 years, 5 years, and 2 years (referred to respectively, as “Ten-year trends”, “Five-year trends”, and “Two-year trends”). The population projections are standard life-table projections, and are based on births, deaths, in-migrations and out-migrations. The parameters of the model are determined by observed population trends in the past. The projections start from the population in June, 2012. The projections will be updated in the new year once 2012-2013 migration estimates are calculated.

The projections carry the following caveats:

1. The Yukon’s population growth is more determined by migration than by natural growth. Migration in the Yukon has historically been cyclical and correlated with business cycles and mineral prices. The population projections, on the other hand, assume that migration and natural growth is constant, which is counterfactual. In the past, it was recommended that the projected population in 10 years be taken as more meaningful than over the short term, since over the long run, the ups and downs of the Yukon economy will hopefully cancel out.
2. The model is not forward-looking. The model does not incorporate any information on any possible future shocks to population growth (projected mine developments or possible drops in future mineral exploration, for example). Therefore, the projections are invalid if there is good reason to believe that the population change over the next few years will not resemble the trends observed in the past few years.
3. The model is not actually adapted to the community level. Community-level estimates have been included because this added detail was requested. There are no reliable measures of natural growth or migration within individual communities, so Yukon-wide parameters have been applied to each individual community’s population to obtain projections of community-specific populations, and then adjusted these numbers so that they match the Yukon-wide population projections (the adjusted numbers are recorded as “Reconciled Pop”). This means that differences in each community’s growth as projected by the model only reflect differences between each community’s initial population breakdown, and does not reflect actual differences in how these communities evolve. In the past, for example, Dawson City’s population grew faster than Watson Lake’s which is due to greater net-migration to Dawson than to Watson Lake. If these dynamics hold up, the projections may end up over-estimating Watson Lake’s growth. So, extra caution

should be exercised when looking at community-level projections, and be sure to come up with justifications for assumptions about future population dynamics that are independent of the model’s calculations. “Some of these shortcomings will be addressed in the next year. There will be an attempt to incorporate economic analyses in the projection model in order to form a more realistic basis for the assumptions about future migration.”

The projections across the three scenarios (10-year, 5-year and 2-year) suggest the possibility of a broad range of growth between 2014 and 2024, ranging from 13.7% to 22.8%. Projected population figures have been presented in the following table, noting the caveat about community level figures cited in item 3 above. (Table 1)

Results have been presented for the Yukon as a whole due to sparse populations at the community level. Consistent with the general trend of an aging population, those 65 years and older are expected to increase substantially over the next ten years. In particular the number of people 80 years and older is expected to double.

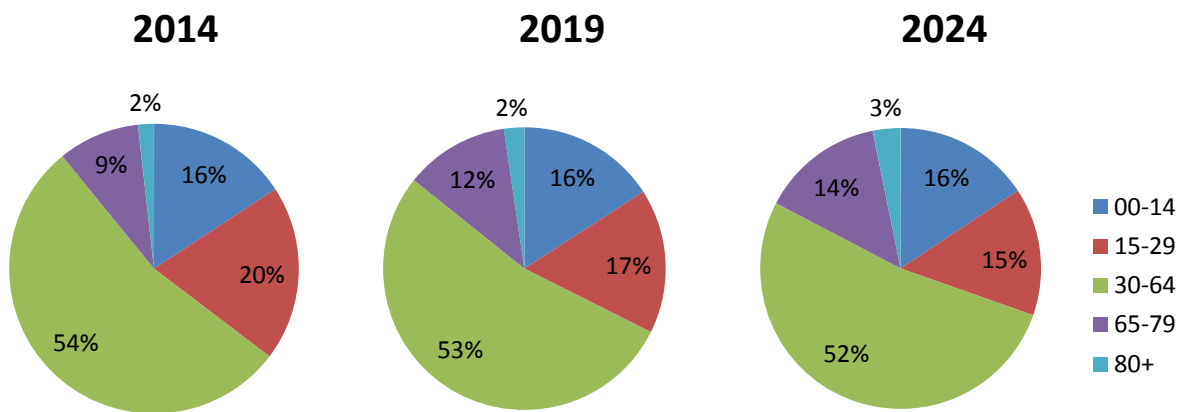
Table 1: Population Projections by Age-Gender Cohort

Gender	Age Group	Yukon			% Change from 2014	
		2014	2019	2024	2019	2024
Females	00-04	1,000	1,029	1,030	2.90%	3.00%
	05-09	915	1,074	1,109	17.40%	21.30%
	10-14	885	923	1,083	4.30%	22.40%
	15-19	980	911	951	-7.10%	-3.00%
	20-24	1,177	1,034	969	-12.20%	-17.60%
	25-29	1,459	1,343	1,215	-7.90%	-16.70%
	30-34	1,483	1,736	1,643	17.00%	10.80%
	35-39	1,406	1,649	1,914	17.30%	36.20%
	40-44	1,379	1,499	1,748	8.70%	26.80%
	45-49	1,353	1,407	1,530	4.00%	13.10%
	50-54	1,642	1,342	1,398	-18.30%	-14.90%
	55-59	1,470	1,587	1,291	8.00%	-12.20%
	60-64	1,167	1,367	1,474	17.20%	26.30%
	65-69	791	1,074	1,262	35.80%	59.60%
	70-74	439	721	983	64.20%	123.70%
	75-79	263	396	649	50.40%	146.60%
	80-84	200	228	343	13.80%	71.50%
85+	154	260	345	68.70%	123.80%	
Males	00-04	1,081	1,104	1,102	2.10%	2.00%

	05-09	1,016	1,177	1,207	15.80%	18.80%
	10-14	951	1,058	1,222	11.20%	28.40%
	15-19	989	979	1,087	-1.10%	9.90%
	20-24	1,255	990	981	-21.10%	-21.90%
	25-29	1,394	1,380	1,127	-1.10%	-19.20%
	30-34	1,504	1,693	1,703	12.60%	13.20%
	35-39	1,297	1,720	1,925	32.70%	48.50%
	40-44	1,336	1,436	1,867	7.50%	39.80%
	45-49	1,346	1,443	1,553	7.20%	15.40%
	50-54	1,644	1,410	1,513	-14.20%	-8.00%
	55-59	1,584	1,626	1,404	2.60%	-11.40%
	60-64	1,330	1,500	1,536	12.80%	15.50%
	65-69	992	1,214	1,368	22.40%	38.00%
	70-74	583	879	1,078	50.60%	84.80%
	75-79	311	492	744	58.10%	139.00%
	80-84	183	247	392	34.50%	113.80%
	85+	118	203	296	72.30%	151.50%
Both	Total	37,078	40,128	43,043	8.20%	16.10%

Figure 2 illustrates the growth of those over 65 years as a proportion of the population from 11% in 2014 to 17% by 2024. Although the number of people over 80 years old is expected to double the proportion of the population that this oldest cohort represents is relatively stable at approximately 2-3% of the total population. The largest proportionate increase for those over 65 is in the 65 to 79 cohort. Over the same period, the proportion in the 15-29 year age group have decline by about 4%.

Figure 2: Age Cohorts as a Proportion of Overall Population: 2014, 2019 and 2024



SOCIO-ECONOMIC

Socio-economic data for Yukon are available from the Yukon Socio-Economic Web Portal and through Statistics Canada's website. The Yukon Web Portal contains a range of reports presenting data from the Territorial level and in some instances, at the community level.

In July 2013 the Yukon Bureau of Statistics published the Yukon Statistical Review - 2012 Annual Report. The document presents a status report across a broad spectrum of life in the Territory.

The following are highlights taken from that report:

- Employment fell from 2011 to 2012 (however, unemployment fell in 2013);
- 39% of working Yukoners were public employees in 2012;
- 25% of private sector workers were self-employed;
- Weekly earnings increased;
- The average annual inflation rate dipped in 2012, but was higher than the national average;
- In October 2012, the Community Spatial Price Index (all items) ranged from 202.0 in Old Crow to 110.6 in Carmacks (Whitehorse = 100);
- The average price of regular gasoline in Whitehorse rose 3.3% in 2012 over 2011;
- Rents have increased steadily over ten years (28.7%), while the vacancy rate has generally declined;
- The total production value of gold in Yukon rose over 400% from 2003 to 2012;
- The total volume of round wood harvested has remained stable since 2009;
- Retail trade has risen steadily since 2003 (over 59%, or \$250 million), and wholesale trade has increased by \$79 million (110% over the same period);

- The volume of liquor rose from 4.3 million to 5.0 million litres from 2003 to 2012;
- GDP rose 3.4% between 2011 and 2012 (6.1% for goods-producing and 2.1% for service-producing industries) based on preliminary estimates, continuing a decline in growth in areas since 2008;
- Travelers entering Yukon by land through Canada Customs has increased steadily since 2003, reaching more than 400,000 in 2012; and,
- Vehicle registrations continue to increase.

SELF-REPORTED HEALTH STATUS

Data for selected indicators have been extracted from the 2011/12 Canadian Community Health Survey² to provide some initial descriptors of the health status of the community. These are self-reported measures. This is an instance where the results reflect the split between rural and urban Yukoners. (Table 2)

Table 2: Selected indicators have been extracted from the 2011/12 Canadian Community Health Survey

Column1	Canada		Yukon	
	(no. persons)	(%)	(no. persons) ²	(%) ³
Perceived health, very good or excellent	17,642,508	59.9	16,771	55.3
Perceived health, fair or poor	3,214,237	10.9	3,545 (E)	11.7 (E)
Perceived mental health, very good or excellent	20,722,747	71.7	21,411	71.6
Perceived mental health, fair or poor	1,655,077	5.7	1,332 (E)	4.5 (E)
Life satisfaction, satisfied or very satisfied	26,553,652	92.4	27,681	93
Perceived life stress, quite a lot (15 years and over)	6,419,718	22.7	6,198	21.6
Arthritis (1) (15 years and over)	4,376,806	15.4	4,353	15.2
Diabetes (1)	1,924,066	6.5	2,606 (E)	8.6 (E)
Asthma (1)	2,385,833	8.1	2,934	9.7
High blood pressure (1)	5,112,017	17.4	4,290	14.2
Pain or discomfort by severity, moderate or severe	4,189,448	14.2	5,513	18.2
Pain or discomfort that prevents activities	4,391,158	14.9	5,243	17.3
Participation and activity limitation, sometimes or often (2)	9,902,260	33.7	12,021	39.7
Current smoker, daily or occasional	5,933,095	20.3	8,882	29.4
Exposure to second-hand smoke in the past month, in vehicles and/or public places (3)	3,866,318	16.6	2,508 (E)	11.7 (E)

² Source: Statistics Canada. CANSIM 105-0501. Accessed June 17, 2013.

5 or more drinks on one occasion, at least once a month in the past year	5,042,829	17.4	6,791	22.5
Fruit and vegetable consumption, 5 times or more per day	11,261,327	40.6	11,477	38.8
Physical activity during leisure-time, moderately active or active (4)	15,579,562	53.9	19,885	66.4
Physical activity during leisure-time, inactive (4)	13,346,297	46.1	10,060	33.6
Body mass index, self-reported, adult (18 years and over), overweight or obese (BMI 25.00 or greater)	13,485,120	52.5	13,727	51.5
Sense of belonging to local community, somewhat strong or very strong	18,857,175	66.1	21,909	73.3
Has a regular medical doctor	25,087,068	85.1	21,643	71.4
Contact with a medical doctor in the past 12 months	23,026,446	78.7	23,841	79
Influenza immunization, less than one year ago	8,292,255	28.9	8,751	29.3
Breastfeeding initiation (5)	1,428,053	90.3	2,288	99.2
Exclusive breastfeeding, at least 6 months (5)	356,368	24.2	1,031 (E)	46.0 (E)
Mood disorder (1)	2,105,882	7.1	1,741 (E)	5.7 (E)
Wears a helmet when riding a bicycle, always	6,749	52.6
Chronic obstructive pulmonary disease (1) (COPD) (35 years and over)	806,592	4.2	641(E)	3.3(E)

(1) As diagnosed by a health professional.

(2) The condition or problem has lasted, or is expected to last 6 months or longer.

(3) Non-smoking population exposed every day or almost every day in past month.

(4) Based on physical activity over the past 3 months.

(5) Females aged 15 to 55 who had a baby in the last 5 years.

(E) Use with caution.

Source: Statistics Canada. CANSIM 105-0501. Accessed June 17, 2013.

HEALTH SYSTEM PERFORMANCE

Indicators of health status are made available by CIHI through its Health Indicators web portal³. These indicators are available on an annual basis from 2000 to 2011. Not all indicators are populated for all years, nor are all indicators available for the Yukon. No

³ Source: CIHI Health Indicators. Accessed from: <http://www.cihi.ca/hirpt/search.jspa?href=http%3A//www.cihi.ca/hirpt/SearchServlet>

sub-territorial level information is provided. Where possible, confidence intervals have been provided.

The indicators are presented for areas:

- Health Status.
- Health System Performance,
- Community and Health System Characteristics.

While some of the indicators relate more toward the health system, for comprehensiveness, indicators from all three areas are presented together in the Clinical Services Plan (pp. 26-27). Some of the CIHI indicators have been omitted where no information is provided for Yukon. Results have been constrained to the most recent five years (2007 - 2011).

Some trends present themselves in tables presented in the Clinical Services Plan, however it should be noted that, due to small volumes, some of the confidence intervals are quite large and the changes may not be statistically significant. The points of note are meant to highlight where there may be emerging concerns in terms of resource planning.

Some points of note among the Health Status indicators are:

- Hospitalized Acute Myocardial Infraction (AMI) events increased by 30% from 2007 to 2011, and more sharply among females (46%) than males (34%);
- Hospitalized stroke events have fallen over the same period by 43% (56% for females, but only 18% for males);
- Hospitalization for injury has declined 15% (22% for males and 3% for females).

Some points of note among the Health System Performance indicators are:

- Information is suppressed (†) for a number of indicators where cell sizes were too small or data was incomplete;
- Hospitalizations for Ambulatory Care Sensitive Conditions (ACSC) (2006 Revision) have risen by 7% from 2007 to 2011 (12% among females, and declined slightly, by 2%, for males);
- Caesarean Sections have declined marginally (7%) over that period; rates among urban residents were marginally higher than rural residents over the period 2007/08 to 2011/12 (23,7 vs. 22.6 4);
- Hospitalized Hip Fracture events were down 8% in 2011 over 2007 (when there was a peak), but were up sharply over 2010.

Some points of note among the Community and Health System Characteristics indicators were:

- Coronary Artery Bypass Grafts (CABG) rose by 32% from 2007 to 2011 (following a dip in the previous two years); the increase for males was 51%;
- Hip replacements declined by 5%, but that was attributable to a 24% drop among males, whereas there was a 9% increase among females;
- Knee replacements rose 31% (attributable to an increase over 100% for males);
- Percutaneous Coronary Interventions (PCI) rose 30% (27% for females and 35% for males);
- Cardiac Revascularizations rose by 30% (20% among females and 40% among males);
- Hysterectomies rose by 7%;
- The ratios of overall inflow to outflow of cases remained relatively consistent over the five year period;
- The rate of visits to General and Family Practitioners fell by 18%, but visits to Specialists rose by 23%.

Health Indicators 2013 (CIHI and Statistics Canada):

The dependency ratio was presented as the number of dependents (the combined population age 0 to 19 and the population age 65 and older) for every 100 people in the working-age population (age 20 to 64). Canadians age 65 and older and those younger than age 20 were more likely to be socially and/or economically dependent on working-age Canadians, and they may also have put additional demands on health services. The dependency ratio for the Yukon is 47.4 compared to 59.1 in Canada, indicating fewer numbers in those dependent age cohorts.

Hospitalizations for injury in Yukon Territory substantially exceed those in Canada as a whole: 1,159 per 100,000 population versus 516, age-standardized. The age-standardized rate of acute care hospitalization is due to injury resulting from the transfer of energy (excludes poisoning and other non-traumatic injuries), per 100,000 population. This indicator contributes to an understanding of the adequacy and effectiveness of injury prevention efforts, including public education, product development and use, community and road design, and prevention and treatment resources.

The rate of people in Yukon Territory hospitalized for acute myocardial infraction (AMI) events exceeds the Canadian level (246 per 100,000 compared to 205, age-standardized), whereas the rate is lower for stroke events (106 per 100,000 versus 121, age standardized).

The following lists self-reported behaviours distinguishing First Nations peoples and Métis relative to non-First Nations in Yukon Territory, as compared to Canada as a whole. Of note are the levels of tobacco use and alcohol consumption.

Table 3: Self-Reported Behaviours First Nations, Metis, and Non-First Nations

Self-Reported Behaviours	Yukon			Canada		
	First Nations	Metis	Non-First Nations	First Nations	Metis	Non-First Nations
Smoking	51%	51%	26%	40%	37%	21%
Heavy Drinking	38%	34%	23%	25%	25%	17%
Physical Activity During Leisure	47%	59%	59%	53%	57%	51%
Fruit & Vegetable Consumption	35%	43%	47%	35%	38%	44%
Sense of Community Belonging	79%	63%	76%	64%	62%	65%
Life Satisfaction (S/VS)	86%	90%	93%	88%	89%	92%

PUBLIC HEALTH

The role of Public Health agencies in Canada is to promote health, prevent and control chronic diseases and injuries, prevent and control infectious diseases, prepare for and respond to public health emergencies⁴. Refer to the previous Health Status section of this report for data related to population health, chronic diseases rates and injury rates. The Yukon Clinical Service Plan Data Compendium was reviewed. This report includes Communicable Disease Incidence rates for: diseases that are preventable by routine vaccination; diseases transmitted by direct contact and respiratory routes; enteric, food and waterborne diseases; and laboratory confirmed sexual transmitted and blood borne infections. Diseases transmitted by direct contact and respiratory routes are of particular interest for Emergency Services both for providing services to patients experiencing acute symptoms related to acute phase of these infectious diseases and also for preventing the exposure and potential spread of the infectious disease to other patients, visitors and staff in the Emergency Department/Hospital.

The following paragraphs was provided by Yukon Communicable Disease from ***Yukon Communicable Disease Report: A Summary of Reportable Diseases 2014***

Effective respiratory control measures in the emergency room setting is essential to limit the spread of respiratory diseases such as influenza, severe acute respiratory syndrome, measles, and pertussis. Transmission of respiratory diseases can occur in many places including the waiting room, triage and treatment areas as well the broader hospital areas (Medical Imaging, Laboratory Services). Some diseases such as Tuberculosis require specific control measures such

⁴ (http://www.phac-aspc.gc.ca/about_apropos/index-eng.php)

as negative pressure rooms. The risk of transmission is not limited to patients but also includes visitors, staff and inpatient population.

There are currently 60 + diseases under surveillance in Yukon, of particular interest to the emergency room setting are the following:

Influenza

Influenza or the flu is a common infectious respiratory disease classified into 3 types (A, B, and C). Epidemic disease is caused by influenza virus types A and B, thus both influenza A and B virus antigens are included in seasonal influenza vaccines. Infection is spread from person to person primarily through respiratory tract droplets created by coughing or sneezing. Contact with contaminated surfaces is also responsible for transmission of these viruses. Influenza can lead to serious complications in those with or without co-morbidities, including healthy infants/children and seniors

In Yukon, the highest incidence of influenza between the 2006-2007 and the 2013-2014 influenza season years occurred during the 2009-2010 year of the influenza pandemic, when a total of 154 influenza cases were reported (all influenza A H1N1); the lowest incidence was observed in the 2010-2011 influenza season when only 10 influenza cases were reported.

Since the H1N1 pandemic in 2009, significant variability has been observed among seasonal influenza trends in Yukon. Influenza seasons (August-July) have ranged from mild seasons with a late seasonal start (2010-2011) to more significant disease with an early start to the influenza year (2012-2013). This was highlighted by Yukon's first influenza outbreak in a facility setting since the pandemic, occurring in a long term care facility in June 2013. During the 2010-2011 influenza season, a total of 10 influenza cases were reported, 2011-2012 influenza season, a total of 77 influenza cases were reported, during the 2012-2013 influenza season, a total of 81 influenza cases were reported.

Pertussis

Pertussis (whooping cough) is caused by the bacterium *Bordetella pertussis*. Pertussis is highly communicable with studies showing 80% secondary attack rates among susceptible household contacts. Transmission is less likely either from vaccinated cases or to vaccinated contacts. Pertussis is usually transmitted by the respiratory route through contact with respiratory droplets.

A large pertussis outbreak occurred in Yukon in 2012. A total of 59 confirmed cases were reported between April 11, 2012 and December 10, 2012 with cases in multiple rural communities and Whitehorse.

Disease occurred mainly in those ages 10-14 and 15-19, with an incidence of 817.9 per 100,000 population for 10-14 year olds and 961.1 per 100,000 population for 15-19 year olds, compared to an overall incidence of 164.5 per 100,000 population (Table 2). Those whose immunization

status was not up to date, as defined by Yukon Immunization Guidelines, were disproportionately affected.

Outside of this outbreak, 2 additional clustering of cases were identified in 2013. Both had limited transmission with a small number of secondary cases identified. Most concerning with these small clusters was that one of the index cases was a health care provider (HCP). This index case was a confirmed epidemiologic link to a confirmed case in another Canadian jurisdiction and did not have an adult dose of pertussis-containing vaccine as recommended in Yukon. This exposure resulted in signs being positioned at community sites making the public aware of potential exposure, symptoms of pertussis and the importance of seeking medical attention if symptoms were present. When contact tracing was completed within the workplace of the index case, it was found that 8 out of 13 or 61.5 % HCPs (nurses and physicians) were up to date as per Yukon Immunization Program Manual, which recommends one dose of acellular pertussis containing vaccine in adulthood regardless of history of infection.

Measles

Measles is one of the most communicable infectious diseases with greater than 90% secondary attack rates among susceptible persons. The virus is transmitted by the airborne route, respiratory droplets, or direct contact with nasal or throat secretions of infected persons. Patients are infectious from 1 day before the beginning of the prodromal period to 4 days after rash onset.

Internationally between 2011 and 2013 there were large measles outbreaks worldwide including significant cases in Europe including United Kingdom, Ireland, Italy and eastern European countries such as Romania, Georgia, and Ukraine.

