Capital Zone Emergency Services Council "CZESC"

Quarterly Report

Quarter 1 (January to March 2016)

With focus on the Emergency Department of IWK Health Centre











Introduction

Emergency Medicine is the medical specialty dedicated to the diagnosis and treatment of unforeseen illness and injury. It includes the initial evaluation, diagnosis, treatment, and disposition of any patient requiring expeditious medical, surgical, or psychiatric care <1>. Thus, the operationalization of "Integrated Networks of Emergency Care" is inherently interdisciplinary and interdependent upon multiple in-hospital and Health System wide structures and processes.

In alignment with the NSHA/IWK/EHSNS commitment to patient safety and with the Better Care Sooner standards (as well as with recommended national ED quality reporting guidelines) this quarterly report focuses on Key Process Indicators, and outcomes when available, to help drive the CQI imperative and to improve care to the patients and populations that we serve.

Emergency Medicine	Unforeseen Unscheduled	Predictable Schedulable	
CTAS 1, 2, 3	 Often described as "real" emergencies 97% of fixed costs of ED to meet population burden of acute illness and injury<4> Does include exacerbations of chronic problems 	 "avoidable" CTAS 3 (ED as safety net) frail elderly with no acute event or problem partial diagnosis requiring further work up chronic condition requiring follow up or has predictable clinical course 	
CTAS 4, 5	 DO NOT cause ED overcrowding<2,3> Very low marginal cost to see in ED<4,5> 9/10 most common successful lawsuits in EM 	 "inappropriate" ED visits (ED as gate keeper) Medication refill "sick note" for work or school Queue jumping to see specialist 	

- 1. ACEP definition of Emergency Medicine: http://www.acep.org/Content.aspx?id=29164
- **2. MYTH:** Emergency room overcrowding is caused by non-urgent cases October 2009 Canadian Health Research Foundation Myth Buster of the year series
- 3. The Effect of Low-Complexity Patients on Emergency Department Waiting Times <u>Schull MJ</u>, <u>Kiss A</u>, <u>Szalai JP</u>. <u>Ann Emerg Med.</u> 2007 Mar;49(3):257-64, 264.e1. Acad Emerg
- 4. THE COSTS OF VISITS TO EMERGENCY DEPARTMENTS ROBERT M. W ILLIAMS, M.D., .PhD (N Engl J Med 1996;334:642-6.)
- 5. Emergency Medical Care: 3 Myths Debunked, Huffington Post. Leigh Vinocur, M.D. Director of Strategic Initiatives at the University of Maryland School Medicine.

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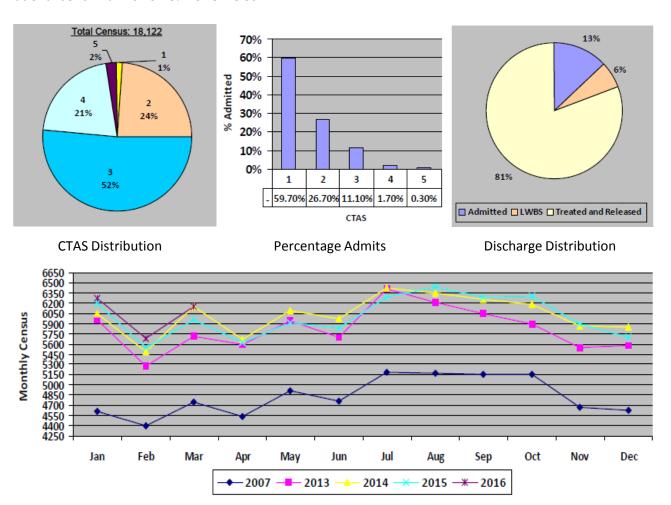
A. IWK Health Centre Emergency Department

Census - Halifax Infirmary ED

Reporting Date: January 1 – March 31, 2016

Context:

Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left Without Being Seen (LWBS) is a reflection of decreased access secondary to wait times (target 2-3%). Percentage admitted national benchmark is 16-18% for CTAS 3s.