Multiple outbreaks of measles have also been found in Canada. Some characteristics of the outbreaks are as follows:

- Alberta, 2013- 42 confirmed cases; age group mainly affected not yet released.
- Quebec, 2011 - 725 confirmed cases; mainly affected young people aged 10 to 19 years
- British Columbia, 2010 - 82 confirmed cases; mainly affected infants and children less than 5 years old and adults 30 to 39 years old
- Ontario, 2008 - 53 confirmed cases; mainly affected those less than 10 years of age

The pattern of cases is consistent with the majority of cases involving predominantly unimmunized and under immunized persons. Although no cases of measles have been reported in Yukon within the past 10 years the number of cases and outbreaks within other jurisdictions both within Canada and internationally emphasize the importance of ongoing vigilance of measles prevention strategies and surveillance in Yukon.

PART 2 SERVICE DELIVERY

This section of the Needs Assessment focuses on current utilization, projected utilization, and identified quality of care issues for ED, and ICU as well as the new MRI program. Sources of information are from Meditech, the CIHI Portal, Accreditation Canada Reports, CSA Z8000-11 Standards for Canadian Health Care Facilities, and a variety of reports from consultants as noted in the Appendices.

EMERGENCY DEPARTMENT

1.1 QUANTITATIVE DATA

The Canadian Institute for Health Information (CIHI) National Ambulatory Care Reporting System (NACRS) uses the Canadian Triage and Acuity Scale (CTAS) to triage ED patients by type and severity based on presenting signs and symptoms⁵. CTAS levels are defined as 1 (Resuscitation), 2 (Emergent) and 3 (Urgent) as the most severe, followed by levels 4 (less urgent) and 5 (non-urgent). Other levels, CTAS 7 and 9, are excluded from the analysis. CTAS 7 are booked minor procedures (seen through Surgical Day Care but reported to CIHI through NACRS), CTAS 9 are ED visits that have not been assigned a CTAS score either through error or due to the client being a repeat visit Medical daycare patient. Data for this section is sourced through CICI's NACRS database.

1.1.1 Analysis of Utilization Data: Volume

Volume increases in 2011-12 and 2012-13 can be attributed to the implementation of increased physician and nursing resources in response to primary health shortages. Visit volumes peaked in May 2012 at 3,097 visits. Since May 2012 ED visits have been trending downward (refer to Figure 3), however total visits in 2013/14 have remained fairly high (refer to Figure 4).

⁵ Source: CIHI NACRS. Emergency Department Trends 2012-13. Accessed June 2 2014: http://www.cihi.ca/CIHI-ext-portal/pdf/internet/NACRS_EDT_INFOSHEET_EN

Figure 3 Emergency Department Visits by Month (Source: Meditech)

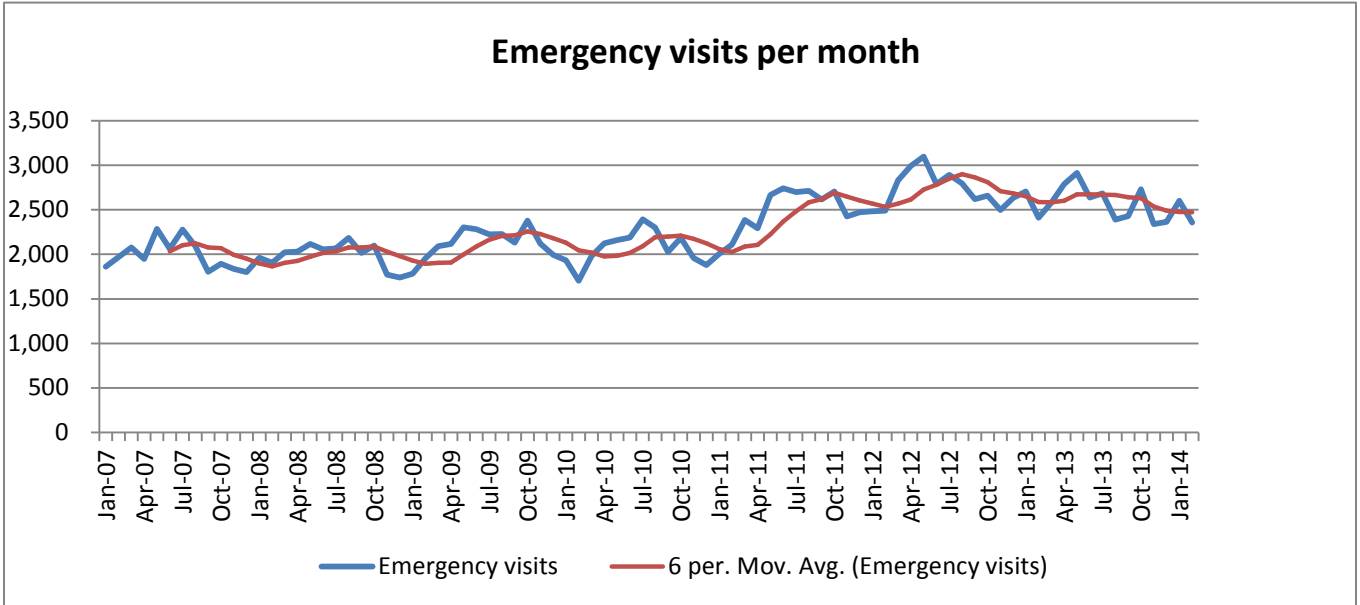
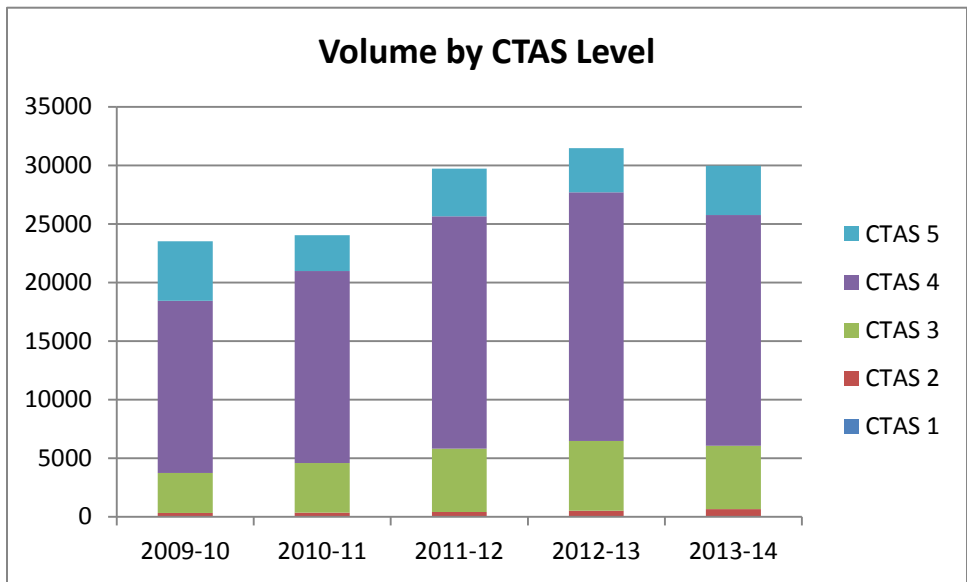
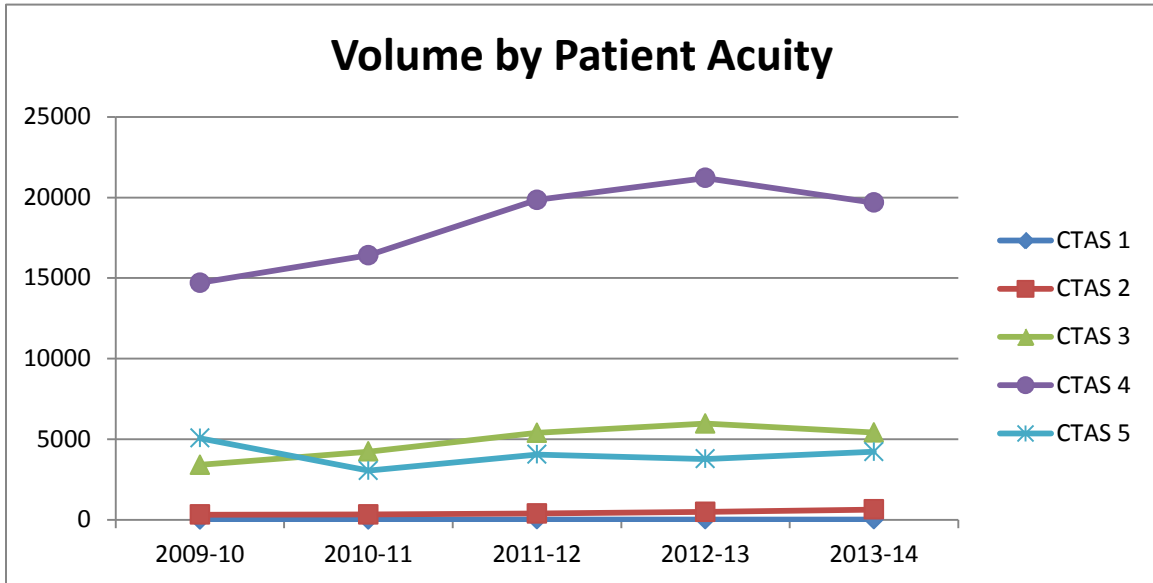


Figure 4: ED Visit Volume by CTAS Level



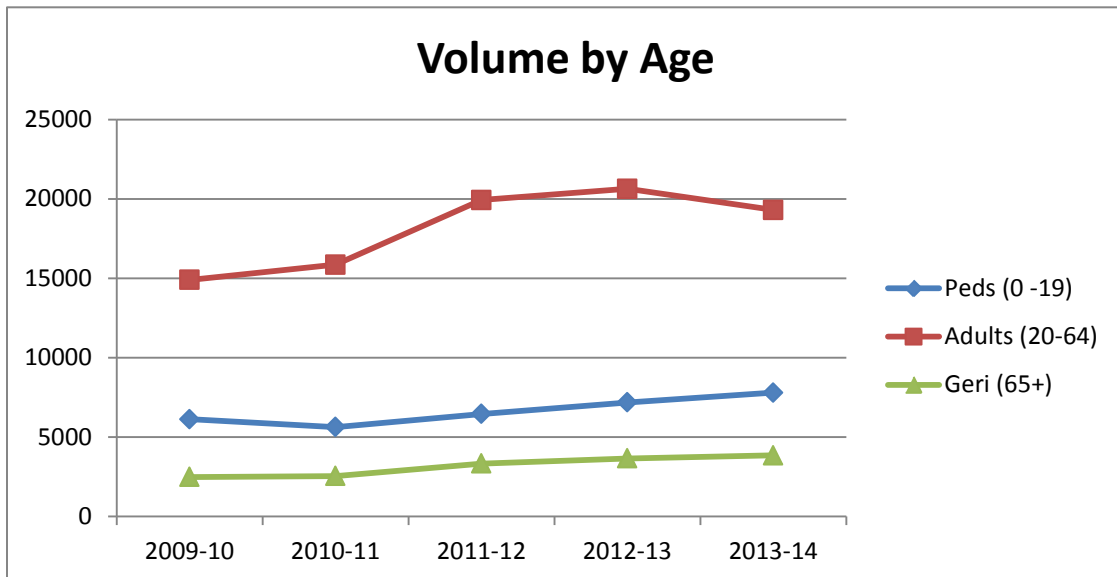
Increases noted between 2009-10 and 2012-13 were primarily in CTAS 4 with slight upward trend for CTAS 3 (Figure 5). Overall volume decreases in 2013-14 were primarily due to reductions in CTAS 4.

Figure 5: ED Visit Volume by Patient Acuity



Although there were increases from 2009-10 to 2012-13 across all age groups the increases were most pronounced in the Adult segment (Figure 6). The reductions in overall volumes in 2013-14 were seen only in the Adult segment, Pediatric volumes continued to increase and the geriatric segment relatively stable.

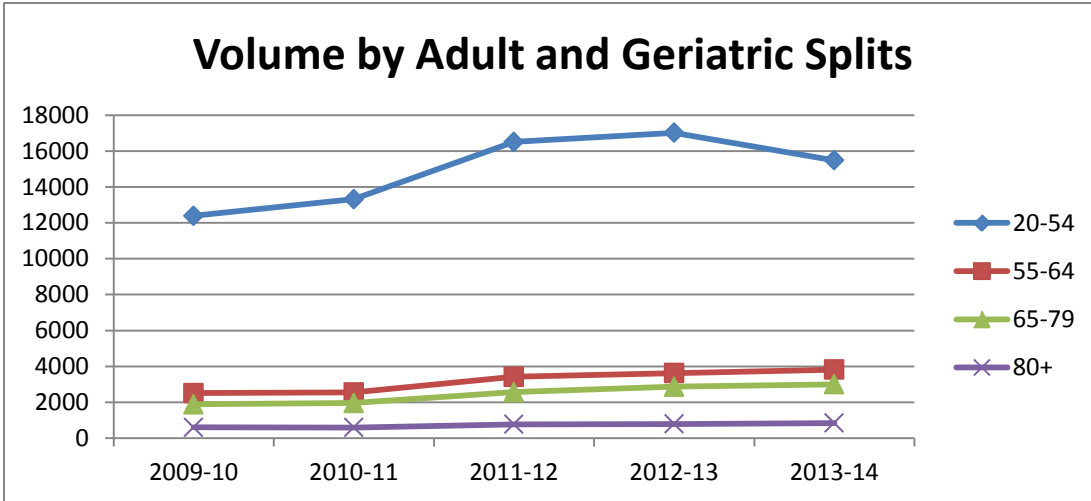
Figure 6: ED Visit Volume by Age Cohort



Breaking down the Adults and Geriatric cohorts into the 20-54, 55-64 (Baby boomers), 65-79 and the 80 plus age groups indicates the largest increase in utilization was for the

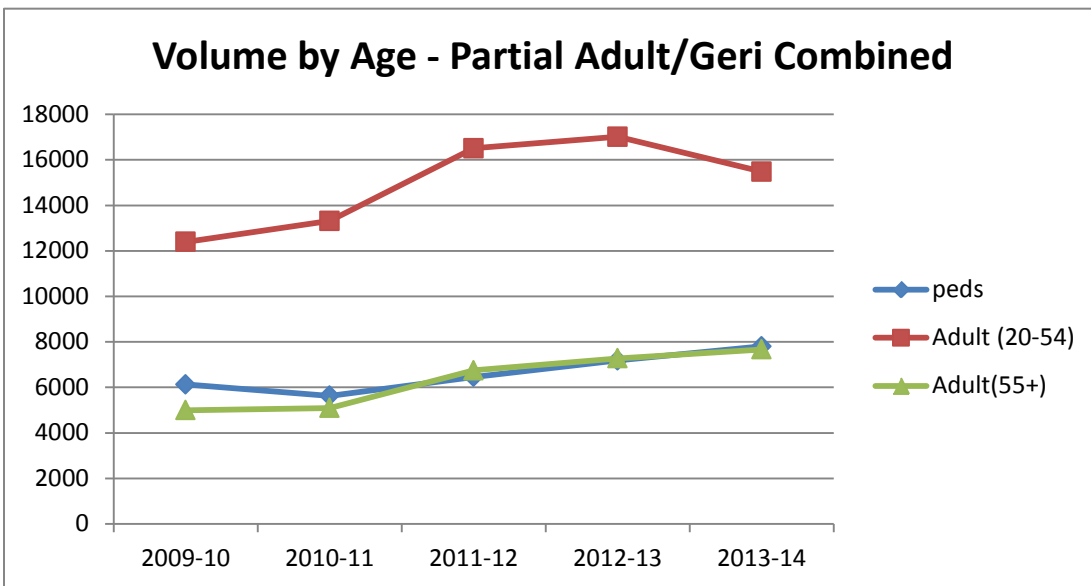
20–55 age group in 2011-12, holding stable in 2012-13, and with a slight trend down in 2013-14 (Figure 7). The 55-64 and 65-79 age groups continued to trend upwards and the 80+ age group was stable.

Figure 7: ED Visit Volume by Age – Adult and Geriatric Splits



Steady volume increases are noted from 2009 to 2014 for Pediatric and older Adults 55 and over with no reduction in volumes in 2013-14 although overall volume reductions were noted in 2013-14. The largest increase in volumes were noted for the Adult group aged 20 to 54 in 2011-12, increasing slightly in 2012-13, followed by a significant reduction for this group in 2013-14 (Figure 8).

Figure 8: ED Visit Volume by Age – Partial Adult/ Geriatric Combined



1.1.2 Analysis of Utilization Data: Peak Hours

The Peak Hours for general ED visits has decreased from 12 hours to 8 hours per day from 8 am to 4 pm which placed less demand on the ED in the evening. However, the peak hours for mental health patients increased from 9 hour to 12 hours per day from 11am to 11pm. Of note, there was a significant overlap between the peak hours of the general population and mental health patients between 11am and 4pm. Peak hours data for 2013-14 was not available from CIHI.

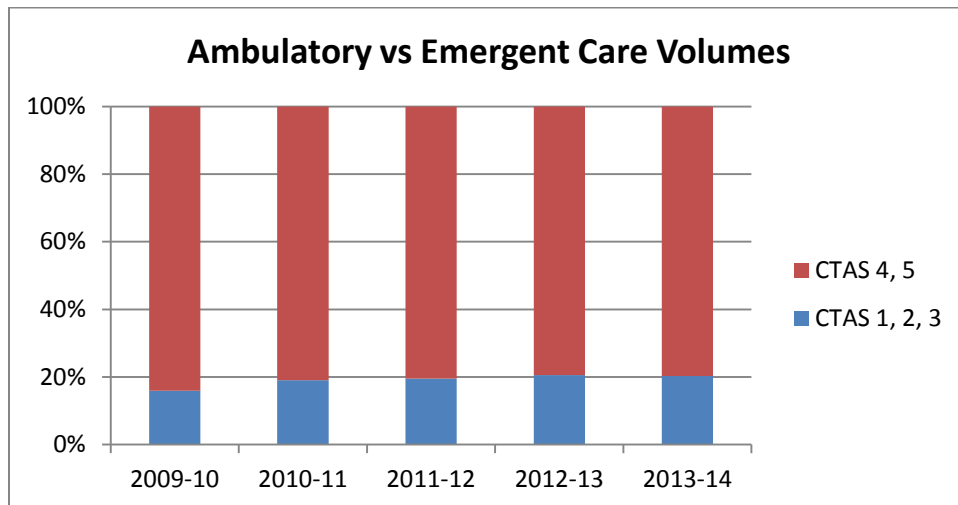
Table 4: ED Peak Hour Comparison – General Population vs. Mental Health

Peak Hours				
Patient Type	2009-10 (23,515)	2010-11 (24,043)	2011-12 (29,719)	2012-13 (31,475)
General Population	12 hours 8am - 8pm	10 hours 8am - 6pm	8 hours 8am - 4pm	8 hours 8am - 4pm
Mental Health	9 hours 3pm – 12am	10 hours 1pm - 11pm	13 hours 11am – 12am	12 hours 11am - 11pm

1.1.3 Analysis of Utilization Data: Complexity of Care

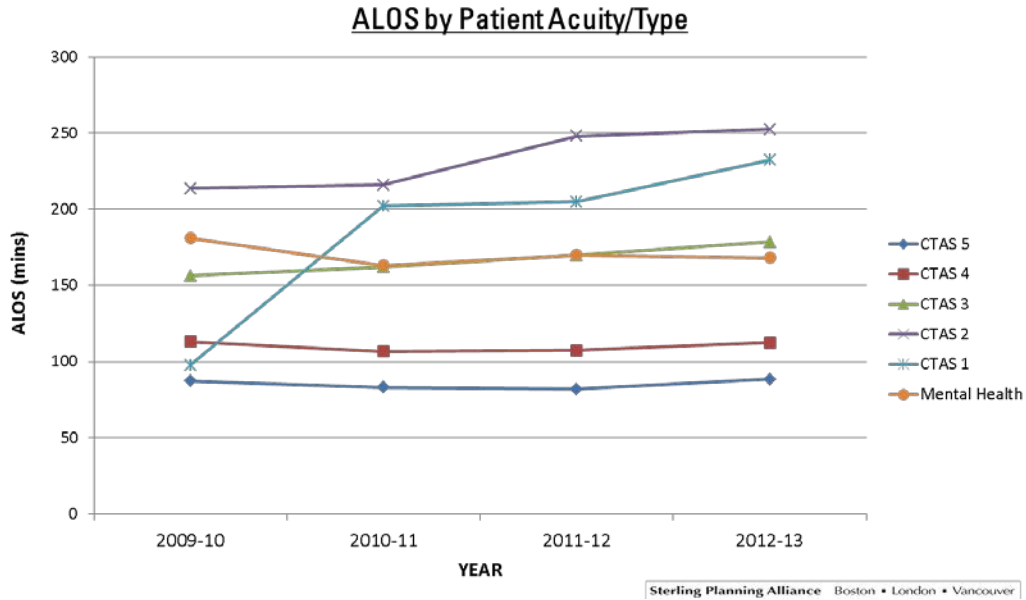
The proportion of total ED visits represented by ambulatory care patients, (CTAS 5 (non-urgent), and CTAS 4 (less-urgent)) has remained relatively stable at 80%. Emergent care patients represented by CTAS 1 (resuscitation), CTAS 2 (emergent), and CTAS 3 (urgent) compose 20% of total ED volumes. (Figure 9)

Figure 9 Proportion of Ambulatory vs Emergent Care Volumes



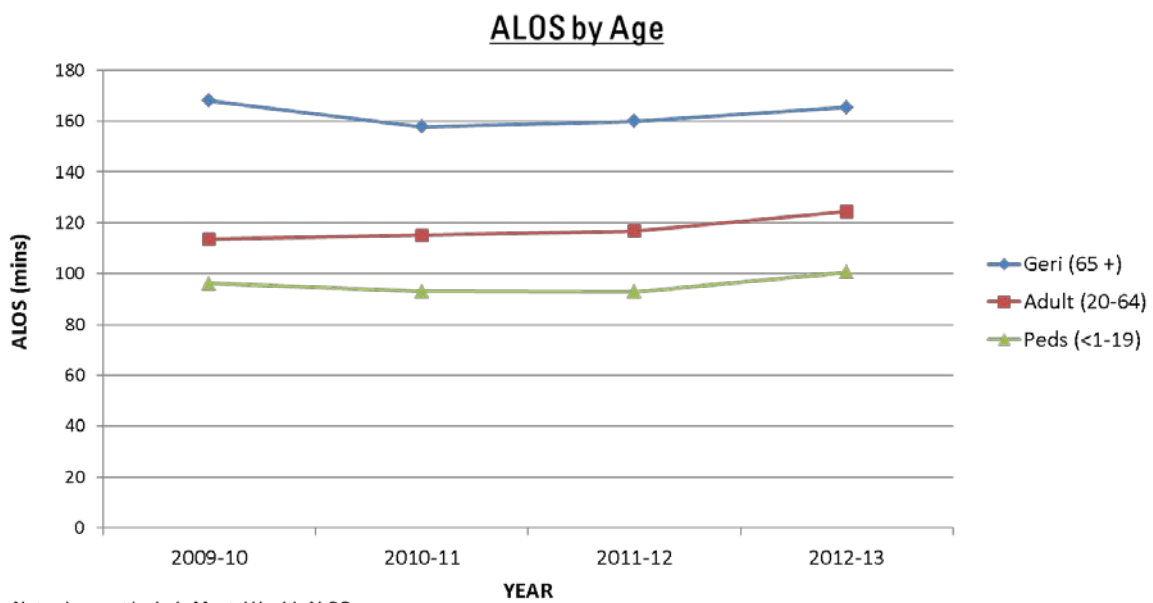
Average Length of Stay (ALOS) for CTAS 5, 4, and 3 has been relatively stable from 2009-10 to 2012-13. Of note is the increasing ALOS for CTAS 1 and 2. (Figure 10)

Figure 10: Average Length of Stay by Patient Acuity/Type



ALOS by age is stable across age groups but it is important to note that geriatric patients have a significantly longer ALOS than Adults and pediatric patients. (Figure 11)

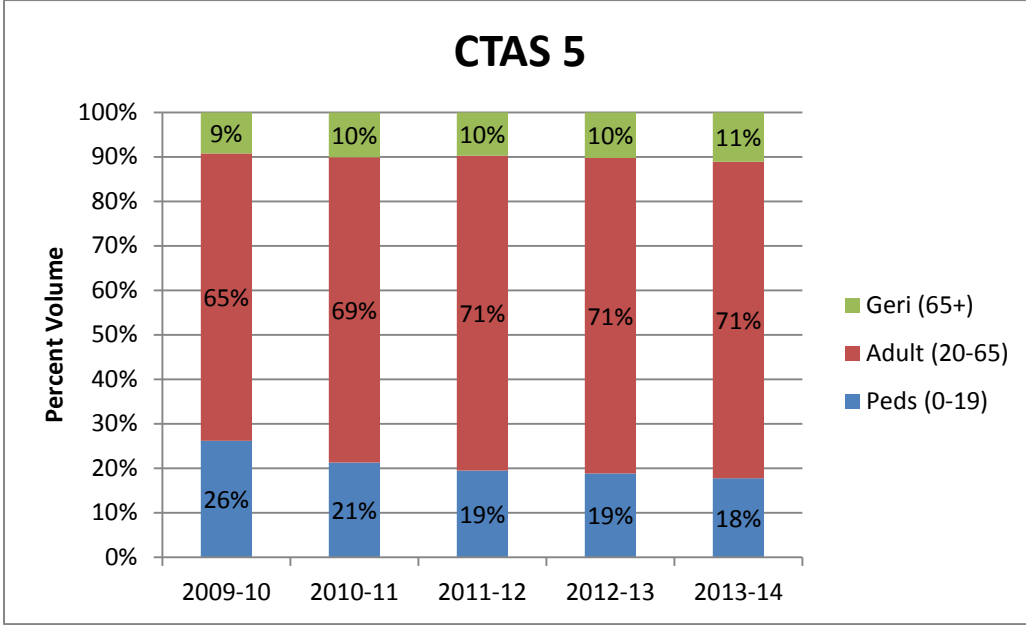
Figure 11: Average Length of Stay by Age



Note: does not include Mental Health ALOS

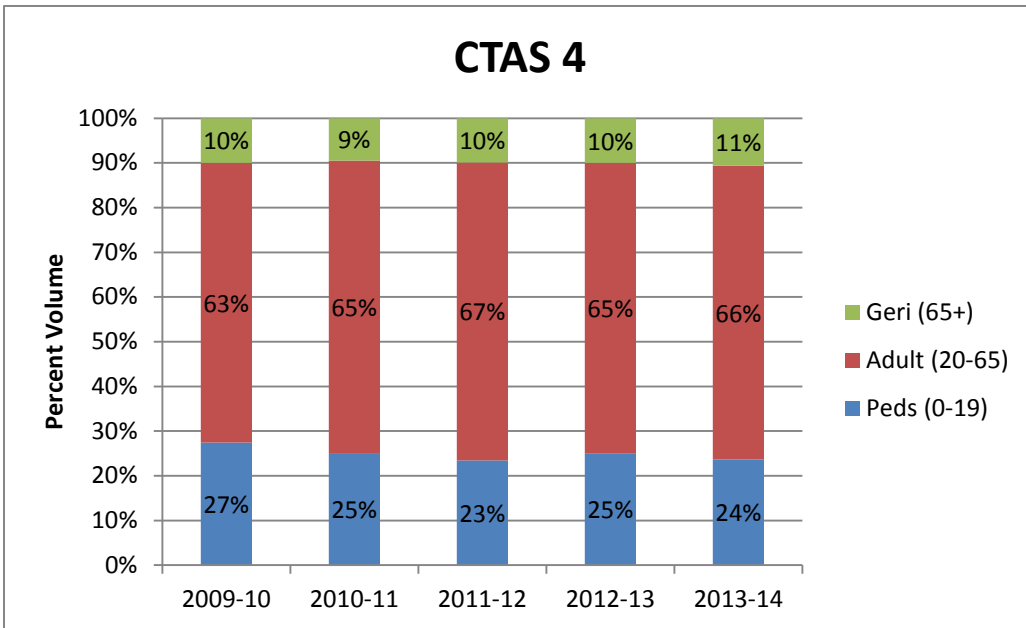
The proportion of visits by age group for CTAS 5 has been relatively stable with a slight increase in the Adult group. (Figure 12)

Figure 12: Proportion of Visits by Age Group – CTAS 5



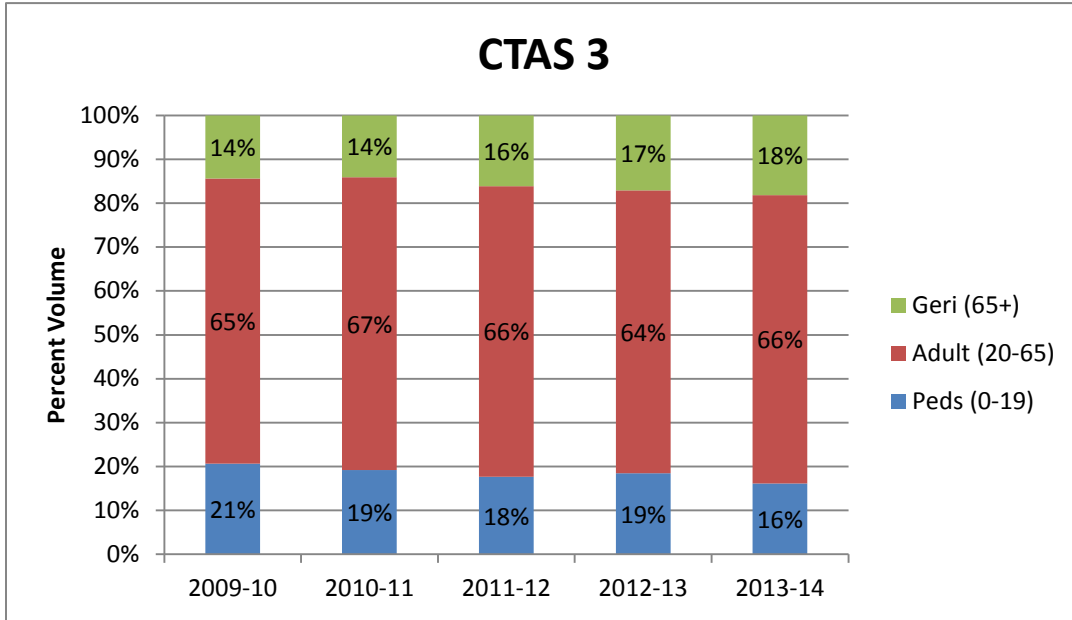
The proportion of visits by age group for CTAS 4 has been relatively stable. (Figure 13)

Figure 13: Proportion of Visits by Age Group – CTAS 4



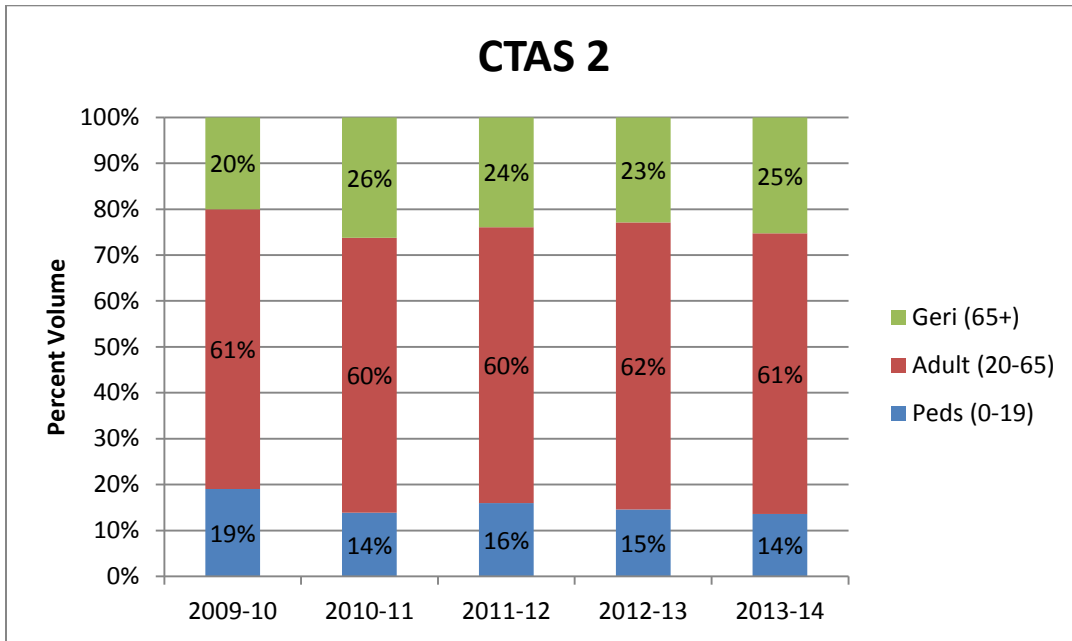
The proportion of patients by age group for CTAS 3 has been relatively stable with a slight increase in the Geriatric age group. (Figure 14)

Figure 14: Proportion of Visits by Age Group – CTAS 3



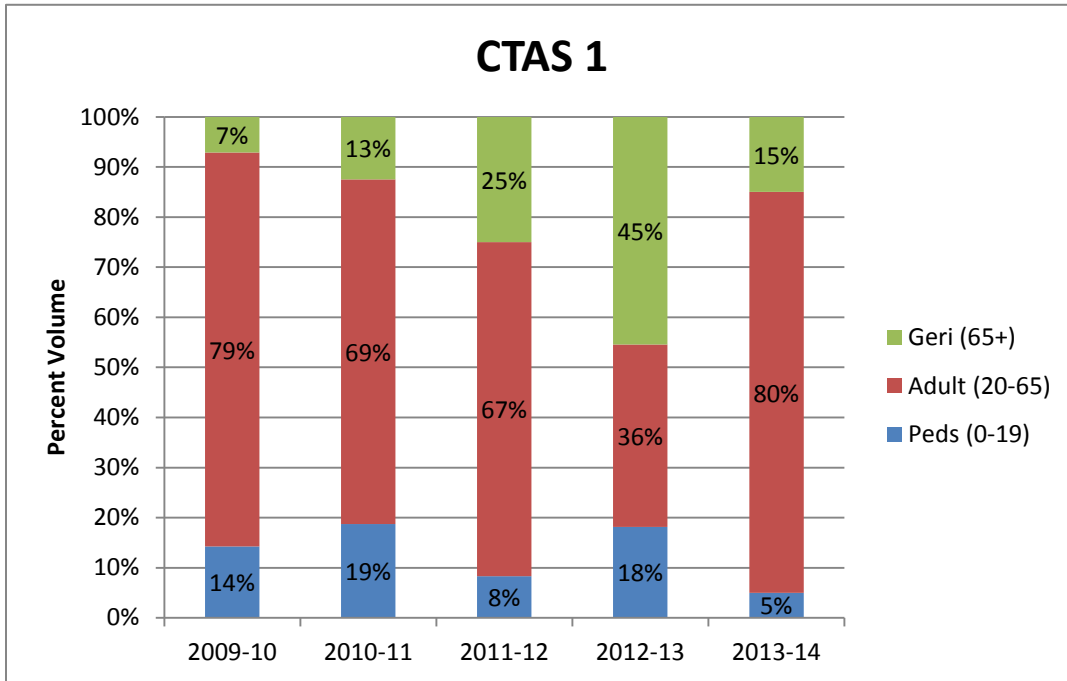
The proportion of patients by age group for CTAS 2 has been relatively stable. Of note the geriatric group represents ~25% of all CTAS 2 cases. (Figure 15)

Figure 15: Proportion of Visits by Age Group – CTAS 2



The CTAS 1 visit volumes are small overall (approximately 14 to 24 visits per year) and as such variations in trends from year to year can be influenced by 1 or 2 cases. Having acknowledged this limitation with the data, the increasing proportion of Geriatric patients for CTAS 1 clients is a very significant trend in particular when considering the increased ALOS associated with geriatric patients (Figure 16) and should be monitored over the coming years.

Figure 16: Proportion of Visits by Age Group – CTAS 1



1.1.4 Analysis of Utilization Data: Mental Health

ED visit volumes related to Mental Health or Substance Use have steadily increased over the 2009-10 and 2012-13 years, with a decrease in 2013-14 (Figure 17). This trend is consistent for both the Mental Health and the Substance Use sub groups but more pronounced in the Mental Health subgroup (Figure 18 and Figure 19).

Figure 17: Volume by Acuity for ED Visits Related to Mental Health or Substance Use

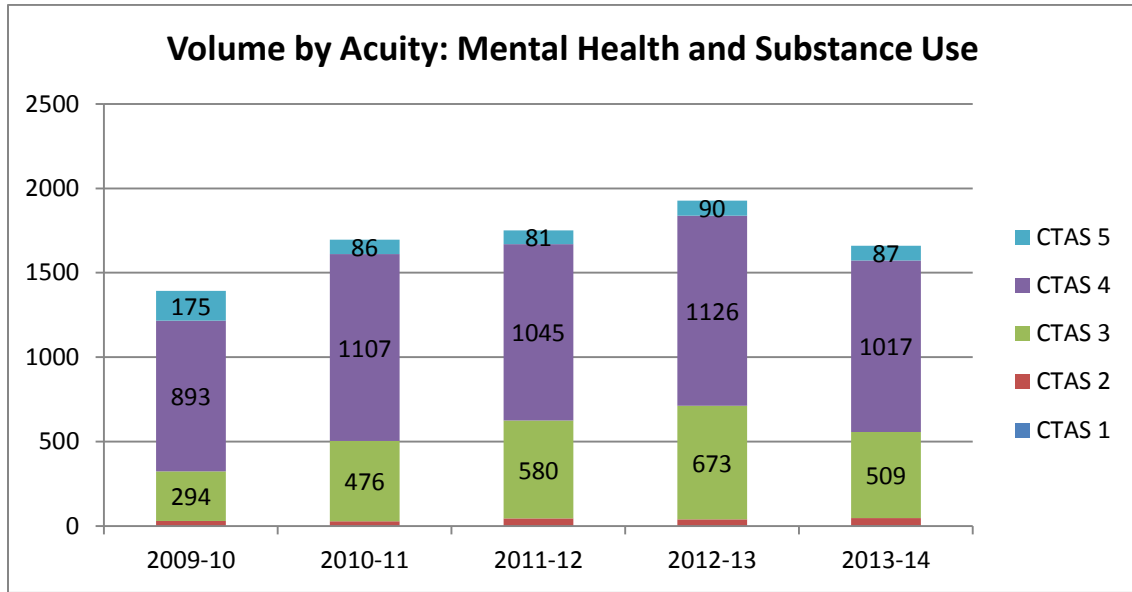


Figure 18: Volume by Acuity for ED Visits related to Substance Use

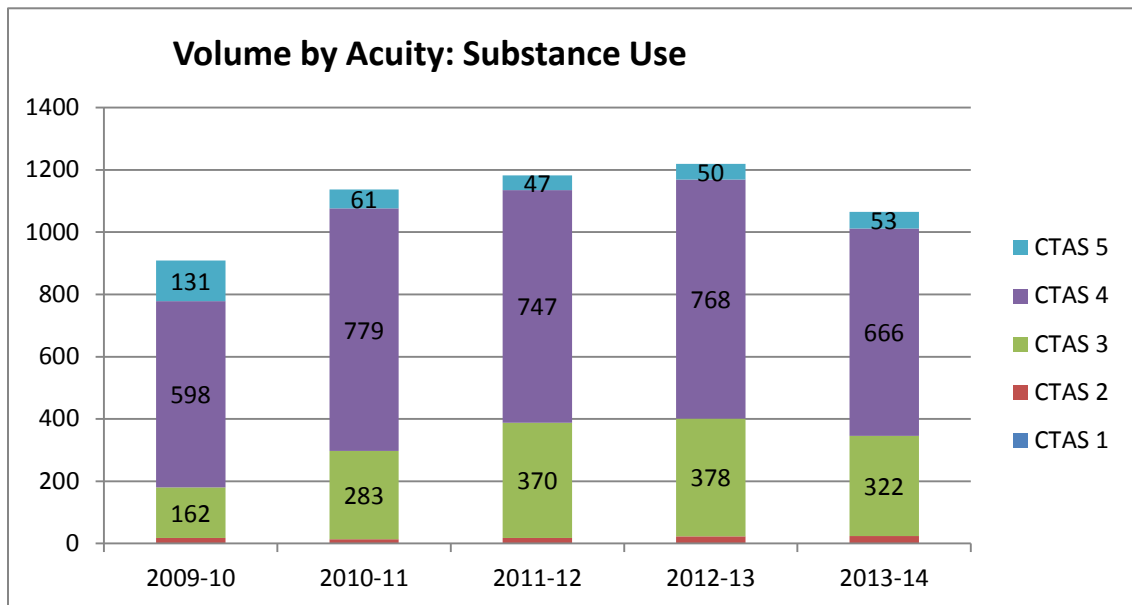
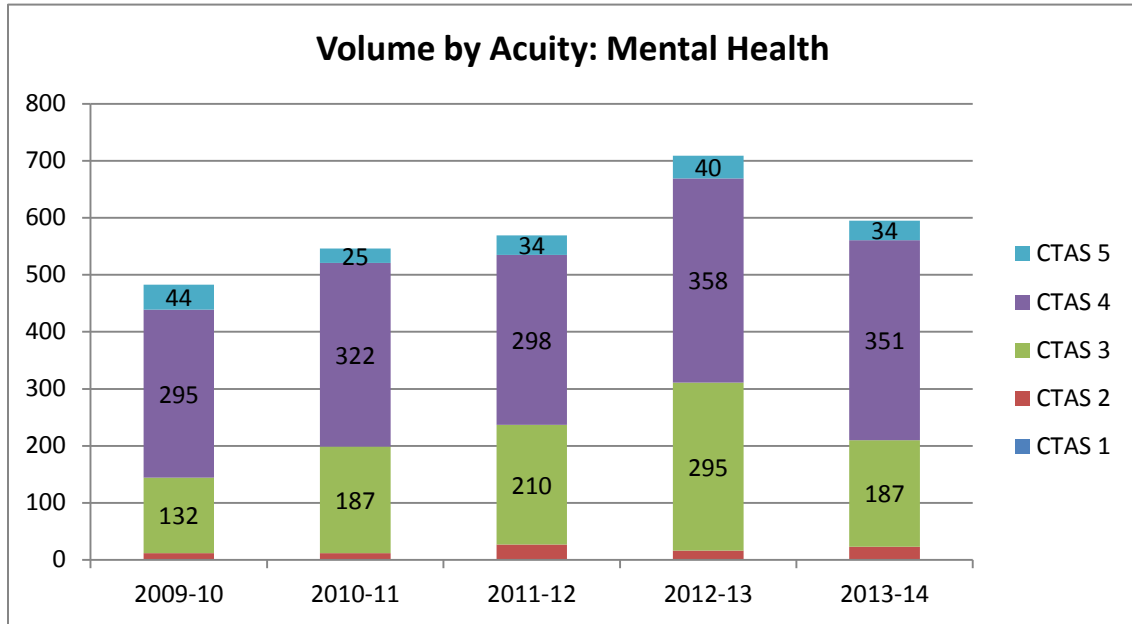


Figure 19: Volume by Acuity for ED Visits related to Mental Health



The acuity of Mental Health and Substance Use visits has shifted over 2011-12 to 2013-14 with the more acute patients (Triage 1, 2 and 3) representing approximately 33 % of the visits for this group of patients (Figure 20), 30% for Substance Use visits (Figure 21), and 38% for Mental Health visits (Figure 22).