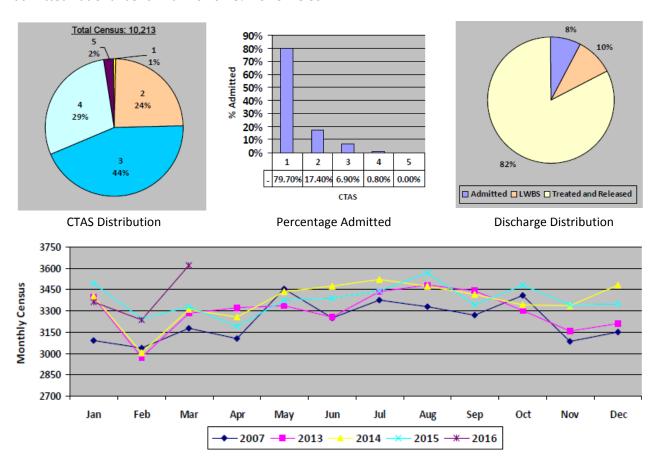
Analysis:

Monthly census continues at levels similar to that in the previous three years. Half of our patients are CTAS 3, and 4/5 patients are discharged from the ED. LWBS rates remain high at 6%, indicating ongoing access block resulting almost entirely from boarded patients occupying emergency beds..

Census – Dartmouth General ED Reporting Date: January 1 to March 31, 2016

Context:

Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left Without Being Seen (LWBS) is a reflection of decreased access secondary to wait times (target 2-3%). Percentage admitted national benchmark is 16-18% for CTAS 3s.



Analysis:

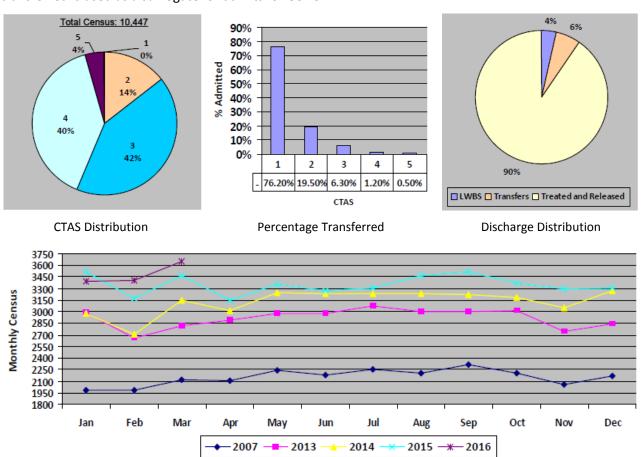
Historically high acuity at the Dartmouth General Hospital Emergency department persists with significant increase in patient volumes.

Ravi Parkash, Site Chief, DGH ED

Census - Cobequid Community ED Reporting Date: January 1 to March 31, 2016

Context:

Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left Without Being Seen (LWBS) is a reflection of decreased access secondary to wait times (target 2-3%). Percentage transferred is used as a surrogate for admits for CCHC.



Analysis:

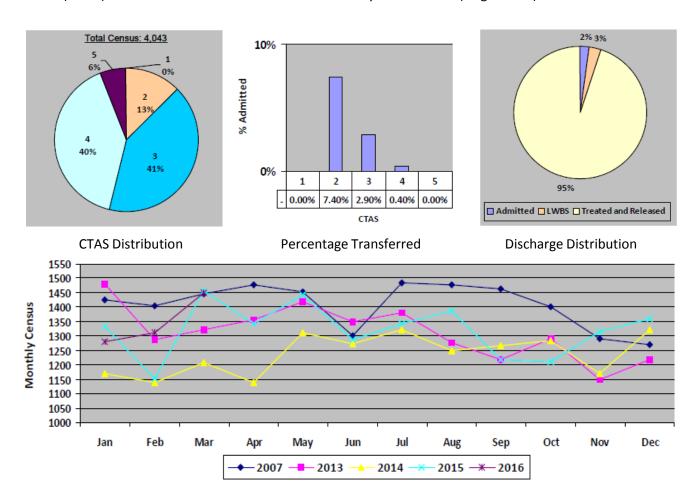
Patient registrations continue to increase at CCHC. First quarter registrations are 3% higher than the same period last year. The LWBS rate is stable at 4%. Acuities are slightly higher than average for 2015 (56 % vs 54% for CTAS level 1-3). In the province, this acuity is only exceeded by DGH and QEII ED's. The increased volume often necessitates double triage which strains available nursing resource between the hours of 9-1400 and 1900-2200. We are hopeful that an application for increased nursing complement will be approved.

Mike Clory, Site Chief, CCHC ED.

Census -Hants Community Hospital ED Reporting Date: January 1 to March 31, 2016

Context:

Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left Without Being Seen (LWBS) is a reflection of decreased access secondary to wait times (target 2-3%).



Analysis:

Seeing an overall rise in our census this quarter however March saw a considerable increase.

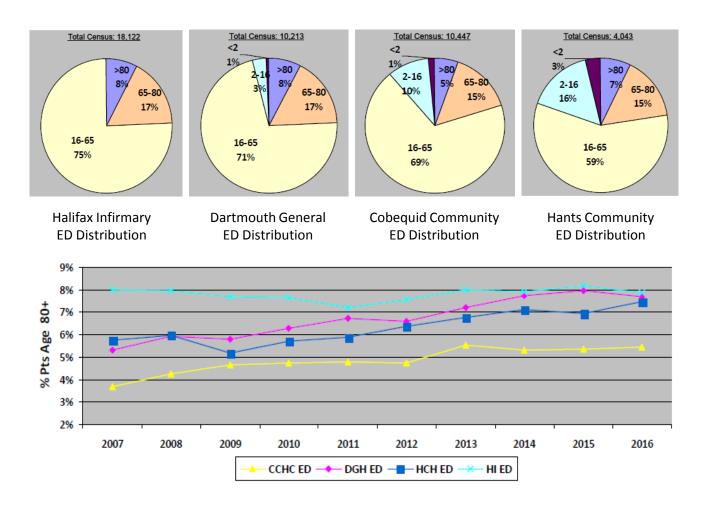
Percentages of CTAS levels remains stable.

Joan Berkvens, Interim Health Services Manager, HCH ED

Emergency Department Demographics — Halifax Infirmary / Dartmouth General / Cobequid Community / Hants Community

Context:

The complexity of patients presenting to the Emergency Department is a function of CTAS, age, presenting complaint, and many other factors. This data looks at the percentage of census in the following age groups (IWK excluded at this time): < 2 yrs, 2-16 yrs, 16-65 yrs, 65-80 yrs, and > 80 yrs.



Analysis:

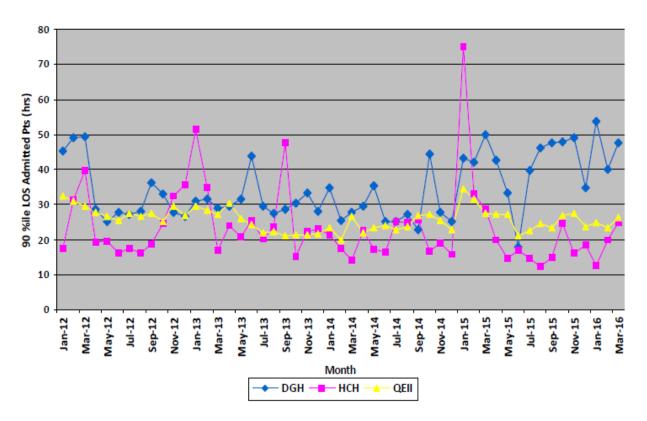
While patient volumes continue to rise, so too does the average age of patients, with 25% of patients at the HI and DGH sites being over 65 years of age. Patient age is a surrogate marker for complexity, which requires longer stays and higher resource use. Constantly improving the care we provide to older patients and those with frailty is a specific goal of the Central Zone Emergency Departments.

Sam Campbell, Acting CZESC Chair, NSHA

ED Length of Stay (LOS) for Admitted Patients

Context:

ED LOS of admitted patients (i.e. "ED boarding") has been recognized as the main cause of overcrowding in the ED. Overcrowding is the term used to describe access block. Access block as manifested by increased patient wait times, increased ambulance offload times, and increased LWBS rates is associated with increased adverse outcomes, increased mortality (in a dose/response relationship), and increased costs to the system overall.



Analysis:

The boarding of admitted patients at the Dartmouth General Emergency Department continues at crisis levels (and is trending to deteriorate), The other Emergency Departments are also significantly affected by boarding, which presents the biggest challenge to safe and effective patient care, both for those being boarded, and those waiting for emergency assessment. The current national target recommended by CAEP of 12 hours is not achieved consistently by any of the ED's and, with the exception of Hants, it has not been achieved at all in the past year. This crisis has been going on for so long that it appears that this deviance from recommended standards of care has become 'normalized', and indicates the failure of an effective system of care.