Figure 20: Proportion by Acuity for ED Visits related to Mental Health or Substance Use

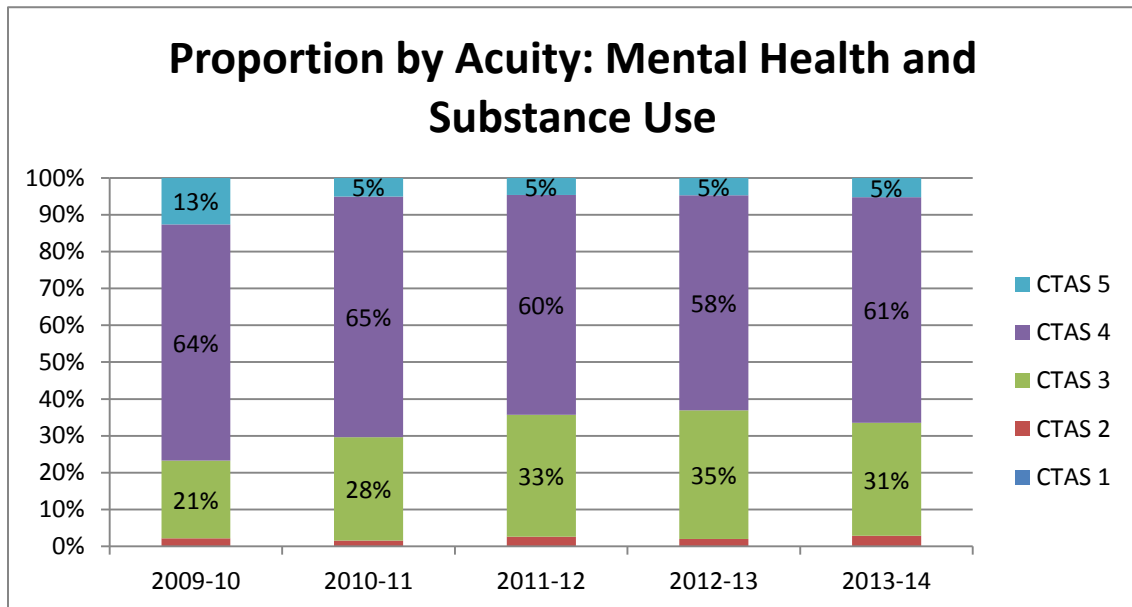


Figure 21: Proportion by Acuity for ED Visits related to Substance Use

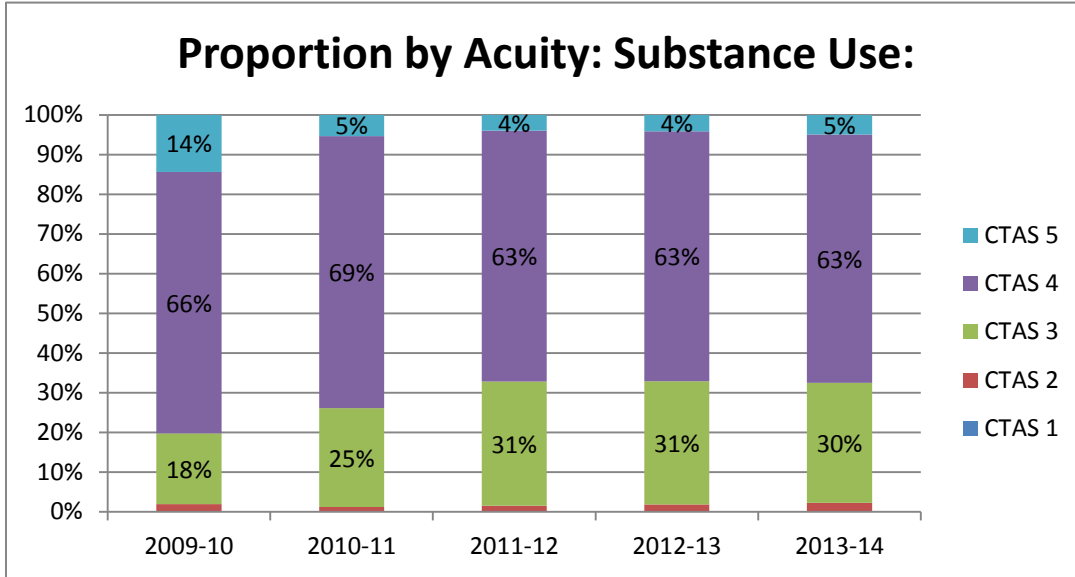
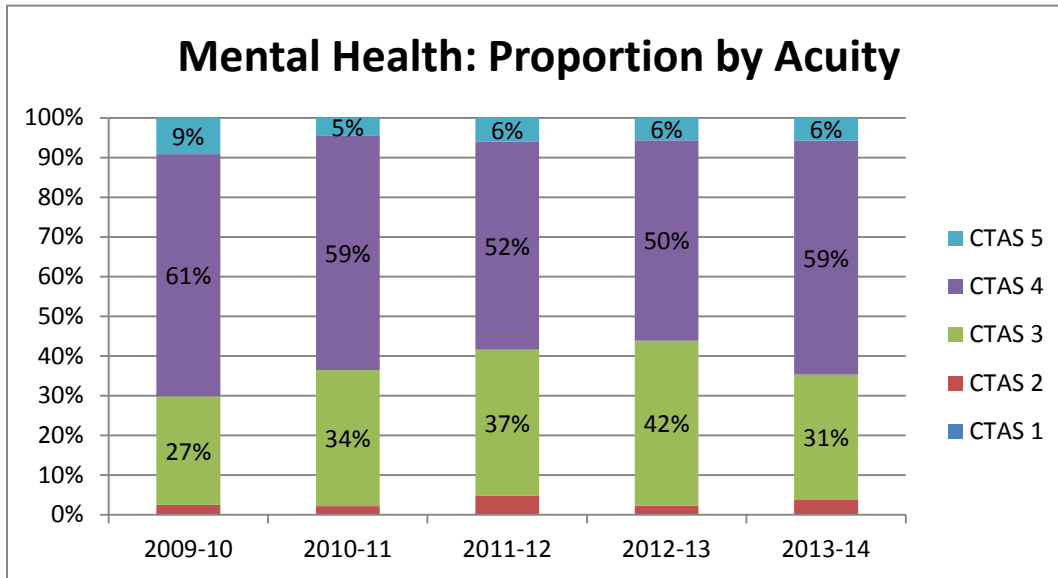


Figure 22: Proportion by Acuity for ED Visits related to Mental Health



The largest increase in visit volumes related to Mental Health and Substance Use was in the 20 to 44 year age group which increased in 2012-13 and reduced in 2013-14 but remained higher than the 2010-11 volumes. The Pediatric, 45-64 year adult, and geriatric age groups are stable with little or no change in visit volumes. (Figure 23) These trends are similar for the Substance Use (Figure 24) and the Mental Health sub group

with the exception of an increase in visits for the 45-64 year age group (Figure 25) in the 2011-12 to 2013-14 period.

Figure 23: Volumes by Age Group for ED Visits related to Mental Health or Substance Use

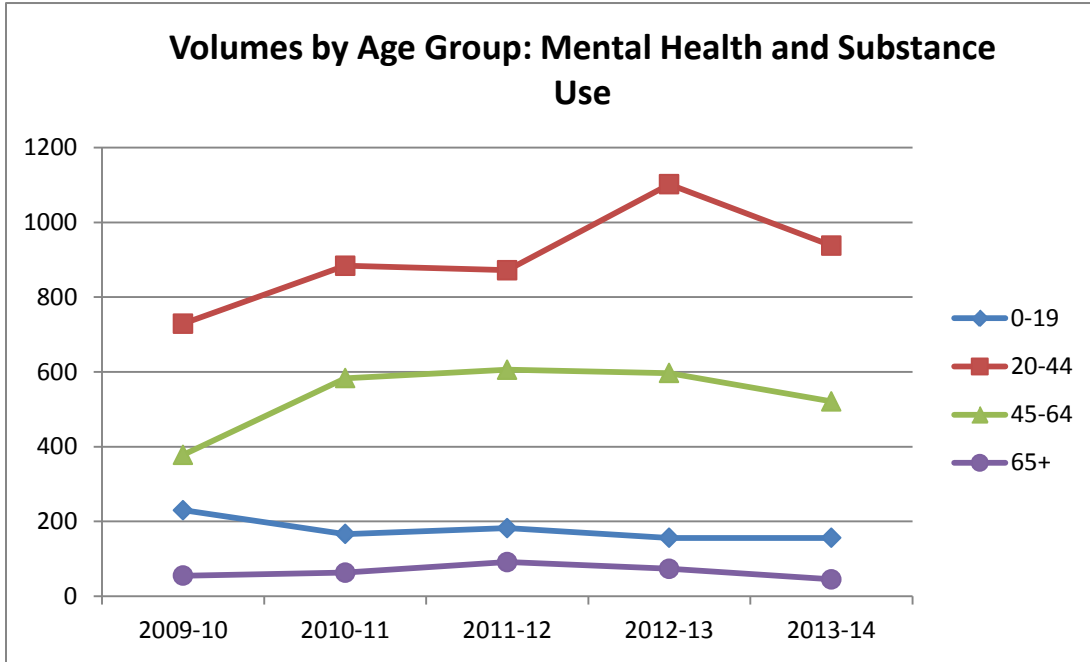


Figure 24: Volume by Age Group for ED Visits related to Substance Use

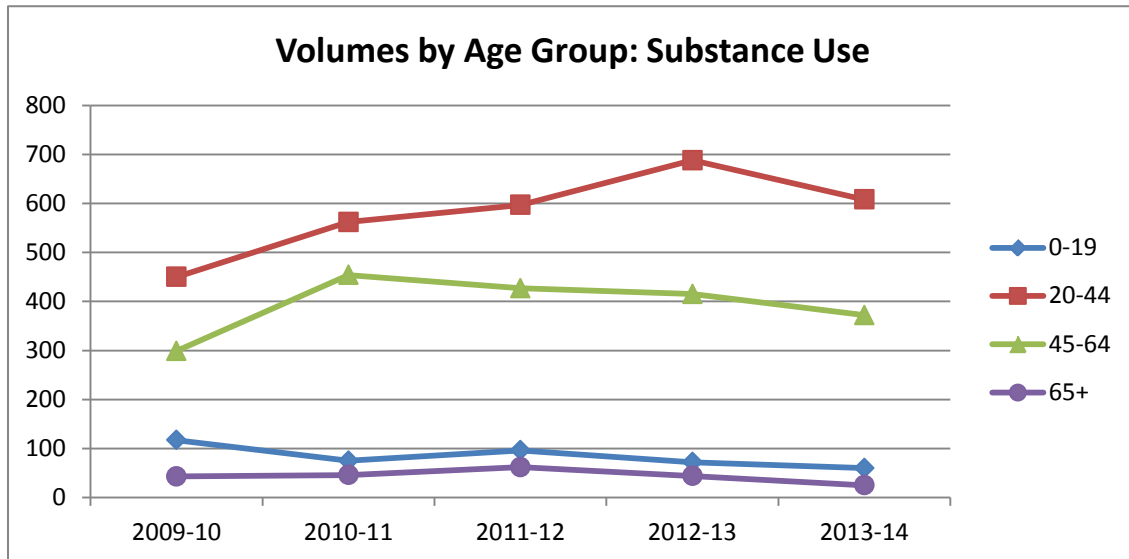
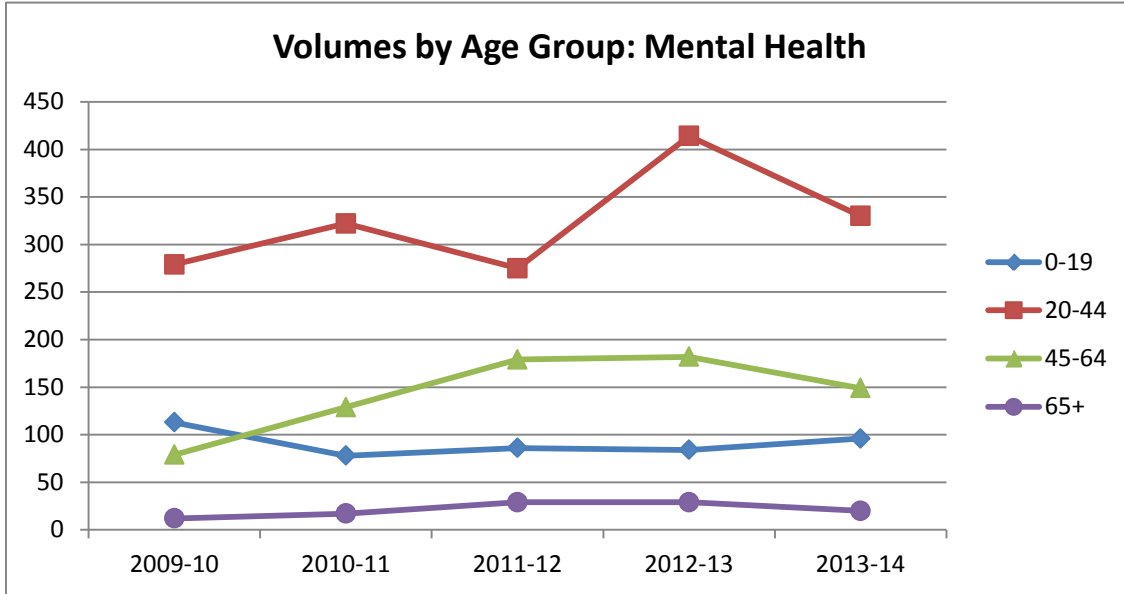


Figure 25: Volume by Age Group for ED Visits related to Mental Health



Overall the distribution of ED Visits for Mental Health and Substance Use over age groups has remained relatively stable (Figure 26) with 20-44 year age group representing approximately 50 percent of the visits and pediatrics representing approximately 7% to 10%. For Substance Use sub group distribution over age groups has also remained stable with the 20-44 year age group representing approximately 55% of the visits and pediatrics representing 5-8% (Figure 27). For the Mental Health sub group distribution over age groups has been more variable with the 20-44 year age group represents approximately 48 -59% of the visits and pediatrics representing 12-23% (Figure 28).

Figure 26: Proportion by Age Group for ED Visits related to Mental Health or Substance Use

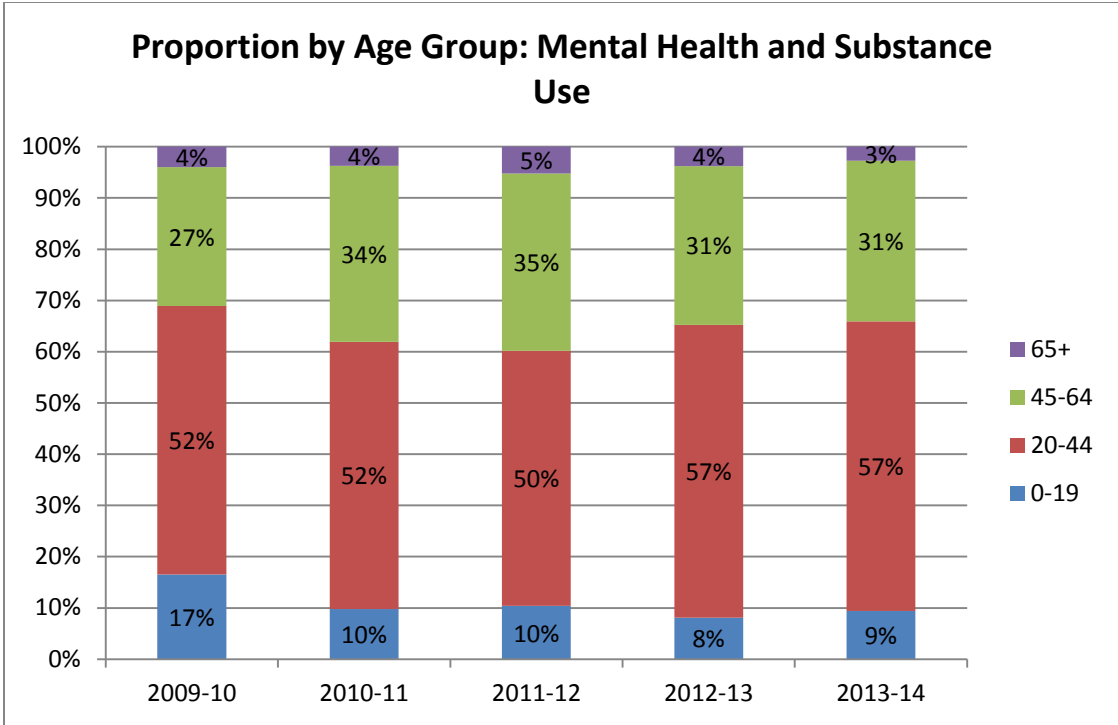


Figure 27: Proportion by Age Group for ED Visits related to Substance Use

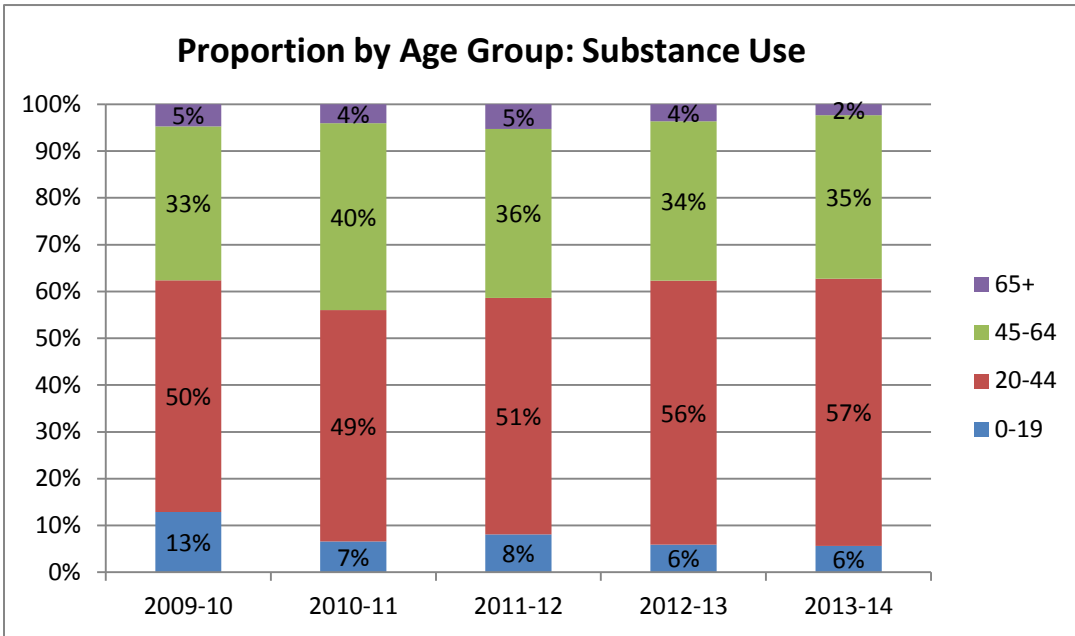
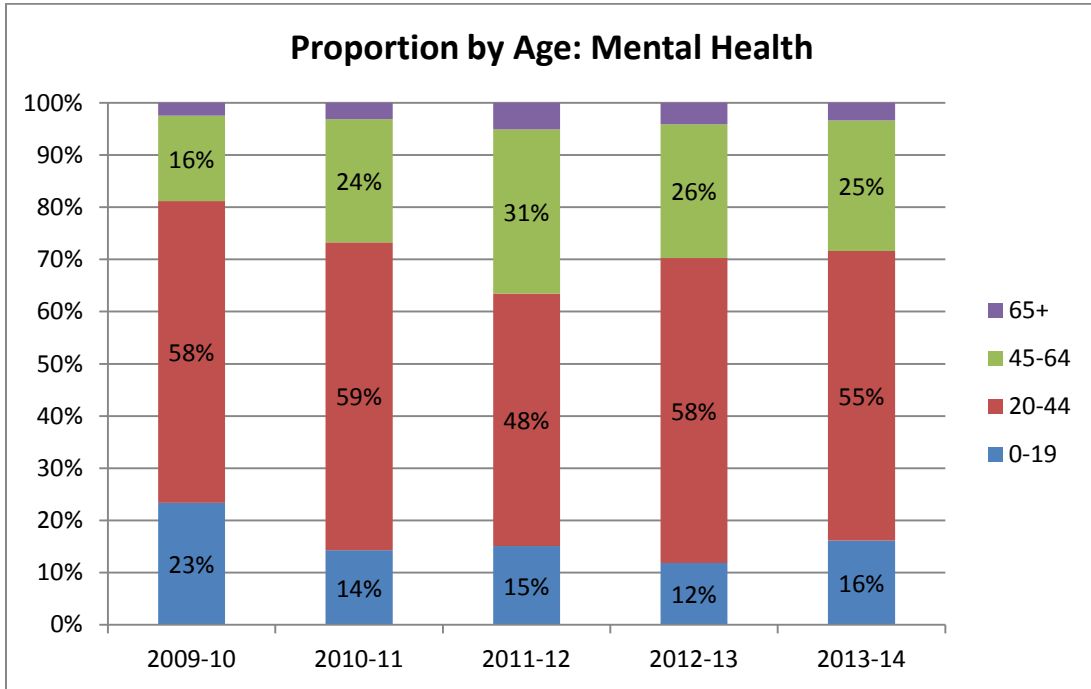


Figure 28: Proportion by Age Group for ED Visits related to Mental Health



1.1.5 Projected Utilization Data

1.1.5.1 Resource Planning Group (RPG) Projections

RPG previously prepared a functional plan for WGH as part of the development of the WGH Campus Master Plan. This plan included projections of ED activity, based on patterns of utilization of the ED and Yukon population projections. In January 2014 WGH asked that RPG update the projections and associated facility planning documents using more current utilization data and updated population projections. The prior RPG work was completed with the assistance of Hay Group Health Care Consulting, and Hay Group supported the development of the updated projections on behalf of RPG.

A dataset for 2012/13 ED visit data containing the following data elements was extracted from the CIHI portal:

- Recipient Country
- Recipient Province
- Patient Residence Code
- Facility Province/Territory
- Hospital #
- Hospital Corporation

- Hospital Site
- Standard Age By 5 Year
- CTAS (Canadian Triage Acuity Score) #
- CTAS Name
- Main Problem ICD10 diagnosis
- Diagnosis Name
- Discharge Disposition code and name
- Total Visits

Yukon Bureau of Statistics population projections were provided based on 2 year historical trends, 5 year trends, and 10 year trends. The 10 year trend population projections were used to support the analysis. Population estimates and projections, by 5 year age/gender cohort were provided by the Yukon Bureau of Statistics (YBS) for 2012 to 2037, with the 2012 data as of June 2012.

The data included projections for individual communities within the Yukon, but since the ED data did not identify individual communities of residence for the ED patients, only the territorial overall projections were used.

The 2012/13 ED patients were categorized by 5 year age cohort and the projected Yukon population change within that cohort, for each of 2015, 2020, 2025, and 2030 was applied to the actual 2012/13 ED data. Table 5 shows the resulting projection of ED visits, by CTAS level, based on the combination of the 2012/13 distribution of ED patients by age and CTAS level, and the projected change in the number of people in each age cohort.