Sam Campbell, Acting CZESC Chair, NSHA.

Ambulance Offload / Transition

Context:

Ambulance offload times are another Key Process Indicator which has implications both to the individual patient (i.e. wait times to see an MD), and to the community (i.e. turn around times for the ambulance to get back to the streets and available to the community for the next 911 emergency call.

Because of rising ambulance offload times in the past (due to ED access block) a transition team has been in place to assume the observation of care in the "ambulance hallway" prior to the placement of the patient in an ED bed (to allow the EHSNS crew to return to service). This off load team was discontinued on April 1, 2014.



90th Percentile Time to Bed (hr)

CCHC	261	247	203	262	253	262	274	276	241	301	248	270
DGH	562	550	546	571	553	487	592	582	580	529	525	594
QEII	1260	1302	1318	1378	1471	1375	1397	1349	1333	1467	1298	1300

Ambulance Volume

Analysis:

A spinoff of boarding and bed blockage is that ambulances are not able to offload patients, tying up prehospital resources in hospital corridors. None of the sites with EDIS are obtaining the 20 min offload recommendations, with DGH again faring the worst.

Sam Campbell, Acting CZESC Chair, NSHA.

Matching Capacity with Demand:

Context:

Ambulance smoothing has occurred in the central region for Quarter 4 2012 based on the relative surge capacity at each ED site. This table shows the percentage of time that the HI and DGH were on then escalating levels of capacity (Red being the highest surge level). CCHC is also part of this network. The surge levels are determined by 5 criteria and are measured real time so the status changes dynamically. If an ambulance patient does not meet exclusion criteria (CTAS 1 and 2 previously determined trip destination criteria for major trauma, stroke, STEMI, or have had recent admit to hospital) then patients may be rerouted from a Red ED to a yellow ED (this was recently changed from rerouting only to Green EDs).

QEII	DGH	%
YELLOW	RED	15.88%
GREEN	RED	13.54%
GREEN	GREEN	11.31%
YELLOW	YELLOW	9.90%
GREEN	YELLOW	9.53%
ORANGE	RED	7.76%
GREEN	ORANGE	6.77%
YELLOW	GREEN	6.64%
YELLOW	ORANGE	5.87%
ORANGE	YELLOW	3.14%
RED	RED	2.74%
ORANGE	ORANGE	2.69%
ORANGE	GREEN	1.98%
RED	YELLOW	0.94%
RED	ORANGE	0.85%
RED	GREEN	0.46%

Analysis:

Compared to the previous quarter, Dartmouth General redirect status toward Halifax Infirmary was up to 36.19% with the opposite the case in only 3.38% of the time. Although part of this can be explained by the recent expansion of diversion potential from 'red to yellow or green, or orange to green, it is another indicator of the severe blockage of access at the DGH site. The Dartmouth General Emergency was in 'Red' status (overwhelmed) 39.92% of the time (Halifax Infirmary 4.99%)

Because it is able to begin the day without boarded patients, Cobequid Community Health Centre continues to help smooth EHS offloads by taking a higher proportion of ambulances with CTAS 3, 4 or 5 patients when other sites are in 'Red' up until 15:00.

Pod of Initial Destination at the Halifax Infirmary ED / RAU

Context:

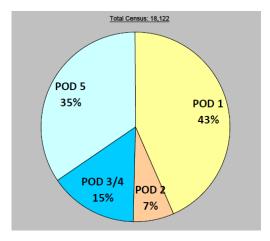
Internal flow within an ED needs to optimize available space/capacity to meet the volume/CTAS demands of the presenting patients.

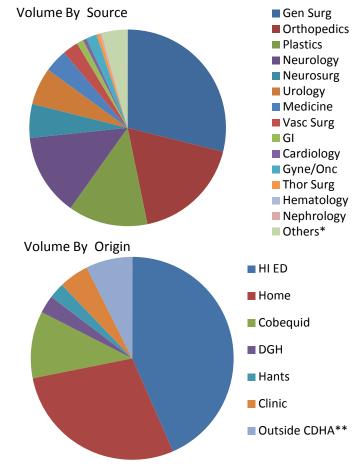
The HI ED has innovated (chair centric Pod 1, fast track/paramedic assisted pod 5) to meet the needs of this demand. The Rapid Assessment Unit (RAU) is another aspect of the ED which has evolved to meet the needs of transferred patients and referred patients from our own ED. This allows expedited consultations to specific services and frees up bed time to see the next Emergency patient in the

waiting room or ambulance hallway.



- Initial Location POD 1-2-3-4-5 or Psych
- Psych and Intake A part of Pod 1
- Intake B Part of Pod 5
- No Left Without Being Seen Counted





Analysis:

The success of a 'Chair-centric' model in pods 1 and 5, as part of the strategy to deal with bed blockage continues to offer a 'lifeline' with 4/5 patients being treated in these areas.

RAU continues to divert patients from Emergency Department beds. Almost half of all RAU patients are referred to orthopedics or general surgery. Although designed primarily to divert consulted patients originating at other hospitals, the Halifax Infirmary Emergency Department is still the biggest 'supplier' of patients to the RAU.

Clinical Decision Unit (CDU) Utilization

Context:

The Clinical Decision Unit is a virtual unit embedded within the physical space of the ED which facilitates observation and rechecks by the Emergency Physician. The purpose is twofold; to improve the transfer of care with more explicit ordering and documentation clinical care pathways, and to try and reduce admissions for patients that potentially may "turn around" with 6 – 24 hours of treatment and observation.

Site	CDU patients	CDU Patients Admitted	Percentage CDU Admitted	Total Site Patient Volume	Percentage Total Patients CDU	Median Length of Stay CDU Non Admitted patients (hr)
HI ED	287	68	23.7%	18122	1.6%	17.27
DGH ED	427	100	23.4%	10214	4.2%	17.33
CCHC ED	19	13	68.4%	10447	0.2%	9.22

Analysis:

While the Dartmouth General Emergency Department approaches the 4-5% benchmark for Clinical Decision Unit (Ontario), The Halifax Infirmary Emergency Department continues to underuse (or underdocument) this option.

The Clinical Decision Unit designation at Cobequid is being used more heavily for patients waiting for transfer to the Halifax Infirmary for admission or consultation.

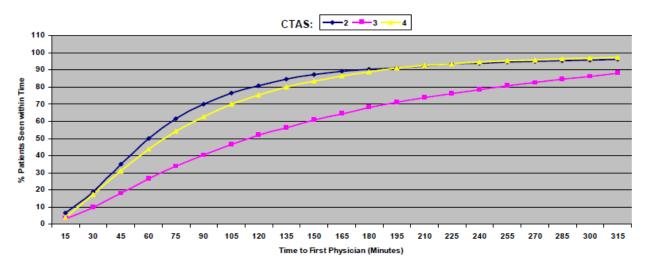
Sam Campbell, Acting CZESC Chair, NSHA.

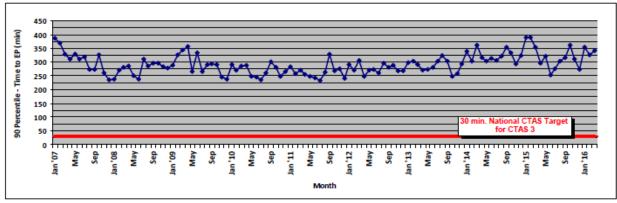
Wait Times - HI ED

Context: One of the main ways ED access block manifests itself is in patient wait times (time from registration to time to see MD). Wait times have been shown to be associated with adverse outcomes in a dose response curve that suggests causation.

This data looks at the wait time performance curve for CTAS 2, 3, and 4s (assuming CTAS 1s get seen expeditiously and CTAS 5s have less of a time dependency).

The time targets are: CTAS 2 = 15 min, CTAS 3 = 30 min, CTAS 4 = 60 min.





Analysis:

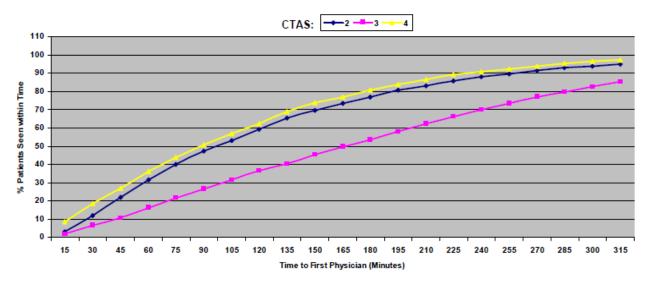
Waits for emergency care remain unacceptably long, with CTAS 3 patients bearing the brunt of system dysfunction. Over half of CTAS 3 patients wait for over two hours and 30% are still waiting over 4 hours for care. (CTAS 4 patients are paradoxically seen quicker than those with CTAS 3 because of the parallel streaming process that takes many of them through pod 5). As half of our patients are assigned a CTAS score of 3, this reflects poorly on the ability of the system to provide emergency care within a reasonable time period. Considering that the occupation of Emergency Department beds by admitted patients remains high, it appears that without increased inpatient capacity, 'internal' methods to improve flow are likely to have limited further impact.