From 2012/13 to 2030, there is projected to be a 34% increase in the number of ED visits to WGH. The greatest rates of increase are projected for the most acute patients, i.e. the CTAS 1 Resuscitation and CTAS 2 Emergent patients due to the impact of the aging population. The lowest rates of increase were projected for the least acute patients, i.e. the CTAS 4 Semi-Urgent, and CTAS 5 Non-Urgent patients, due to a key planning assumption that community-based primary care services will appropriately address non-urgent (CTAS 5) and a significant portion semi-urgent (~40-50% of CTAS 4) patient needs in the primary care environment.

Table 5: Projected ED Visits

CTAS Level	2012/13 Actual	Projected ED Visits				% Chg. 2012/13 to 2030	
		2015 Proj.	2020 Proj.	2025 Proj.	2030 Proj.	#	%
1 - Resuscitation	22	25	30	35	42	20	89%
2 - Emergent	493	535	607	679	746	253	51%
3 - Urgent	5,971	6,395	7,131	7,878	8,587	2,616	44%
4 - Semi-Urgent	21,209	22,264	24,048	25,871	27,626	6,417	30%
5 - Non-Urgent	3,780	3,968	4,284	4,587	4,881	1,101	29%
9 - Unknown/NA	3,990	4,314	4,842	5,336	5,811	1,821	46%
Total	35,465	37,500	40,943	44,387	47,693	12,228	34%

1.1.5.2 Yukon Clinical Services Plan Projections

Yukon Clinical Services Plan (Compendium 80) also projected the changes to Hospital Emergency Visits based on expected population changes and a single year of CIHI reported data (2012-13) (Table 6) and 6 years of CIHI reported data (

Table 7).

Table 6: Projected Changes in Hospital Emergency Activity based on CIHI Reported Data (Single Year) and Expected Population Changes (3 Scenarios)

	2014	2019	2029
Total ED Visits based on 10 year population trend	36,386	38,946	41,724
% change over 2012-13 (35,465 Visits)	3%	10%	15%
Total ED Visits based on 5 year population trend	35,295	36,737	40,377
% change over 2012-13 (35,465 Visits)	0%	-12%	14%
Total ED Visits based on 2 year population trend	44,554	35,295	36,240
% change over 2012-13 (35,465 Visits)	26%	-13%	-19%

Table 7: Projected Changes in Hospital Emergency Activity Based on CIHI Reported Data (Six Years) and Expected Population Changes (3 Scenarios)

	2014	2019	2029
Total ED Visits based on 10 year population trend	30,150	32,478	34,866
% change over 2012-13 (35,465 Visits)	-15%	10%	16%
Total ED Visits based on 5 year population trend	29,279	30,433	33,646
% change over 2012-13 (35,465 Visits)	-17%	-13%	15%
Total ED Visits based on 2 year population trend	37,190	29,279	30,013
% change over 2012-13 (35,465 Visits)	5%	-13%	-19%

1.1.5.3 Sterling Planning Alliance Projections

YHC contracted Hughes Condon Marler Architects (HCMA) as Facility Consultant Advisory Team to assist with the initial planning of the WGH expansion. Sterling Planning Alliance is a member of their team offering expertise in functional planning. Sterling Planning Alliance completed a peer review of the RPG functional plan, and also completed an analysis of current utilization based on their experience with planning Emergency Departments in Canada, USA and Europe, and determined the appropriate number and type of treatment spaces to deal with WGH's volumes of services over the past four years. Sterling Planning Alliance approached space planning first by assessing the ED's current requirements and by identifying what percentage of current volumes could be diverted from current visit volumes before projecting future visit volumes.

In a recent US study in 2006-2009 of the estimated 110 million US ED visits included in the study approximately 40% of visits were categorized as semi urgent or non-urgent.⁶ This is consistent with the Ontario Ministry of Health and Longterm Care target of approximately 47.5% of total ED visits being non-urgent or less-urgent (Table 8).

⁶ Honigman et al. National Study of Non-Urgent Emergency Department Visits and Associated Resource Utilization, *West J Emerg Med.* Nov 2013; 14(6): 609-616. Accessed June 6, 2014: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3876304/>

Table 8: Ontario Ministry of Health and Longterm Care Proportion of ED Visits by Acuity⁷

Level	Acuity	Examples of Patient Symptoms	% of Emergency Dept. Visits
1	resuscitation	cardiac and/or pulmonary arrest, major trauma (severe injury and burns), unconscious	0.6
2	emergent	chest pain with cardiac features, stroke, serious infections	12.9
3	urgent	moderate abdominal pain, moderate trauma (fractures dislocations), moderate asthma	39
4	less urgent	constipation with mild pain, ear ache, chronic back pain	39
5	non-urgent	medication request or dressing change, sore throat, minor trauma (sprains minor lacerations)	8.5

Sterling Planning identified that if all CTAS Level 5 visits and 50 percent of CTAS Level 4 visits could be diverted to community based primary health services the proportion of ED visits by acuity would be approximately 38% Emergent (CTAS 1, 2 and 3) and 62% Less Urgent (CTAS 4 and 5) which although does not meet the Ontario targets is closer to Sterling Planning Alliance’s experience with smaller remote hospitals. Based on these assumptions, the recommended number of treatment spaces to meet current demands is 16 (Figure 29).

Figure 29: ED Treatment Space Needs

⁷ Auditor General of Ontario, Chapter 3 Section 3.05 Hospital Emergency Departments. Accessed June 6, 2014 http://www.auditor.on.ca/en/reports_health_en.htm

ED TREATMENT SPACE NEEDS						
TREATMENT SPACES	EXISTING ROOMS	2009-10 (23,515)	2010-11 (24,043)	2011-12 (29,719)	2012-13 (31,475)	2012-13 (17,728) ¹
FAST TRACK	3	7	8	9	10	5
GENERAL ED	3	2	3	4	5	5
TRAUMA	1	2	2	2	2	2
MENTAL HEALTH	1	1	1	1	2	2
CAST ROOM	2	2	2	2	2	2
TOTAL	10	14	16	18	21	16

Note: All patient volumes exclude levels 7 & 9; Treatment spaces calculated based on actual ALOS & peak hours for each year

¹Patient volume excludes all level 5 and half of level 4

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Meeting the Sterling Planning Alliance Targets of 50% reduction in CTAS 4 and 100% reduction of CTAS 5 is aggressive. Acknowledging that pediatric and geriatric populations have not responded to recent improvements in community based services, the Sterling Planning Alliance projections were modified using the following modified Sterling Planning Alliance assumptions (Table 9):

- 100% of all CTAS 5 visits will be seen through community based services.
- 50% of all Adult CTAS 4 visits will be seen through community based services. Preliminary trends in 2013-14 indicate this population may be the most responsive to increased community based services.
- 25% of all Pediatric CTAS 4 visits will be seen through community based services
- 25% of all Geriatric CTAS 4 visits will be seen through community based services
- No changes to CTAS 1, 2 and 3.

Table 9: Projections based on modified Sterling Planning Alliance Planning Assumptions

	Revised 2013-14	2014-15	2019-20	2024-25
Pediatrics (0-19)	4452	4524	4778	5088
Adult (20-65)	10439	10611	11004	11269
Geriatrics (65+)	2723	2906	4117	5374
Total	17613	18041	19898	21731

1.1.5.4 Comparison of ED Visit Projections

The three approaches to projecting ED visits yield very different projections (Table 10). Although RPG used the different planning horizons of 2015, 2020, and 2025, for the purpose of this comparison RPG’s figures are re-assigned to the 2014, 2019, and 2024 planning years.

Table 10: Comparison of ED Visit Projections

	2014	2019	2024
RPG	37,500	40,943	44,387
Yukon Clinical Services Plan (1 year data, 10 year population trend)	36,386	38,946	41,724
Yukon Clinical Services Plan (6 years, data, 10 year population trend)	30,150	32,478	34,866
Modified Sterling Planning Alliance	18,041	19,898	21,731

1.1.5.5 Treatment Space needs

These varied visit volumes scenarios create very different projected treatment spaces. There are basically three different approaches to estimating treatment space needs. The first approach is to estimate the capacity of each bed in total annual visits per bed. This ratio has continued to drop as patient length of stay in emergency services increase, dropping from targets of 2000 visits per bed to current recommendations in the range of 1400 visits. Institutional variations in patient length of stay, seasonal peaks in activity and patient mix make the application of suggested ratios arbitrary and high risk. This methodology provides no information on estimated delays in access to treatment areas, or the potential effect of changes in through-put times. The second approach is to estimate bed needs based on target utilization goals considering peak periods, maximizing utilization for different types of rooms and acceptable wait times to access treatment spaces and inpatient beds. Although this approach is simple to use, there are serious shortcomings, including the inability to estimate the probability of reaching bed capacity and the resulting total wait time for access to a room. The third and most complex method is to utilize simulation modeling which considers

process/flow, statistical probabilities associated with utilization patterns, and ability to illustrate scenarios through graphic animations of patient flow and floor plans.⁸

For the purpose of this needs assessment an initial estimate of treatment space needs has been applied to the projected volumes above utilizing the first method. During site visits to Lions Gate Hospital and Surrey Memorial Hospital (April 2014), 1,500 visits annually per treatment spaces was confirmed as an appropriate planning assumption to calculate the base number of treatment spaces. In addition adjustments to total number of must be made for appropriate specialized treatment spaces including 2 cast room and 2 mental health treatment spaces.

Table 11: Comparison of Projected Treatment Spaces

	2014	2019	2024
RPG	29	31	34
Yukon Clinical Services Plan (1 year data, 10 year population trend)	28	30	32
Yukon Clinical Services Plan (6 years, data, 10 year population trend)	24	26	27
Modified Sterling Planning Alliance	16	17	18

The function programmers (RPG and Sterling Planning Alliance) both used the second method to estimate the treatment spaces in the functional programs referenced in Part 4 of this report.

1.1.6 Description of data limitations and gaps

Data that includes diagnosis, length of stay, or time of day for service is sourced from CIHI. The CIHI data (at time of writing this report) is only available to available up to October 2013. Data from Meditech is limited to number of visits. 2013-14 data related to age and triage level was sourced from the 3M coding software.

⁸ Source: Zim, F. A Resource for Emergency Facilities Planning - Estimating Treatment Space Needs ED Issues. Accessed June 4, 2014. <http://edissues.wikidot.com/estimating-treatment-space-needs>

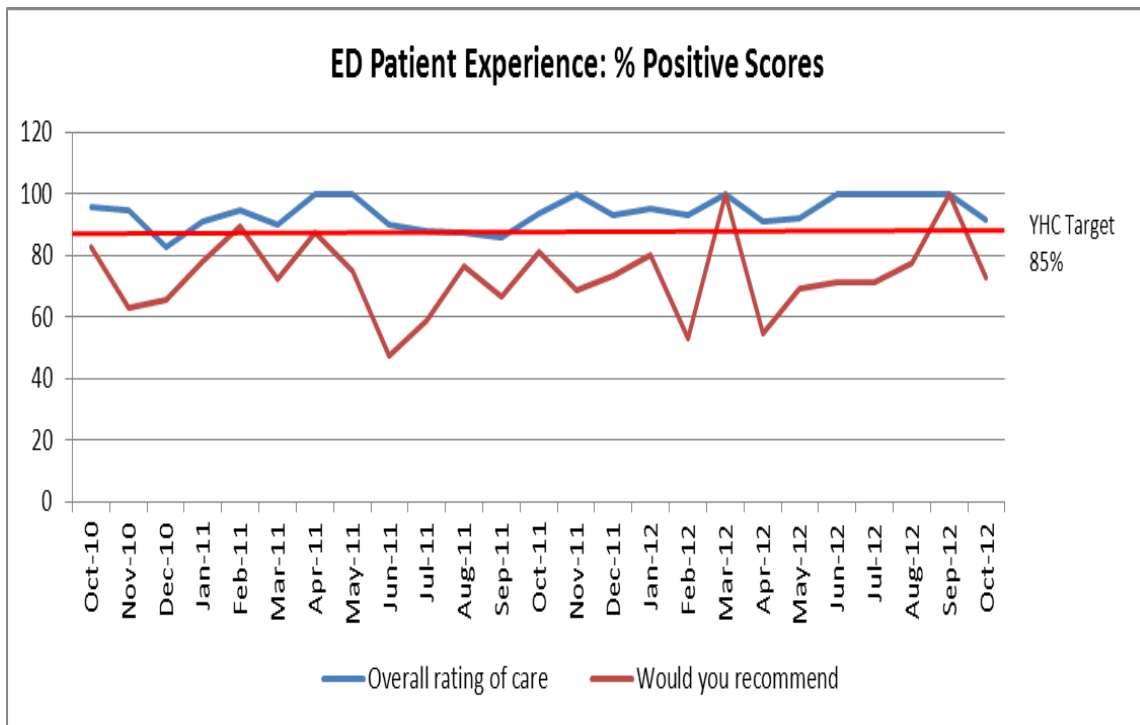
The data is presented with limited information about changes to community programs and services.

1.2 QUALITATIVE DATA

1.2.1 Patient Experience Survey Results

YHC contracted NRC Picker to complete patient experience surveys for the WGH ED from 2003 to 2013. In recent years (Oct 2010 to Oct 2012) patients rated the ED at 95% overall and would recommend it 74% of the time.

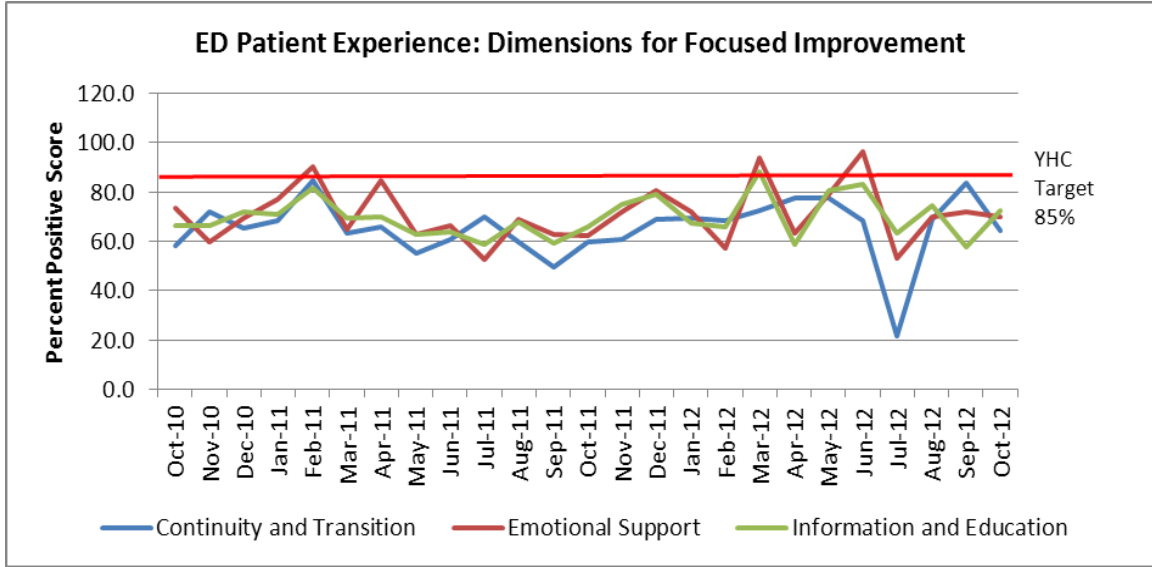
Figure 30: ED Patient Experience – Overall Rating



Areas for improvement identified included:

- Continuity and Transition – knew who to call with questions, explained how to take new medications, explained medication side effects, explained danger signals to watch for, appointment for treatment made before patient left ED.
- Emotional Support – ED Doctor discussed patient fears/anxieties, ED nurse discussed patient fears/anxieties, Confidence/trust in ED Doctors and nurses.
- Information and Education – Explained causes for problems, questions, reasons for tests and test results understandably, and explained reason for wait.

Figure 31: ED Patient Experience – Dimension for Focused Improvement



1.2.2 Patient Complaints:

YHC uses an electronic database, Risk Monitor Pro, for the systematic reporting of incidents and patient complaints. The most frequent complaint received from patients receiving care in the ED was related to the lack of confidentiality around personal information being shared either between the patient and care provider or between two care providers. The proximity and openness of treatment spaces are contributing factors to these complaints.

The Canadian Standards Association (CSA) outlines standards for the planning, design and construction of both public and private health care facilities in Canada. According to CSA standards, healthcare facilities should be designed to ensure confidentiality of patient discussions, to keep the reason(s) for the ED visit confidential, and to appropriately locate window, doors, and curtains to ensure the patient privacy⁹.

1.2.3 Triage and Patient Flow

The entrance, reception, and triage areas should be designed to support a logical flow for patients who present at an emergency department. The security area is critical to security access, parking, general information, and potential screening of all patients. The security area should ideally be located near the triage area or have a clear line of sight to the triage area. The triage area should ideally be the next step for all patients. This allows for the fastest identification of emergent presentations by the medical team, as opposed to registration prior to seeing a triage nurse/healthcare provider. The last

⁹ CSA Z8000-11 7.7.6, 9.4.3.2

step should be registration. In addition the triage area should have an unobstructed view of the waiting room¹⁰.

The ED should ideally be rapidly accessible by the public and Emergency Medical Services (EMS) through two separate entrances. Ambulance and other EMS traffic should not interfere with each other or other traffic patterns on the site¹¹.

Currently access to the WGH ED is through two separate access points, although neither access point are direct entry points from the outside. Public access is through the front entrance of WGH, to the registration desk and then to the triage desk (open only during peak hours) or to the doors of the ED. The distance from the front curb to ED is ~ 70 meters (230 feet). To ensure that emergency patients do not have to wait in line while non-urgent patients are registering for services, a fast-track line was established. The EMS entrance is through the ambulance bay, down 50 meters (165 feet) of corridor and into the ED through a back entrance. The distance to the ED via both these routes represents a delay in accessing services.

YHC participates in Accreditation Canada's voluntary accreditation program. Every three years, as part of the accreditation process, YHC takes part in a self-assessment followed by a survey visit. The survey itself includes a review of documentation, team interviews, facility tours and focus group meetings with various stakeholders. This accreditation process allows Accreditation Canada and the organization to evaluate the quality of the organization's services by comparing them to nationally accepted standards.

Following each Survey, Accreditation Canada issues a report which outlines successes and challenges, and makes recommendations for improvement action.

In 2004 Accreditation Canada made the following High Urgency recommendation:

“Review the physical layout of the emergency department to ensure that service is timely and that patient safety is protected. Potential Adverse Event: Clients may be delayed in accessing medical care because of the distance from the front door and from the ambulance bay. Clients may be delayed while registering because the registration desk precedes the triage desk. Several of the rooms, including the waiting area, are not readily observable by staff, which may lead to an adverse event”.

¹⁰ CSA Z8000-11 9.4.2.2

¹¹ CSA Z8000-11 9.4.2.2.2, 9.4.2.2.5

In 2011 Accreditation Canada noted the following:

“The ED physical layout poses a challenge to ensuring safe assessment and visibility of patients when they present for care and treatment. This has been identified in previous surveys. The Senior Leadership team is committed to these improvements and recognizes these challenges. A longer term master plan is in progress to address the overall growth and needs of the WGH for the next 25 years”.

Accreditation Canada recommended the following specific criteria that require attention:

- Emergency Department users can find the Emergency Department easily.
- The team has the workspace needed to deliver effective services in the Emergency Department.
- The team conducts a triage assessment for each client within CTAS timelines.

YHC has implemented a number of changes to attempt to address the issues identified by Accreditation Canada, including implementing a fast track line at Registration with electronic signage, continuous video monitoring of waiting areas, and a new triage area in the atrium. However, the placement of the ED in the center of the main building limits the effectiveness of the changes made. Improving access to the ED is dependent on reducing the distances to the ED, which cannot be changed without relocating the ED, and providing direct and faster access to the ED from the exterior.

1.2.4 Line of sight for patients in waiting room and in back rooms

Due to the acute status of emergency patients and the likelihood of rapid change in patient condition, clinical staff should have clear line of sight of all patient and visitor traffic and treatment spaces from the staff work and charting areas¹². As well, the reception/triage area should be located to have unobstructed visibility of the waiting areas¹³.

The current ED is built around a central core which includes the Nursing Station, Medication Room, public washroom and Trauma room. Only 4 of 10 treatment spaces have clear line of sight from the Nursing Station. And, of particular note the Obstetrical/Gynecology room is located at the rear of the ED, out of the higher traffic flow. While this does provide privacy, it also acts to isolate the patient from routine and regular observation.

¹² CSA Z8000-11 9.4.2.5

¹³ CSA Z8000-11 9.4.2.2.6

1.2.5 Infection control

Health care facilities should be planned and designed to be safe for all building occupants in terms of both the prevention of healthcare acquired infections and the control of infectious diseases. The following infection prevention and control measures are basic principles that should be incorporated into the design and construction of Health Care Facilities¹⁴.

- Allocating sufficient space for patient care to prevent the spread of illness
- Using materials in construction that are free of contaminants and excessive moisture and are able to withstand regular cleaning
- Using antimicrobial fabrics and other materials on furniture, fittings, and equipment
- Providing areas for localized waste management
- Dedicating areas for storage of supplies and equipment, and
- Providing accessible hand hygiene sinks and waterless hygiene stations designed for caregiver and patient hand hygiene.

In addition to the general list of infection prevention and control requirements, Emergency Departments also should include¹⁵:

- Partitions or single rooms separating patients from each other
- Designated waiting areas for patients and their family members presenting with infectious disease symptoms
- Decontamination areas in or directly adjacent to the ambulance area
- Negative and positive pressure rooms located to minimize passing traffic and equipped with appropriate HVAC systems
- Design and layout that allows for the movement of patients to an isolation room within the ED due to suspected or known infectious disease
- Design features that reduce cross traffic

Table 12: YHC Self-Assessment of Compliance with Infection Control Standards in ED

Criteria	Current Assessment	Score
1. Allocating sufficient space	5 of 10 treatment spaces are too small to approach patient from both sides, stretcher needs to be pushed to one side which prevents access to hand washing sink, supplies in stretcher bays are not accessible which means supplies need to be	Partially met

¹⁴ CSA Z8000-11 7.5.1.3

¹⁵ CSA Z8000-119.4.3.3

	stored in corridor.	
2. Materials free of contaminants	Yes	Met
3. Antimicrobial fabrics on furniture, fittings, and equipment	Yes	Met
4. Localized waste management	Yes	Met
5. Dedicating areas for storage of supplies and equipment	Yes but not always accessible	Partially met
6. Providing accessible hand hygiene sinks	Hand washing sinks should be located in each treatment space at the exit door - 10/10 Treatment spaces have hand washing sinks however only 5/10 are accessible to healthcare workers during normal work practices. As well the triage area does not have a hand washing sink	Partially met
7. Waterless hygiene stations	Yes	Met
8. Partitions or single rooms separating patients	Cast room stretchers are separated by curtain, Stretchers in family room are separated by curtains (used primarily for mental health and/or intoxicated patients)	Partially met
9. Designated waiting areas for patients /family with infectious disease symptoms	No	Not met
10. Decontamination areas in or directly adjacent to the ambulance area	Current decontamination area is an open shower within the ambulance bay (not private or heated appropriately for patient strip down) or a shower in the morgue (contaminated patient needs to enter the building to access, contaminants are then sucked into HVAC system, exposing staff and patients to contaminants).	Not met
11. Negative and positive pressure rooms located to minimize passing traffic and equipped with appropriate HVAC systems	Only 2 treatment rooms and the trauma bay can be switched to negative pressure. Unfortunately none of these rooms can be switched to positive pressure; none have appropriate ante rooms nor patient washrooms. The two treatment rooms do not have wall mounted oxygen or suction and are the smallest of the treatment spaces	Not met

	making them unworkable as isolation rooms.	
12. The design and layout allowing for the movement of patients to an isolation room	No true isolation room available with ante room, current practice is to use OBG room which is at the back of the ED, patient must move through the ED and by the SDC to access the room	Not met
13. Reduce the cross traffic	Entrance and exit through same door exposing patients waiting for triage (sitting at doors) to potential infectious diseases	Not met

1.2.6 Intoxicated Patients

The Task Force on Acutely Intoxicated Persons at Risk Final Report to the Minister of Health & Social Services (December 31, 2010) attempted to produce legitimate, achievable and locally applicable recommendations of management strategies for appropriate and effective ways to deal with acutely intoxicated persons at risk of harming themselves or others, consistent with the mandate of the Task Force.

According to the Final Report, there were three distinct population groups who constituted the acutely intoxicated persons at risk;

- Those who are violent and dangerous,
- Those who have significant medical needs, and
- All others who constitute the majority of clientele

“The specific needs and requirements of each of the above population groups must receive distinct consideration. They do not necessarily need to be assessed independently and can be integrated but provision for the unique needs of each group must be considered and accommodated. For example, an intoxicated person is inherently volatile and can quickly become violent and a danger to personnel. Provision for such a possibility might be a dedicated facility for violent and dangerous acutely intoxicated persons at risk or it might be staffing a care facility with personnel capable of containing a violent person within an environment conducive to defusing an explosive event. Similarly some acutely intoxicated persons at risk will undoubtedly require in-hospital care and all detainees will require some degree of health risk assessment. But not all individuals require assessment at Whitehorse General Hospital Emergency Department.” (pp. 4-5)

“The breadth of the medical needs of the acutely intoxicated person at risk is such that in fact assessment by an ER physician is usually not even appropriate. Undoubtedly there will always be times when an acutely intoxicated person will need to go to the ER and/or be admitted for in-

hospital care. Uncontrolled seizure activity, a suspected subdural hematoma, severe orthopedic trauma, diabetic ketoacidosis induced by excessive and prolonged alcohol abuse and the like will always need ER assessment and in-hospital care. But these are medical conditions in an intoxicated person, requiring an intense level of care, not the primary problems and consequences of acute alcohol abuse.” (pp. 17-18)

Acknowledging the above statement that not all acutely intoxicated patients require the resources of an emergency department but that there will be times that an acutely intoxicated patient requires care for a related medical need, recent ED utilization data was analyzed with a focus on visits related to substance use by triage level. From the 2009 to 2013 there has been a significant increase in CTAS 2 and 3 (emergent and urgent care) for visits related to substance use. The peak periods in 2012-13 for intoxicated patients visits was from 11am to 10pm.

Table 13: Emergency Visits related to Substance Use (Source CIHI Portal)

Triage Level	2009-10	2010-11	2011-12	2012-13	% Change 2009-10 to 2012-13
CTAS 1	0	0	0	0	0
CTAS 2	18	14	18	23	28%
CTAS 3	162	283	370	371	129%
CTAS 4	598	779	747	757	27%
CTAS 5	60	61	53	50	-17%
Total	969	1137	1235	1201	

For these emergent and urgent care intoxicated patients it is essential to provide care in an environment that maximizes safety and minimizes risk to clients when they are incapable of assuring their own safety. Spartan treatment rooms which assure minimum risk, close observation, and continuous video monitoring have been used effectively to protect intoxicated patients’ safety in other jurisdictions (p. 8). The same design principles for safe rooms for Mental Health clients (see 2.7 Mental Health Patient) should be applied in order to provide a safe environment for intoxicated patients.

Currently intoxicated patients are placed in the “Family Room” which is located close to the nursing desk for better observation. However, the design of the nursing desk with its high enclosure, the alignment of the room’s door, and placement of the two stretchers in the room does not provide appropriate lines of sight. There is also no continuous video monitoring, since the room is used for multiple purposes and not limited to intoxicated patients. Some reduction in the number of intoxicated persons may be attributable to medical detox now available through H&SS and plans to rebuild and expand Alcohol and Drug Services are underway to address broader population health needs.

1.2.7 Mental Health Patients

Emergency departments should provide a safe room for patients presenting with psychosis, delirium, suicidal, or aggressive behavior¹⁶. The design of a safe room should include the following features¹⁷:

- Mental health and safety risk mitigations such as elimination of horizontal or vertical projections that could lead to self-harm and protective glazing on windows
- Direct access from triage with good access for emergency medical staff but not adjacent to the emergency entrance
- Observation window with one-way vision
- Multi-point door locking with automatic locking function when closed
- Acoustic separation from other emergency areas
- A stretcher with restraint capability and locking wheels

WGH’s current ED does not have a safe room. The “Family Room” has been re-fitted to accommodate 2 stretchers for patients who require observation while detoxing and is also used for lower acuity Mental Health patients when deemed appropriate. Patients who present with psychosis, delirium, suicidal, or aggressive behavior are generally not held within the ED but are transported to the Secure Medical Unit (SMU) and placed within a seclusion room soon after presenting to the ED. This practice does not allow for assessment and stabilization of the patient prior to admission which leads to significant patient and staff safety risks, as well as being disruptive for other inpatients as the transportation route is through inpatient units.

From 2009 to 2013 there has been a significant increase in visits related to mental health, particularly for CTAS levels 2 and 3 (emergent and urgent care). The peak periods in 2012-13 for mental health patients visits are from 10am to 11pm.

Table 14: Emergency Visits related to Mental Health (Source CIHI Portal)

Triage Level	2009-10	2010-11	2011-12	2012-13	2013-14	% Change 2009 to 2013-14
CTAS 1	0	0	0	0	3	NA
CTAS 2	9	8	18	8	44	389%
CTAS 3	109	149	155	228	274	151%
CTAS 4	255	301	282	330	456	79%
CTAS 5	43	23	33	38	54	26%
	416	481	488	604	831	100%

¹⁶ CSA Z8000-11 9.4.2.4

¹⁷ CSA Z8000-1 Table 9.4

1.2.7 Decontamination

According to Harvard School of Public Health, Hospital Decontamination Self-Assessment Tool, (2013) Healthcare Facilities are relied upon to provide medical care to accident victims that may be contaminated with chemical, biological, radiological, nuclear, or explosive matter. All hospitals with an emergency department should be prepared to decontaminate victims in small and large- scale hazardous materials incidents¹⁸.

The safety of hospital personnel during decontamination operations is paramount, and should be carefully considered as a critical component of decontamination planning, training, response and recovery. The hospital's main priorities in a decontamination event are responder safety, limiting the spread of contamination, patient triage, decontamination, and medical care, as well as medical monitoring of patients and staff.

Victims of a hazardous materials incident may have certain access, functional, and social needs and should be accommodated to the greatest extent possible during a decontamination response. These needs should be considered in decontamination planning, training, exercise, and response.

The design of the decontamination room is critical to limiting the spread of contamination and exposure of healthcare workers to the contaminant. Direct access to the decontamination room from the exterior should be provided as well as direct access from a decontamination room to an isolation room. The ventilation system should draw air from the decontamination room and exhaust it outdoors so that contaminants are prevented from entering the hospital ventilation system. The decontamination area should be provided with temperature controlled shower heads/spigot and hose and the run off should be contained and disposed of safely to ensure that it does not enter community drainage systems. In addition, patient privacy must be maintained¹⁹.

Currently there are two options for decontaminating a patient at WGH. The first is an open shower located in the Ambulance Bay. This is not temperature regulated and is not protected for patient privacy. The second option is a shower located in the morgue. While this option provides temperature regulated water and patient privacy, it does not

¹⁸ Source: Harvard School of Public Health, Hospital Decontamination Self-Assessment Tool (2013) <http://www.hsph.harvard.edu/policy-translation-leadership-development/files/2013/01/Hospital-Decontamination-Self-Assessment-Tool-2013.pdf>

¹⁹ CSA Z8000-11 6.1.1.2, 7.7.5.1, 9.4.3.1, Table 9.4

prevent air borne contaminants from entering the WGH ventilation system thus risking greater staff and patient exposure, nor does it protect the community drainage systems.

1.2.8 Mass Casualty

During a Mass Casualty Incident (MCI), health care facilities need to be able to control access to their facility; receive, decontaminate, and triage patients; direct and track flow of triaged patients to appropriate locations; and provide appropriate emergency services in a surge situation.

On August 8, 2013, YHC participated in Operation Nanook and had the opportunity to test WGH's Code Orange - Mass Casualty Plan. While there were many successes with this exercise there were also valuable lessons learned. One of the most significant issues identified was regarding the placement of the MCI triage area. Typically in a MCI, EMS staff triage patients at the incident site and then transport them to the hospital at a designated casualty collection point. Patients are received by hospital staff at the designated casualty collection point and they are re-triaged and routed to the appropriate treatment area. At most hospitals the casualty collection point is generally designated directly outside the emergency department entrance. During Operation Nanook the Casualty Collection point was designated at the main entrance to the WGH. Initially triage was to be completed at the Casualty collection point; however feedback from clinical staff during the exercise indicated that this weakened WGH's response as our medical and nursing staff was split between two distant locations. Triage was then relocated into the atrium closer to the ED. This then presented challenges tracking the flow of patients, accounting for patients, completing registration, maintaining security and controlling access to the facility.

1.2.9 Security

Emergency care services should be designed to provide safety and security for patients, visitors and staff, in order to avoid injuries, psychological trauma, and the damage or loss of property. Emergency care receives a large number of patients and their visitors 24/7 (~35,000 patient visits per year). A number of these individuals are distressed, intoxicated, or involved in violence. The base for security personnel should be positioned either within or immediately adjacent to the emergency care service with rapid communication links. Each examination and treatment room, staff and public washroom, triage and reception areas, and support areas should have staff

assistance/code white (aggressive situation) alert buttons. As well, the ED should have a video security system at all entrances and waiting room areas²⁰.

Current public access to the ED is through the main entrance 24/7. After-hours the main entrance is locked and emergency patients must press a buzzer to be admitted. Video security is present at both the public and ambulance entrances. The security desk is located at the main entrance to provide a control point closest to the entry point and is staffed after hours and on weekends. This desk is 48 meters (157 feet) away from the ED. Ideally this should be located closer to the ED to support a more rapid response to aggressive situations, but due to the placement of the ED in relation to the main entrance it was deemed more appropriate to place the Security Desk at the main entrance to control and monitor entry.

INTENSIVE CARE UNIT

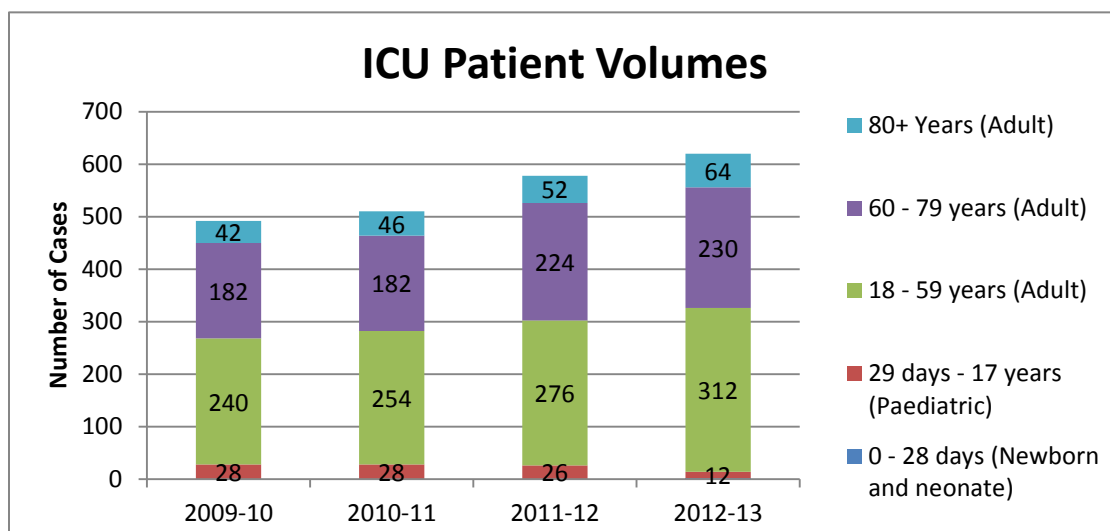
2.1 QUANTITATIVE DATA

Data sources for ICU utilization data include both Meditech and CIHI Portal.

2.1.1 WGH Utilization Data – Volumes, ALOS and Occupancy

ICU patient volumes have increased from 2009-10 to 2012-13 by 26% (Figure 32). Figure 32: ICU Patient Volumes

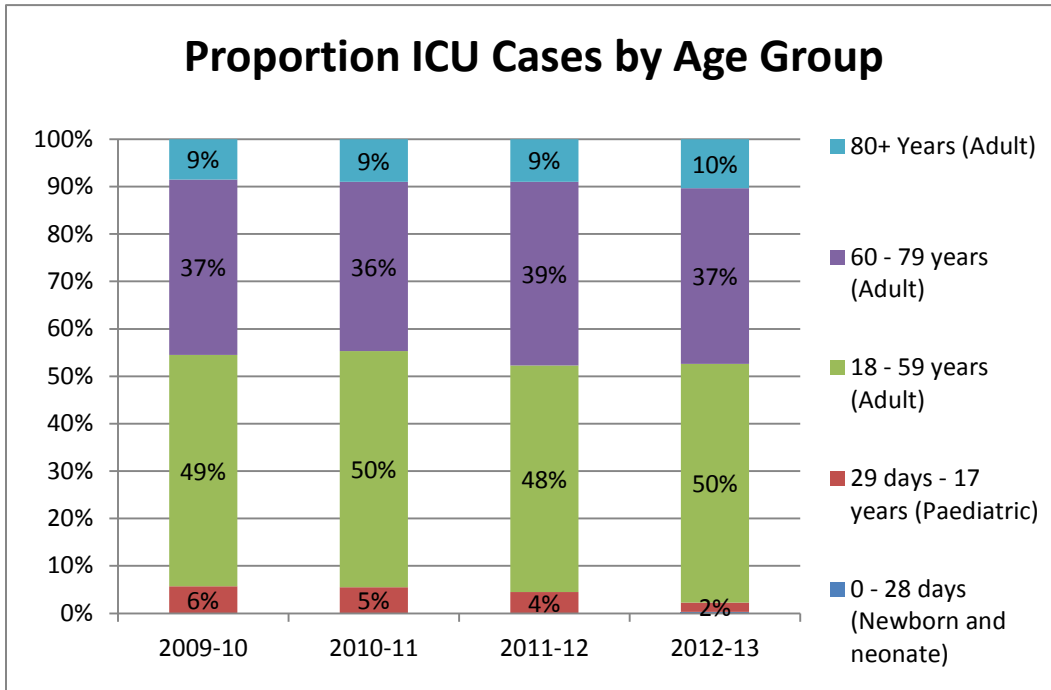
Figure 32: ICU Patient Volumes



²⁰ CSA Z8000-11 9.4.3.8

The although the numbers of ICU cases are increasing the proportion by cases by age group has been stable (Figure 33)

Figure 33: Proportion ICU Cases by Age Group



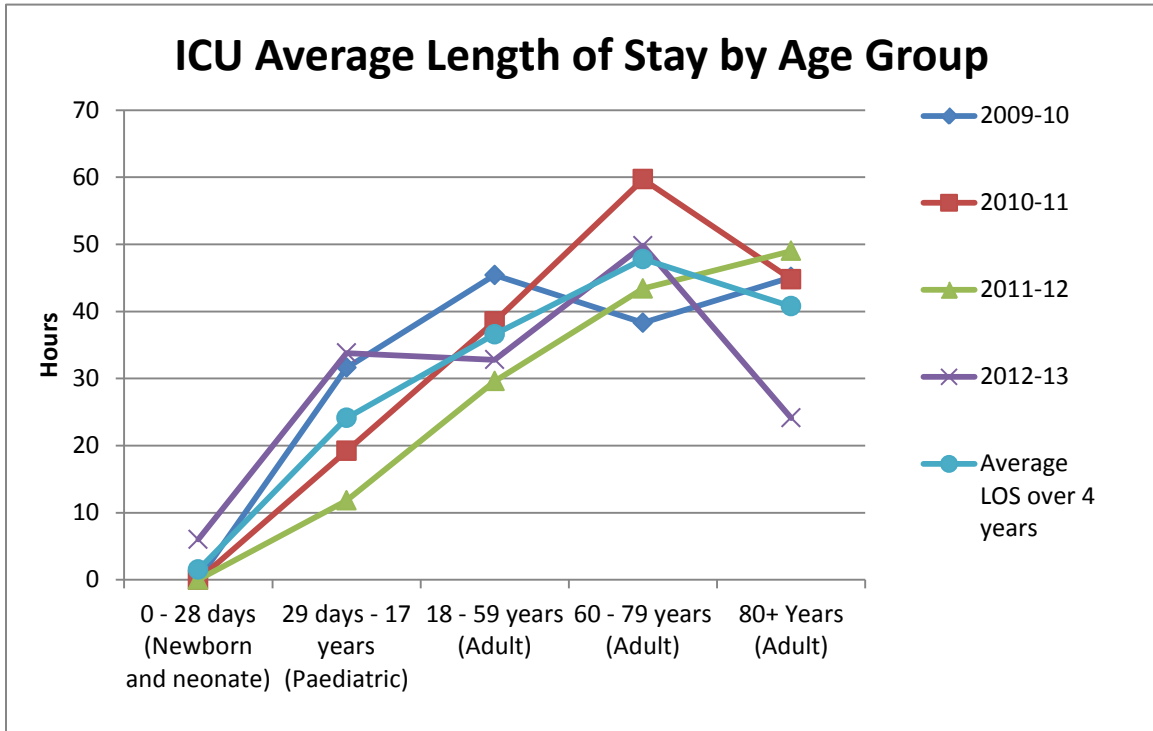
Average length of stay in the ICU has decreased slightly from 2009-10 to 2012-13 (Table 15) from 1.8 days to 1.5 days.

Table 15: ICU Average Length of Stay(ALOS)

	ALOS (Hours)	ALOS (Days)
2009-2010	42.0	1.8
2010-2011	44.9	1.9
2011-2012	36.1	1.5
2012-2013	37.1	1.5

The ICU Average Length of Stay is lowest of Neonatal and Pediatrics age groups, and increases with age with the 60 to 79 and 80 plus age groups being relatively equal at approximately 45 to 48 hours. (Figure 34)

Figure 34: ICU Average Length of Stay by Age Group



Between 2009-10 and 2012-13 there were approximately 230 cases per year that had ICU length of stays that were less than 24 hours representing (Figure 35) approximately 42% of all ICU cases (

Figure 36).

Figure 35: Total ICU Cases by Length of Stay (LOS) Group

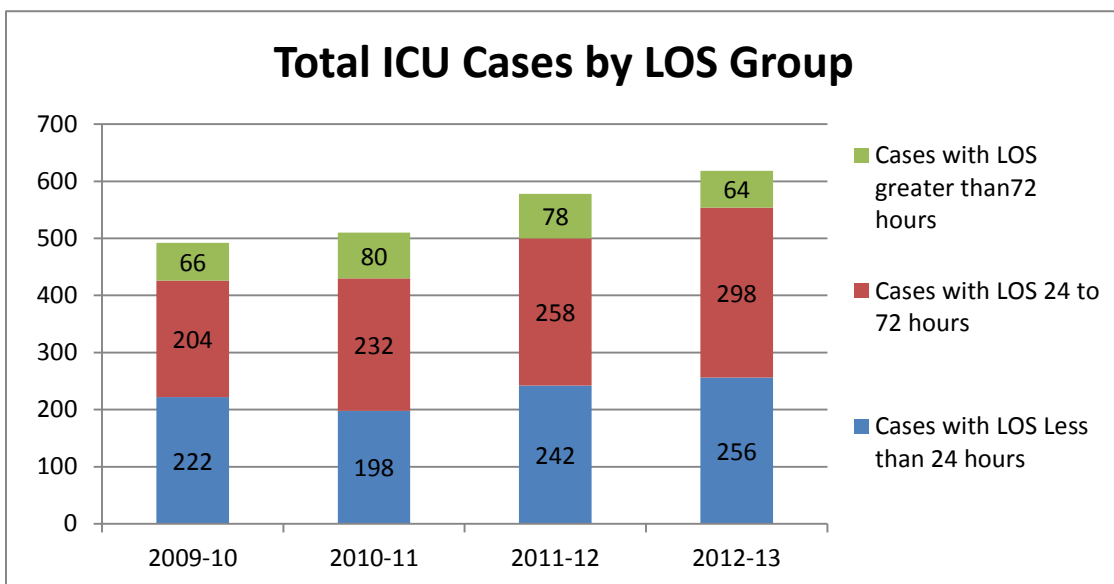
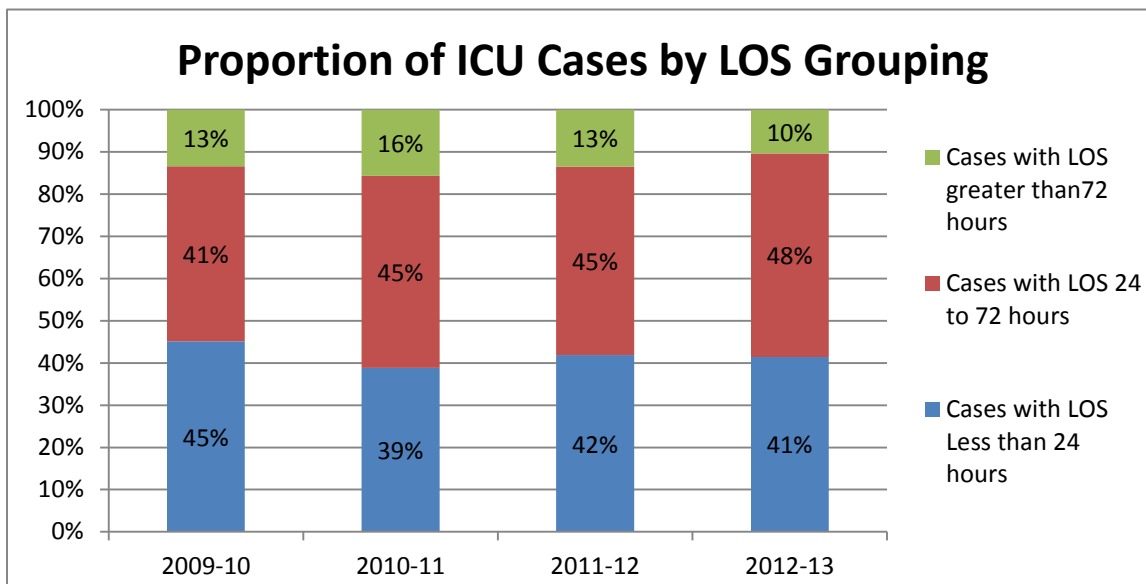


Figure 36: Proportion of ICU Cases by Length of Stay (LOS) Group



Initial analysis of ICU Occupancy sourced data from Meditech which indicated that ICU Occupancy was just under 50% from 2011 to 2013 (Table 16). Meditech occupancy rates are based on the bed census at midnight. Since approximately 40% of patients have lengths of stay less than 24 hours, not all patients admitted to ICU will remain in a bed until midnight; therefore it is safe to conclude that this occupancy rate may not be accurate.