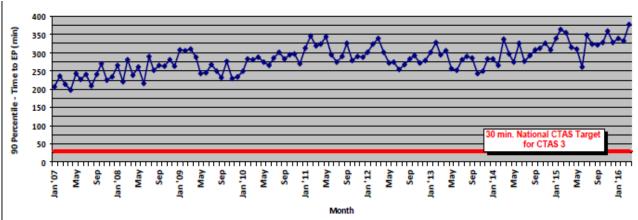
Wait Times - DGH ED

Context: One of the main ways ED access block manifests itself is in patient wait times (time from registration to time to see MD). Wait times have been shown to be associated with adverse outcomes in a dose response curve that suggests causation.

This data looks at the wait time performance curve for CTAS 2, 3, and 4s (assuming CTAS 1s get seen expeditiously and CTAS 5s have less of a time dependency).

The time targets are: CTAS 2 = 15 min, CTAS 3 = 30 min, CTAS 4 = 60 min.





Analysis:

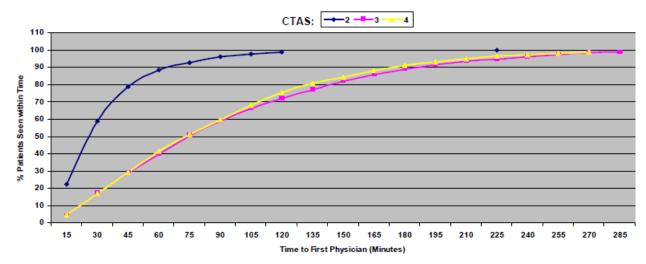
Increasing wait times at the Dartmouth General Hospital Emergency Department reflect lack of inpatient capacity at Dartmouth General Hospital and increased length of stay for admitted patients in the emergency department. This creates access block for incoming patients.

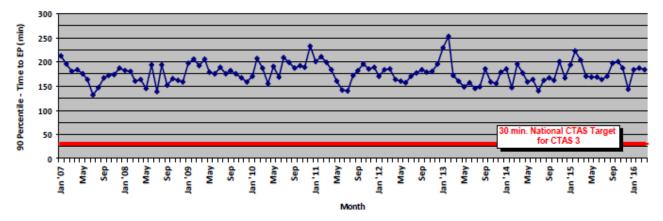
Wait Times - Cobequid ED

Context: One of the main ways ED access block manifests itself is in patient wait times (time from registration to time to see MD). Wait times have been shown to be associated with adverse outcomes in a dose response curve that suggests causation.

This data looks at the wait time performance curve for CTAS 2, 3, and 4s (assuming CTAS 1s get seen expeditiously and CTAS 5s have less of a time dependency).

The time targets are: CTAS 2 = 15 min, CTAS 3 = 30 min, CTAS 4 = 60 min.





Analysis:

Wait times have remained stable despite increased volumes. An increase in nursing resource to allow full bed capacity during hours of operation may improve patient wait times as the level 3 patients are often waiting for a bed to be assessed.

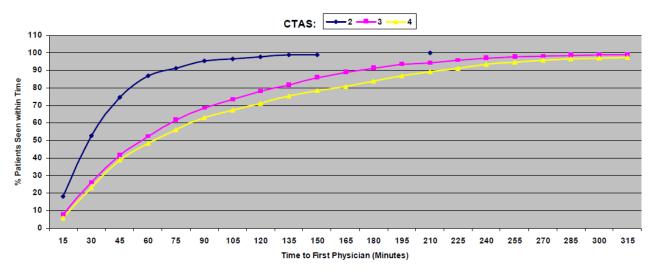
Mike Clory, Site Chief, CCHC ED

Wait Times – Hants ED

Context: One of the main ways ED access block manifests itself is in patient wait times (time from registration to time to see MD). Wait times have been shown to be associated with adverse outcomes in a dose response curve that suggests causation.