Table 16: ICU Bed Occupancy – source Meditech

	# of Patients	# Patient Days	% Occupancy
2011-12	410	563	46.90%
2012-13	423	569	47.40%

CIHI reported data accessed through the portal indicates that the average occupancy rate from 2009 to 2013 was 78% (Table 17).

Table 17: ICU Bed Occupancy – source CIHI

	Number of ICU Visits	ALOS (Days)	# Patient Days	% Occupancy
2009-2010	498	1.7	838	77%
2010-2011	518	1.7	870	79%
2011-2012	592	1.4	833	76%
2012-2013	632	1.4	889	81%
Total	2240	1.5	3429	78%

2.1.2 WGH Utilization Data: Frequent Diagnostic Category

The most frequent diagnostic categories for the past two years included Cardiac, Respiratory, Gastrointestinal, and Post op/Post injury intervention. Although the ALOS for these diagnostic categories was less than 2 days, the range was from 1 to 212 days. This indicated that there were a significant number of critically ill patients and a high number of other patients who required observation/monitoring either while waiting for a treatment decision contingent on tests results or post-operative recovery.

Table 18: Most Frequent Diagnostic Categories with associated ALOS: Data Source CIHI Portal

Discharge Fiscal Year	CMG+ Description	Cases (SUM)	Total SCU Hours (AVG)	Total SCU DAYS (AVG)	RANGE (hrs)	Acute LOS in Days (AVG)
2011-2012	Cardiac	194	34.0	1.4	3 – 102	3.2
	Post op/post intervention injury	68	31.4	1.3	2 – 212	4.6
	Respiratory	60	36.2	1.5	1 – 186	4.2
	Gastrointestinal	60	51.3	2.1	1 – 179	13.3
	Poisoning/Toxic Effect of Drug	38	18.8	0.8	6 – 30	3.6
	Neurological	30	23.5	1.0	3 – 53	5.1
	Sepsis	24	53.3	2.2	1 – 108	11.6
	Psychoactive Substance Use	22	37.9	1.6	6 – 103	8.9

Discharge Fiscal Year	CMG+ Description	Cases (SUM)	Total SCU Hours (AVG)	Total SCU DAYS (AVG)	RANGE (hrs)	Acute LOS in Days (AVG)
2012-2013	Cardiac	204	27.2	1.1	3 – 95	3.4
	Respiratory	96	44.1	1.8	3 – 155	4.8
	Gastrointestinal	78	48.6	2.0	2 – 199	6.9
	Post op/post intervention injury	54	40.8	1.7	1 – 138	4.4
	Neurologic	36	30.9	1.3	4 – 116	8.1
	Psychoactive Substance Use	32	27.8	1.2	10 – 68	3.6
	Poisoning/Toxic Effect of Drug	28	22.2	0.9	9 – 25	2.1
	Sepsis	24	40.6	1.7	7 – 33	5.2

2.1.3 Projected Volumes

The number of ICU cases are projected to 2014, 2019, and 2024 (Table 19) based on:

- A utilization rate calculated using the average number of ICU cases by age group per year over the 2009-10 to 2012-13 reference period divided by the 2012-13 population per age group
- The assumption that the utilization rates would remain the same
- Population projections by age group based on the 10 year trend

Table 19: Projected ICU Cases and Patient Days

	2014	2019	2024
0 - 17 years (Pediatric)	24	25	27
18 - 59 years (Adult)	274	280	286
60 - 79 years (Adult)	217	282	336
80+ Years (Adult)	57	81	119
Total ICU Cases	571	669	768
Patient Days	857	1004	1152

In a recent review of the literature²¹ the optimal ICU occupancy rates were around 70-75%. However the authors noted that setting a uniform target figure for all ICUs would be problematic as there are a range of factors both at the unit and the hospital level that impact occupancy figures and optimal occupancy levels. For a 3 bed unit targeting 70 -75% occupancy would mean that a bed would be available for admission only 5 days per week. The current bed occupancy target is 50% to ensure a bed is always available for a critical admission and is staffed to this level. Target occupancy could be increased to 67% and still meet the goal of always maintaining a bed available when needed.

Table 20: Projected ICU Bed Occupancy

	2014	2019	2024
Occupancy 3 bed unit	78%	92%	105%
Occupancy 4 bed unit	59%	69%	79%

Based on these projections target occupancy of 67% is exceeded for a 3 bed ICU in 2014 and by 2019 for a 4 bed ICU.

If the current LOS distribution across age groups is applied to the projected volumes, the following LOS distribution is projected.

²¹ Tierney LT, Connor KM. Optimal occupancy in the ICU: A literature review. [Aust Crit Care](https://doi.org/10.1016/j.aucc.2013.11.003). 2013 Dec 27. pii: S1036-7314(13)00262-2. doi: 10.1016/j.aucc.2013.11.003. [Epub ahead of print] Accessed June 4, 2014. <http://www.ncbi.nlm.nih.gov/pubmed/24373914>

Table 21: Proportion of Projected Cases by Length of Stay (LOS)

	Proportion of Cases	2014	2019	2024
Total Projected Cases	100%	571	669	768
LOS less than 24 hours	42%	240	281	323
LOS 24 hours to 72 hours	45%	108	126	145
LOS greater than 72 hours	13%	14	16	19

Decanting all short admission to the ICU to an Observation Unit or Clinical Decision Unit is an alternative model to expanding an ICU unit. In this scenario potentially all ICU cases that have an anticipated LOS of less than 24 hours would be care for in a unit adjacent to the ED. This reduces exposure to Hospital Acquired Infections and also reduces the likelihood of errors often associated with a care transition.

Occupancy Rates for a 4 bed Observation Unit and a 3 bed ICU has been projected by applying estimated length of stays to the projected cases in Table 21.

Table 22: Projected Occupancy Observation Unit and ICU Care Model

	Estimated LOS	2014	2019	2024
Observation	1	16%	19%	22%
ICU	3.3	35%	41%	48%

There will potentially be opportunities to identify additional patients who currently have LOS slightly over 24 hours who may also benefit from this model. In addition, this unit would not be expected to open until completion of construction and may only open 2 or 3 beds initially.

While this proposed model addresses projected volumes and target occupancy, it does not address the need to cohort critical care nursing as described in the quantitative need section below.

2.1.4 Description of data limitations and gaps

- Meditech data only includes patients occupying an ICU bed at midnight when the bed census is taken. Frequently patients are in ICU for less than 24 hours so may not be captured in the data. However, current hospital occupancy and utilization rates are based on this same limitation so projected hospital ICU rates were based on Meditech data.

- CIHI data includes all patients who occupied an ICU bed regardless of time of day. The number of cases reported in CIHI are higher than those reported through Meditech based on this reason.
- Current data does not include age in analysis
- 2013-14 data is not available from CIHI Portal

2.2 Qualitative data

2.2.1 Patient Flow

Key relationships and dependencies between departments are important to the efficient operations of healthcare facilities. Essential relationships for an ICU are between Emergency care and Operating rooms. As well, another important relationship is the connection between the ICU and medical/surgical inpatient care.²² In a larger hospital there may be several critical care units to support different clinical care units. In a smaller hospital it may not be possible to ideally position an ICU to support all critical functions. Situating an ICU to ensure safe patient care and efficient use of resources will require thoughtful planning during hospital planning and designing.

Currently, WGH patients are admitted to the ICU from 3 locations:

- From the Emergency Department
- From Operating Room/Post Anesthetic Care Unit (PACU)
- From the inpatient units.

At the end of their ICU stay patients are either discharged home, transferred to an inpatient bed, or medivaced south.

Currently the 3 bed ICU is located on the Medical Unit. It is routinely staffed with one RN with specialized ICU qualifications 24/7 (5.5 FTEs). For smaller community hospital ICUs, target occupancy for an ICU is 50% in order to ensure that a bed is available for critical care patients when required. Due to the critical status of the patient, nurse to patient ratio is generally 1 RN to 1 patient or 1 RN to 2 patients. Occasionally, if a patient requires more intensive care the ratio can be 2 RNs or 1 RN and 1 medical staff to 1 patient. Patient acuity determines the staffing requirement. When additional staffing is required over and above the regularly scheduled staffs, additional staff are pulled in from the Medical Unit staff complement and they are backfilled. This practice puts a strain on the Medical Unit and can only be maintained for approximately 3 to 4 days. If the unit occupancy and patient acuity remain high, the Unit manager in

²² CSA Z800-11 6.3.3

collaboration with medical staff, plan for the medevac of the patient out of territory to provide a higher level of care.

2.2.2 Patient Experience

Patients admitted to an ICU bed are typically critically ill, recovering from an operation, or are awaiting critical information that will impact a diagnosis and further care decisions. This is generally a very stressful time for patients and their families. The design of the physical environment in a critical care unit should address both the physical and psycho-social requirement of patients and their families; have natural light via a window with an exterior view while the patient is lying in bed; provide space for discussion with patient's families; and provide for security, privacy, and confidentiality. Areas for family, caregivers, and visitors should provide a calming environment with additional space and amenities as required meeting the needs of visitors who stay in the area for extended periods of time²³.

Currently 2 of the 3 beds have natural light but none are set up in a way that the patient has a view through an exterior window. The unit is located centrally on the medical unit, is easy to access by families, is close to a family lounge/meeting room, as well as being close to a nourishment center.

2.2.3 Staff recruitment and retention

Staffing the current 3 bed ICU has presented challenges over the past years. Nursing critically ill patients requires specialized nursing skills which need to be maintained through practice, continuing education, and certification. As noted above, nurse to patient ratio is generally 1 RN to 1 patient or 1 RN to 2 patients. With the current occupancy rate of 78%, staff are frequently pulled from the medical unit to provide an additional nurse when occupancy demands 2 nurses. To ensure staff resources are available the ICU is staffed with 1 Critical Care nurse 24/7 and a second critical care nurse is scheduled on the medical unit as back-up if needed.

Critical care nurse turnover rate is higher than general nursing turnover rate. Reasons for this higher rate include: nurses practicing in an ICU without quick access to ICU physician (on site physician is located in ED); desire to practice in a more specialized setting (currently ICU nurses are also scheduled on Medical Unit); need to maintain skills; and continued career growth.

In addition, critical care nurses are difficult to recruit.

²³ CSA Z800-11 8.2.2

Theoretically situating critical care nursing functions including ICU, Post Anesthetic Care Unit (PACU), and Emergency Care close to each other would allow for a larger pool of critical care nurses that could support these critical care functions and improve recruitment and retention of critical care nurses. However in practice, these three critical care environments are very different in terms of the pace of the units and care needs of the patients. In a smaller community hospital it is essential that efficiencies are created where possible and there may be opportunities to explore other care models that will address the need to support critical care patient needs as well as maximizing resource utilization.

1.3 Quantitative data

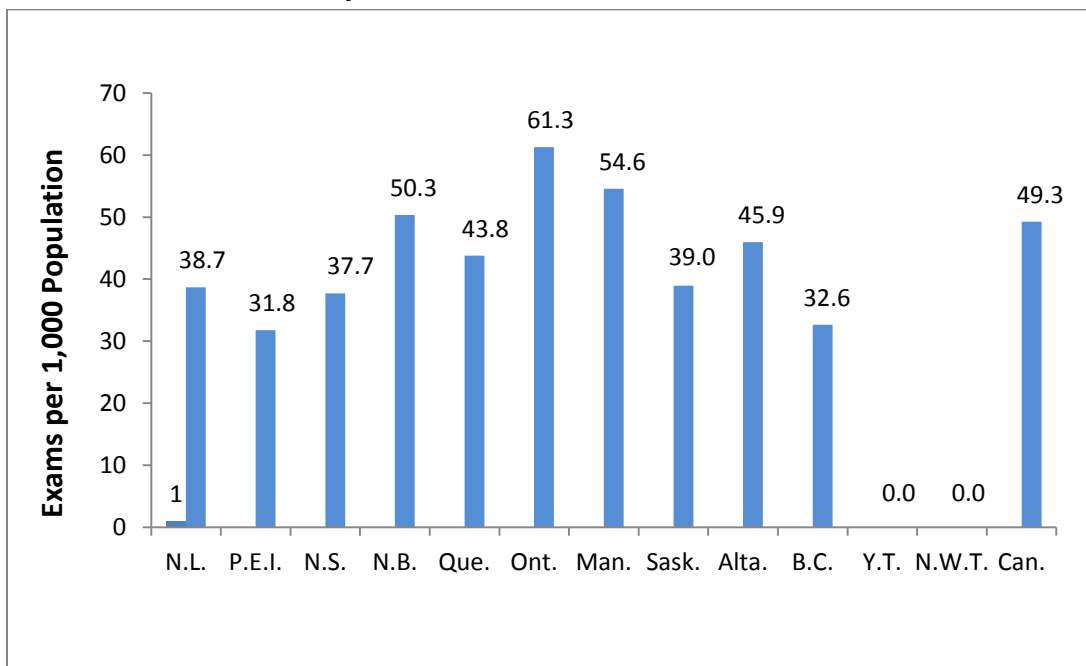
3.1.1 Projected Utilization Data

An MRI program at WGH would have the capacity to perform 3000 scans annually. In the past several years, Yukon's Insured Health Services has paid for 500 to 600 MRIs per year for Yukon residents, which have been done out of Yukon (usually in BC or Alberta).

A significant proportion of the MRIs ordered for Yukon residents in the future could be scanned in Whitehorse. However, a small portion (perhaps as much as 5%) of residents needing MRIs may continue to have their MRIs done out of Yukon.

The rate of MRIs per 1000 population has been rapidly increasing across Canada. The Canadian Institute for Health Information (CIHI) reports that in 2011-12, the national average rate for MRI exams was 49 per 1000 people, which is an increase over just 2-3 years of almost 50% from the national average of 31 MRIs per 1000 population reported by CIHI for 2009.

Figure 37: Number of Magnetic Resonance Imaging (MRI) Exams per 1,000 Population, by Jurisdiction and Canada, 2011–2012



Given the steep rate of increase in MRI use across Canada, governments have become highly concerned about ensuring the appropriate use of MRIs.

As an example, the BC Ministry of Health and regional health authorities in the Lower Mainland recently consolidated diagnostic imaging (including but not limited to MRI) sites and standardized practices across sites. Subsequently, the BC Ministry of Health commissioned a study of CT and MRI requests in all health regions in the province. That study determined that in BC (which CIHI reports as having a MRI rate of 33 per 1,000 population, one of the lowest rates in Canada), physicians appear to be adhering to clinical guidelines when ordering MRI exams, with only 2% of orders reviewed deemed “inappropriate”.

The Canadian Medical Association has partnered with a variety of organizations across Canada to launch the *Choosing Wisely Canada* (CWC) campaign to help physicians and patients engage in conversations about unnecessary tests, treatments and procedures, and to help physicians and patients make smart and effective choices to ensure high-quality care²⁴. Choosing Wisely Canada recognizes the importance of educating and engaging patients so that they could make informed choices about their care. This campaign has created patient-friendly materials to help patients learn about the tests, treatments or procedures in question, when they are necessary and when they are not, and what patients can do to improve their health. Choosing Wisely Canada is working with various stakeholder groups to disseminate the patient materials widely.

Based on the Yukon Bureau of Statistics’ projection for 2024 of 43,043 Yukon residents, it is estimated that Yukon’s Insured Health Services could pay for between 1403 and 1975 MRIs per year in 2024 depending on if the Yukon MRI utilization rate is similar to BC or Alberta’s current rate. Based on the Medical Imaging Department’s Medical Director’s experience with services similar to WGH’s program in Alberta, approximately 5% of the total MRIs can be expected to be done outside of Yukon. This indicates that the currently anticipated volume of MRIs that will potentially be done in Yukon for 2024 of 1333 to 1876 exams is well within the stated capacity for the Yukon MRI machine of 3,000 MRIs per year.

Public demand for MRIs can be very strong once an MRI program is in place, and not all requests are appropriate or medically necessary. It will be important to rigorously manage the appropriate utilization of MRIs, once this program is available in Yukon.

²⁴ <http://www.choosingwiselycanada.org/about/what-is-cwc/>

To ensure appropriate utilization of the MRI, YHC will utilize Alberta's protocols. The standard protocol for MRI (as for CT scans) will require that each requisition received from a physician will be assessed by YHC's radiology consultants prior to booking. If alternative imaging is appropriate given the provided clinical indicators, then alternative imaging will be utilized. The radiology consultants will provide Yukon physicians with initial and ongoing training in appropriate use of MRI, and will monitor and address utilization patterns with Yukon physicians.

Based on actual counts of MRI's funded by Insured Health Services of 554 MRIs in 2012-13, the Yukon rate of approximately 16 per 1,000 population is much lower than the BC rate of 34 per 1,000 and the Alberta rate of 46 per 1,000. Although there has been no specific study to determine the reasons why the rate is so significantly below other Canadian jurisdictions' rates, the impact of traveling out of territory with its associated costs, time off work, and impacts on family are likely contributing factors. Based on experience in other jurisdictions, improved access to services locally will likely lead to increased ordering of MRIs. This issue will need to be closely monitored and managed.

Non-urgent MRI wait times in the provinces vary by province and health authority. The average wait time for a non-urgent MRI is 3-6 months, and this can delay access to care in cases where the MRI is required before other care (e.g. seeing a specialist). Urgent MRIs generally do not have a wait time and usually occurred within one week.

3.2 Quantitative data

In the spring of 2010, the YHC conducted a Public Awareness campaign. Research through the public awareness campaign provided the following key priorities as identified by Yukoners.

- Reducing the need to travel away from home
- Reducing wait times
- Providing necessary infrastructure to recruit and retain health care professionals
- Building necessary infrastructure to house new equipment and technology.

In 2010 The Yukon Hospital Foundation (YHF) and YG announced a three year fundraising campaign to raise funds for the first MRI program in Canada north of 60. H&SS committed to matching the YHF's fundraising goal of \$2 million to meet the required \$4 million goal to purchase the required equipment, train staff and contribute to the specific facility requirement to house the MRI. The community support for this project was dramatic, demonstrated by reaching the \$2 million goal in just 2 years.

The business case implementation of the MRI program identified that the new MRI will provide:

- Improved access to *appropriate* diagnostic imaging services - by ensuring the patient receives the right imaging procedure at the right time;
- Clinicians with ability to:
 - provide accurate and timely diagnosis;
 - plan treatment options;
 - better manage patients through the continuum of healthcare services and programs;
- 10% reduction of CT's currently being performed where MRI is the preferred modality – thereby reducing radiation exposure to patients;
- Improved Wait times for MRI, compared to MRI services offered in other jurisdictions;
- YHC greater ability to recruit and retain health care professionals;
- Further enhances onsite diagnostic options;

INPATIENT BEDS

4.1 Data Source: Meditech, CIHI, Hay Group

4.2 Quantitative Data

In 2011 the Hay Group completed an analysis of inpatient bed utilization as part of the Master Planning data analysis (Appendix G). The approach used for this analysis included incorporating population projections plus the parameters listed below to identify the future WGH clinical service requirements:

- Target acute care bed occupancy rates
- Expected inpatient LOS and potential delays in access to post-acute services (impacted by scope and availability of post-acute services)
- Rates of reliance on acute care (impacted by availability of community resources, population health status, etc.)
- Reliance on YK providers vs. out of territory providers (by level of care – e.g. primary/secondary vs. tertiary/quaternary)
- Mix of inpatient and ambulatory care

4.2.1 Per Capita Inpatient Cost

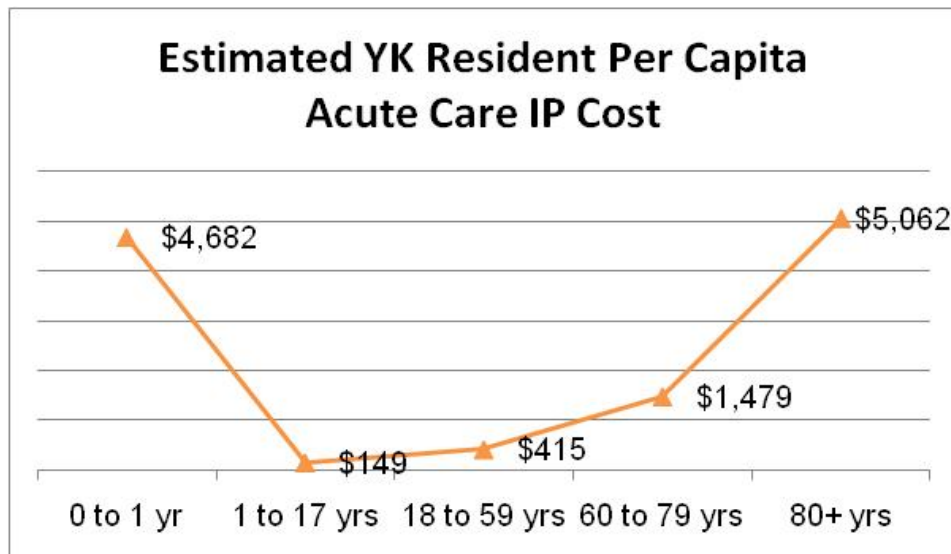
- Hospital inpatient utilization per population varies with population age (and gender)
- Highest rate of utilization for infants (since birth usually in hospital), but per capita hospital days and estimated cost highest for very elderly
- Data includes all hospitalizations of Yukon residents (i.e. not only in WGH)
- Future projection must be sensitive to projected increases in elderly population

Table 23: Per Capita Inpatient Costs

Age Group	2010 Population	09/10 Rates per 1,000 Population			Estimated YK Resident Per Capita Acute Care IP Cost
		IP Cases	IP Days	IP RIW	
0 to 1 yr	381	1,148	4,955	936	\$ 4,682
1 to 17 yrs	6,705	37	124	30	\$ 149
18 to 59 yrs	22,776	88	391	83	\$ 415
60 to 79 yrs	4,643	188	1,448	296	\$ 1,479
80+ yrs	479	570	7,109	1,012	\$ 5,062
Grand Total	34,984	109	622	123	\$ 616

Note: Per capita inpatient cost based on national average of \$5,000 per RIW weighted case

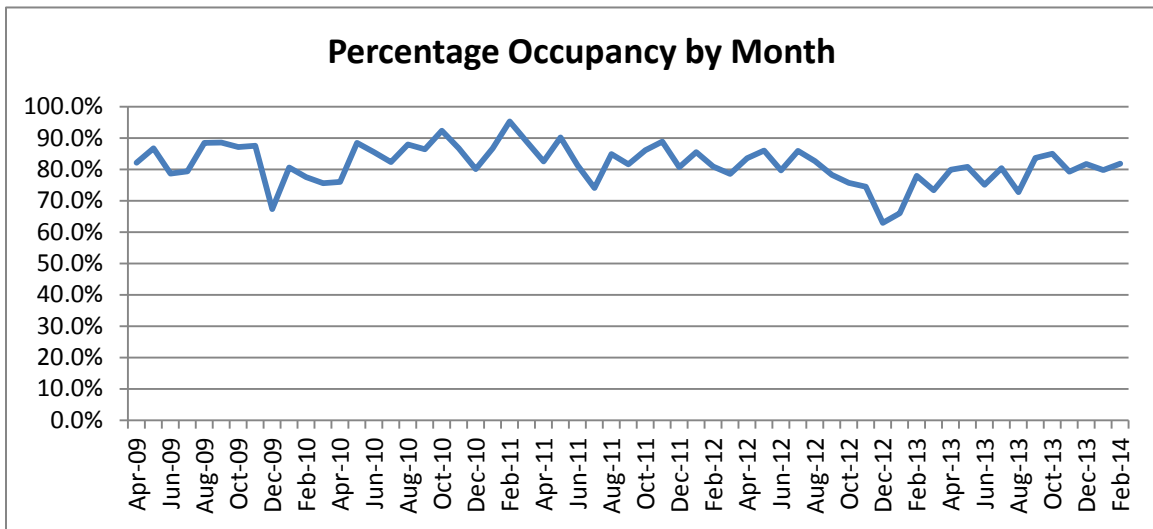
Figure 38: Estimated YK Resident per Capita Acute Care Inpatient Cost



4.2.2 Analysis of Utilization Data – Occupancy

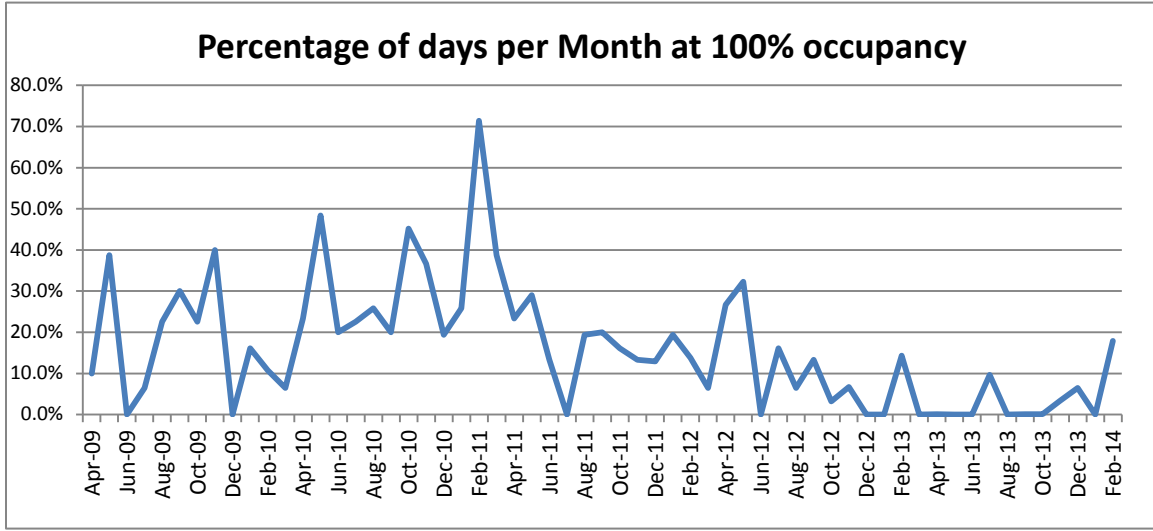
Occupancy has historically fluctuated between approximately 75% and 90% (with the exception of two low periods in December 2009 and December 2012). YHC’s target has been to maintain occupancy below 80% to ensure that inpatient beds are available when needed. This overall occupancy rate includes all inpatient bed. The specialized units of ICU and maternity require lower occupancy targets to ensure that these beds are available when needed. (ICU target occupancy less than 50%, Maternity Unit target occupancy less than 75%). When these units are excluded from the data, the occupancy rate is higher.

Figure 39: WGH Percentage Overall Occupancy by Month



Just as the overall occupancy by month fluctuates month to month, the daily occupancy fluctuates as well. When beds are 100% occupied, the organization is severely challenged to meet the care needs of Yukoners. In June 2012 YHC implemented new discharge planning procedures to proactively anticipate and plan for discharges which has helped reduce the percentage of days at 100% occupancy.

Figure 40: WGH Percentage of Days per Month at 100% Occupancy



4.2.3 Analysis of Utilization Data – Length of Stay

Hay Group analysis completed in 2011 based on CIHI Data 2009-10 and made the following comments:

- WGH birthing LOS is 28% longer than expected
- WGH mental health LOS is 30% shorter than expected

Table 24: Comparison of Actual and Expected LOS for WGH “Typical Cases” (2009-10)

Program	"Typical" Case Days		Actual as % of Expected
	Actual	Expected	
Birthing	2,033	1,589	128.0%
Medicine	4,924	4,967	99.1%
Mental Health	681	980	69.5%
Surgery	1,518	1,584	95.8%
Ungroupable	39	38	103.4%
Grand Total	9,195	9,157	100.4%

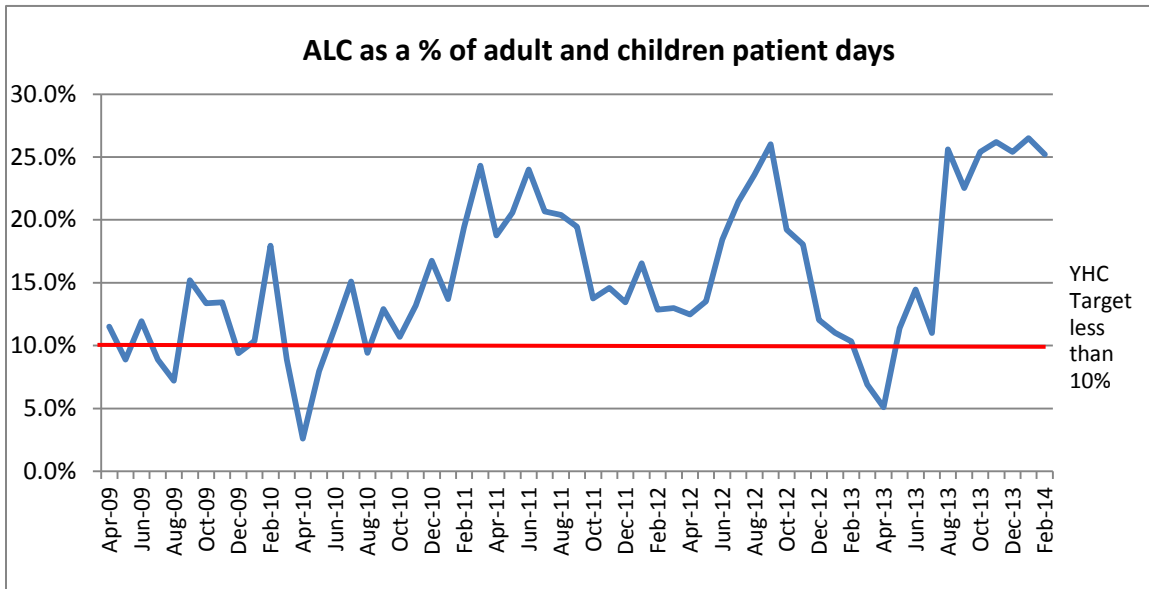
Maternity ALOS length of stay in 2012-13 was 2.7 days compared to 2.0 ELOS (CIHI Portal) (1,284 days Actual days vs. 950 Expected days, 35% longer than expected). Maternal Newborn team is focusing on ways to reduce Maternity ALOS.

Mental Health ALOS length of stay in 2012-13 was 6.3 days compared to 7.9 ELOS (CIHI Portal) (1,745 days Actual days vs. 2,196 Expected days, 21% shorter than expected). Shorter lengths of stays are associated with higher rates of readmission and repeat hospitalizations.

4.2.4 Analysis of Utilization Data – Alternative Level of Care

- YHC has recently implemented a new ALC policy and process to more accurately track ALC status which will provide more accurate measures of ALC activity through CIHI data.
- This new policy is based on the Ontario definitions of ALC status including the following categories:
 - ALC – LONG TERM CARE
 - ALC – PALLIATIVE
 - ALC – HOME
 - ALC – REHAB
 - ALC - ACUTE
- In past years ALC status has been designated when a patient has occupied an acute care bed for more than 30 days.

Figure 41: WGH Alternative Level of Care as a % of Adult and Children Patient Days



4.2.5 Ambulatory Care Sensitive Conditions and Injury Rate Hospitalizations 2011-12

Table 25: Ambulatory Care Sensitive Conditions (ACSC) and Injury Rate Hospitalizations 2011-2012 per 100,000 population²⁵

Health Region	ACSC	Injury Hospitalization
Canada	290	516
Newfoundland and Labrador	423	537
Prince Edward Island	457	617
Nova Scotia	316	491
New Brunswick	460	578
Quebec	290	512
Ontario	269	409
Manitoba	314	657
Saskatchewan	454	789
Alberta	313	711
British Columbia	254	545
Yukon	507	1,159
Northwest Territories	646	1,153
Nunavut	892	871

4.2.6 Reliance on YK providers vs. out of territory providers (by level of care – e.g. primary/secondary vs. tertiary/quaternary)

Hay Group analysis completed in 2011 based on CIHI Data 2009-10 and made the following comments:

- 80.2% of hospitalizations for Yukon residents were provided at WGH
- YT is most self-sufficient for Birthing (90.7%) and least self-sufficient for Surgery (58.4%)

²⁵ Source: Health Indicators 2013, CIHI. Accessed June 5, 2014.
https://secure.cihi.ca/free_products/HI2013_Jan30_EN.pdf

Table 26: Location of Inpatient Hospitalizations for Yukon Residents 2009-10

Broad Program	Hospital Location				% Yukon
	Yukon	BC	Alberta	Other	
Birthing	800	40	35	7	90.7%
Medicine	1,568	192	70	14	85.0%
Mental Health	155	8	8	4	88.6%
Surgery	524	296	71	6	58.4%
Ungroupable	25	5	1	-	80.6%
Grand Total	3,072	541	185	31	80.2%

4.3 Data Limitations

- Current ALC rates are based on patient days over 30, only capture long stay patients, are not identified by reason

PART 3 FUNCTIONAL PROGRAM

In 2006, it was identified that while WGH had been redeveloped in 1997 and was generally well planned and deemed suitable for the community at that time. Since then there has been considerable change in practice in some services, in technology and techniques used, and in the population depending on the hospital to provide care. The ED and ambulatory care services were identified as most in need of redevelopment²⁶. Based on financial considerations, other departments experiencing space constraints, and the potential use of the Thomson Centre for the delivery of hospital services, the YHC reviewed options for the expansion of the ED which included expansion within the current facility.

In May 2009, YHC engaged Hughes Condon Marler Architects (HCMA), together with the Resource Planning Group Inc. (RPG) to conduct a feasibility study that explored the following options for the redevelopment of the ED:

- Expansion of the ED into the atrium and relocation of impacted services within existing available facilities;
- New build for Materials Management on-site to allow for expansion of ED and relocation of services within existing facilities; and
- New build for ED and expansion of other services within existing facilities.

In support of the Feasibility Study, RPG prepared an updated/addendum to the Emergency Department Functional Program and developed Master Program information for select services in the main facility relevant to the Feasibility Study (in particular those that were anticipated and identified to have increased scope and space requirements). Other relevant or impacted areas were assumed to remain the same size in future as existing and were included in the summary space table, but were not included in the Master Program Information²⁷.

The Feasibility Study concluded that there was insufficient space within the existing facilities to expand the ED to meet program requirements without a significant new building component. Particular attention was given to off-loading existing services into the Thomson Center to free up space within the existing building for the ED. However, critical adjacencies between Laboratory, Medical Imaging, Emergency Care, Operating Suite, and Inpatient Units needed to be maintained to facilitate efficient operations which limited which services could be off-loaded into the Thomson Centre. As well, the

²⁶ Source: Agnew Peckham (2006). See Appendix C

²⁷ Source: RPG (2010). Feasibility Study. See Appendix D

Thomson Centre is a purpose built building which made re-purposing it to other functions challenging and a decision was made shortly after completion of the report to re-open the Thomson Center to provide additional residential care services.

In 2011 there was recognition by YHC and YG that it was prudent to complete a Strategic Campus Facilities Plan and Master Plan prior to investing in a major capital project for the expansion of WGH. The intent was to identify if there was sufficient space on the campus to expand the current hospital to meet the hospital care needs into 2025. A contract to develop a Strategic Facilities Plan and Master Plan for the WGH Campus was awarded to Stantec Architecture Ltd. of Vancouver.

The final 'Master Plan' documents included two components:

1. Strategic Facilities Plan including:
 - Existing condition analysis
 - Organizational needs statement
 - Gap analysis
 - Recommendation for new spaces/buildings
 - Facility cost projects/life cycle cost analysis
 - Capacity analysis and use recommendations

2. Master Map including:
 - Site specific physical plan for the WGH Campus
 - Infrastructure and systems within the WGH Campus
 - Aesthetics of buildings and grounds
 - Phasing plans for building
 - Construction estimates
 - Engineering estimates

The Master Plan outlined a staged approach to re-development of the WGH campus of five phases over approximately 20 years. Although YHC and the YG did not endorse the approach proposed in the Master Plan, there was an acknowledgement that the current site does have the capacity to expand to meet demands over the next 20 years as far as forecasting and planning assumptions permit. As well, the Master Planning exercise confirmed the location identified in all previous planning exercises for the ED expansion as the most feasible.

In Spring 2013, YHC was asked by YG to proceed with the development of a preliminary business case outlining the concept of an expansion to the WGH to house a new MRI Suite and new and expanded ED. In August 2013, YG approved the initial project

concept and resources to proceed with the initial design to include capital construction of expanded ED facilities, an MRI suite, a new energy centre, a new data centre, and the construction of shelled future inpatient development space on the second floor.

YHC contracted a number of expert advisors to assist with the procurement of the Project. In order to establish confidence with the Project cost, the advisor team developed an Indicative Design. The Functional Program developed in 2010 by RPG was used as a starting point for this design. Sterling Planning Alliance completed a peer review of this program and noted that since the functional program was developed, CSA issued new Canadian design standards²⁸ while identifying that the Functional Program did not meet these standards, particularly in treatment space allocation.

While CSA's standards for Canadian Health Care Facilities are not mandated by legislation, the standards are used as guidelines to ensure that Canadian Healthcare Facilities are designed to meet patient and staff safety, accommodate technological changes, and provide consistency of design across Canada. Canadian architectural, planning, and construction firms have adopted these as best practice. According to Partnerships British Columbia, the Ministry of Health in BC has endorsed these standards as guidelines and in practice BC Health Authorities currently use these standards whenever practicable.

In an effort to ensure that planning was based on most current population projections, utilization patterns, and design standards/guidelines, YHC contracted Sterling Planning Alliance to re-refresh the Functional Program developed in 2010 (Appendix E).

Sterling Planning Alliance completed an analysis of current utilization based on their experience with planning Emergency Departments in Canada, USA and Europe, and determined the appropriate number and type of treatment spaces based on WGH's volumes of services over the past four years (Figure 29).

It is important to note that in order to contain the WGH Expansion Project's scope during the planning phase, the development process assumed that changes currently underway within Yukon's community-based primary care services and work being planned and conducted by H&SS will continue to evolve and deliver results over time that provide for appropriate diversion of non-urgent and semi-urgent visits from the future ED. With this assumption in mind, Sterling Planning Alliance recommended an ED with 16 to 17 clinical treatment spaces as an appropriate sized ED to meet the community's future needs. Also, the addition of 4 Observation Beds co-located with the ED will allow greater flexibility to respond to fluctuating demands, greater efficiency

²⁸ Source: CSA Z8000-11 Canadian Health Care Facilities

with managing inpatient pressures, and the ability to potentially expand the ED in the future, beyond the planning horizon.

PART 4 NEEDS SUMMARY AND RECOMMENDATIONS

This section summarizes the high priority needs identified in the previous sections and makes recommendations to be addressed through the development of a functional program for the ED, ICU, and MRI.

SUMMARY OF POPULATION AND SERVICE DELIVERY NEEDS

Yukon's population growth between 2006 and 2011 was 11.6%, the highest of any province or territory. In the last decade (2003-2013) Yukon's total population increased by 6,550 people or 21.8% with the greatest growth in Whitehorse. Population projections across 10-year, 5-year and 2-year scenarios) suggest the possibility of a broad range of growth over the next ten years, ranging from 13.7% to 22.8%. The proportion of the population over 65 years is expected to grow from 11% in 2014 to 17% by 2024 while over the same period, the 15-29 age group is expected to decline by about 4%.

Utilization trends from 2009-10 to 2013-14 have shown increased volumes. Utilization trends from 2011-12 to 2012-13 showed a marked volume increase for less urgent (CTAS 4) cases in response to decreased primary care and physician availability. Data for 2013-14 indicated volume increases have stabilized if not decreased.

The effects of the aging population are already being seen in the increasing proportion of older patients seen in CTAS 3, 2, and 1s. Older patients present with more complex health needs, have longer lengths of stay and are more likely to be admitted to hospital. As Yukon's population ages, the demands on the health care system will increase, impacting the ED as well as the ICU and inpatient units and these services are the most expensive within the health care system. Efficiencies must be built into the design of our systems to reduce the cost of care and to ensure the safety of patients receiving care and staff delivering care.

Chronic disease rates, smoking rates, alcohol use, injury rates, acute myocardial infarction rates, and self-injury rates are higher in the Yukon than the rest of Canada. While the development of specific prevention programs are important to reducing these rates and improving the health of Yukoners, until rates are reduced the ED will continue

to see patients suffering from traumatic injuries, acute myocardial infarctions, complications related to chronic diseases, intoxicated patients, and acute mental health patients (self-injury).

While a portion of these can appropriately be seen in primary care settings, the ED becomes the backup care option when primary care services are not available or strained within the community.

RECOMMENDATIONS

Based on this assessment and the prioritization of needs, the following conclusions have been drawn:

- 1) An appropriately designed and sized Emergency Department should effectively and efficiently address:
 - Triage and patient flow
 - Infection Control requirements
 - Safety and Security for staff and patients
 - Projected increased volumes and complexity of patient care
 - Population health needs, particularly around acute mental health and substance use
 - Other foreseeable events due to surges and emergency response (mass casualty incidents)
- 2) Creation of Observation Beds co-located with Emergency Department will:
 - Reduce unnecessary admissions (less than 24 hours) by providing more appropriate space for observation while awaiting clinical decision to admit
 - Support Post-operative recovery after hours
 - Maintain current ICU beds to serve patients requiring more intense care and longer length of stays
- 3) Creation of an MRI Program will:
 - Improve access to appropriate diagnostic imaging services
 - Improve Wait times for MRI

- Improve accuracy and timeliness of diagnosis and treatment planning
- 4) WGH needs to have the capacity to be flexible and responsive to meet future bed needs as they change over time.
 - 5) A coordinated and collaborative approach to developing community based health programs is needed to alleviate the demands on the WGH. This is a key planning assumption that requires an ongoing commitment by all partners to dialogue and share information for the purpose of inform future actions.

Five key recommendations are presented in support of this analysis:

- 17 Treatment Spaces be designed in ED
- 4 bed Observation Unit be co-located with ED
- MRI Suite be created
- Shelled second floor to meet future inpatient bed need
- Appropriate mechanisms are identified to enable improved strategic and systems thinking across primary care community.

APPENDICES

APPENDIX A	Clinical Service Plan, Draft February 5, 2014
APPENDIX B	CSA Z8000-11 Canadian Health Care Facilities
APPENDIX C	ED Functional Program, Agnew Peckham, 2006
APPENDIX D	ED Feasibility Study, Resource Planning Group, 2010
APPENDIX E	Sterling Planning Alliance Functional Program, 2014
APPENDIX F	MRI Business Case 2010
APPENDIX G	WGH Clinical Services Planning – General Presentation by Hay Group, June 10, 2011