This data looks at the wait time performance curve for CTAS 2, 3, and 4s (assuming CTAS 1s get seen expeditiously and CTAS 5s have less of a time dependency).

The time targets are: CTAS 2 = 15 min, CTAS 3 = 30 min, CTAS 4 = 60 min.





Analysis:

Wait times are seeing an increase over last quarter. Wait times within HCH exist due to:

- 1. Admitted bed shortages creates limited space bed availability has been excellent .
- 2. Physician dependent (1 EP) limited flux remains same. Newer physicians take a bit longer as they build experience in the department. Does not account for protocols being carried out by nursing prior to physician seeing patient.
- 3. Delays to tertiary care and/or consultants within HI site minimal delays over this quarter. Staff report some EHS related issues. Not showing in reports. Encouraged to report in order top track.

4. Increased census

Clinical Care

Diagnostic Imaging & Lab Reporting

Context:

Through put of patients in the Emergency Department is impacted by the intensity of the work up (lab and diagnostic imaging required). Decision rules developed in the Emergency Department setting (Cat Scan Head, Cervical-Spine, Ottawa Ankle, Rule Out Deep Vein Thrombosis, Rule Out Pulmonary Emboli, etc) all impact the cost effectiveness of patient investigation.

Reporting Period from: Jan 01, 2016 to: Mar 31, 2016

	DI Ordered									
Site	Pt Volume	CT Orders (%Pt Volume)	US Orders (%Pt Volume)	MRI Orders (% Pt Volume)	XR Orders (%Pt Volume)	Total Di Orders (% Pt Volume)				
QEII	18122	2403 (13.3%)	952 (5.3%)	38 (0.2%)	7301 (40.3%)	10694 (59.0%)				
DGH	10214	1742 (17.1%)	426 (4.2%)	1 (0.0%)	5133 (50.3%)	7302 (71.5%)				
HCH	4043	3 (0.1%)	69 (1.7%)	0 (0.0%)	1361 (33.7%)	1433 (35.4%)				
CCHC	10447	889 (8.5%)	145 (1.4%)	0 (0.0%)	5216 (49.9%)	6250 (59.8%)				
Total	42826	5037 (11.8%)	1592 (3.7%)	39 (0.1%)	19011 (44.4%)	25679 (60.0%)				

Labs Ordered								
Site	Patients with Labs Ordered % Patients with Labs		Patient Volume					
QEII	8279	45.7%	18122					
DGH	5363	52.5%	10214					
HCH	1200	29.7%	4043					
CCHC	4625	44.3%	10447					
Total	19467	45.46%	42826					

Analysis:

Apart from ultrasound (Dartmouth General Hospital has been a national leader in the use of Ultrasound by Emergency Physician's, and perhaps has a greater challenge to obtain emergency radiology ultrasound than the Halifax Infirmary or Cobequid Community), Dartmouth General Hospital Emergency Department continues to order more Lab and Diagnostic Imaging than the other centres.

The reasons for this disparity in unadjusted data are unclear, but may lie in the different triage processes at each site. A new CZESC Registered Nurse blood testing guide has been developed that may decrease the disparity with lab test usage.

Sam Campbell, Acting CZESC Chair, NSHA.

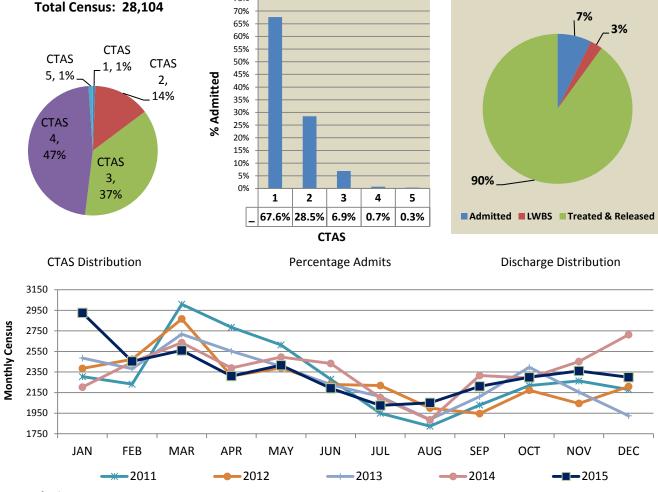
Census – IWK Health Centre ED

Reporting Date: January 1 – March 31, 2016

Context:

Because the IWK Health Centre does not have an EDIS, data is not readily accessible and we have not received data from the last quarter of the 2015/16 fiscal year. We will as usual be reporting data for the full calendar year of 2015. We reported for 2013 that we were able to decrease our Left Without Being Seen (LWBS) numbers to 4% which we saw as a major achievement. In 2014, this was down to 3% and has continued to decrease to 2.7% in 2015. The continued decrease is likely due to improved staffing a t both a physician and nurse level.

75%



Analysis:

Demand has been relatively stable over the past 5 years. Ongoing work on triage has changed our distribution so that just over 50% of our patient are levels I to III. This is bringing up scloser to national statistics. Seasonal variation is evident in the above graph, with activity increasing in the fall and continuing through the spring. Winter months bring a high burden of infectious disease particularly in younger children. In the fallof 2014, activity increased quite quickly, well above average patient volume. this continued through February of 2015. at that time patient volume dropped to a more typical level. an admission rate of 7% is consistent with national pediatric ED admission rates.

IWK Health Centre ED Admissions

Reporting Date: Jan 1 - Dec 31, 2015

Context:

The ED admission rate remains similar to last year at just over 7% this year. This is a change from previous year where we were closer to 9%. Almost 50% of admitted patients go to the medical unit. This is a consistent trend. Approximately 25% of admissions were to the surgical unit. Just over 15% went to the psychiatric unit and this number continues to rise. The remaining approximately 10% go to the intensive care units, direct to OR, and to the oncology unit. The occasional patient is admitted to Family Newborn in the Women's Health Program. We are seeing improvement in our <=8 hours LOS in ED. We have improved this number by 1.5% with the largest improvement in the Oct – Dec period. This would be owing to our more rapid access to medicine inpatient beds and increased numbers of ED trained physicians.

Emergency Department Statistics	Jan to Mar 2015	April to Jun 2015	July to Sep 2015	Oct to Dec 2015	Total 2015
Total Emergency Department Admitted	540	513	469	535	2,057
Percent Admitted of Total Visits	6.80%	7.41%	7.46%	7.69%	7.32%
Average Length of Stay (minutes) (Triage to Admission to Inpt Unit)	285.0	282.0	264.5	278.1	278.5
Number of ED Admissions Length of Stay <= 8 hrs	494	467	438	502	1,901
Percentage of ED Admissions Length of Stay <= 8 hrs	91.5%	91.0%	93.4%	93.8%	92.4%

Analysis:

Time to the inpatient unit at the IWK is considerably less than at the adult facilities across the province, which is consistent with national data. As evidenced in the summer months, and as would be expected, LOS is decreased with lower numbers of admissions. In general LOS in ED is longer for patients being admitted to the medical unit predominantly because of the amount of ED activity that this unit sees, and the strong medical teaching component that requires learners to do most of the admissions. We continue to try to improve outflow to the medical unit, and in collaboration with medical unit staff and physicians, have moved the majority of patients to the unit for their admission clerking. This continues to be a work in progress as it is a large culture change. However we have begun to see improvement and sub-analysis shows that admission time to the inpatient unit has decreased by approximately 10% through a resident led initiative called RIPA (Rapid Initial Patient Assessment). Our current largest issue affecting flow is our physical plant space. We have made some improvements this year by creating a second triage space to reduce the lengthy wait times to see a triage nurse. We are currently looking for ways to validate this time, and are exploring options for some way to identify what time patients come through the door. We expect to complete renovations this month that will provide us with one additional treatment space that we plan to use as a fast track area.

IWK Health Centre ED Focus

IWK ED Visioning Process Underway:

The IWK ED is starting a visioning process in June. We know that we are currently operating out of a space that is far too small and is poorly equipped to provide modern day emergency care.

We will be starting a process that will help us decide not only how our physical space will be configured but what our key priorities for care and integration with the ED network should be.

New iCare Adventure:

iCare Adventure is a game based information system developed by Everage Inc and the IWK for use in emergency department waiting rooms.

This system allows parents and children to take greater control of their own pain control and information needs, and is being expanded to include injury prevention strategies and to allow self treatment of asthma and concussion while still in the waiting room."