

Capital Zone Emergency Services Council
“CZESC”

Quarterly Report

Quarter 3 (July to September 2015)

**With focus on the Emergency Department of
QEII Health Sciences Centre’s
Charles V. Keating Emergency & Trauma 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> “avoidable” CTAS 3 (ED as safety net) <ul style="list-style-type: none"> - 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	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> “inappropriate” ED visits (ED as gate keeper) <ul style="list-style-type: none"> - 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 [Schull MJ, Kiss A, Szalai JP. Ann Emerg Med. 2007 Mar;49\(3\):257-64, 264.e1. Acad Emerg](#)

4. **THE COSTS OF VISITS TO EMERGENCY DEPARTMENTS** ROBERT M. WILLIAMS, 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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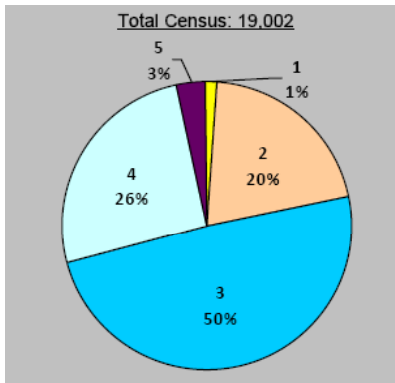
Demand

Census – Halifax Infirmary ED

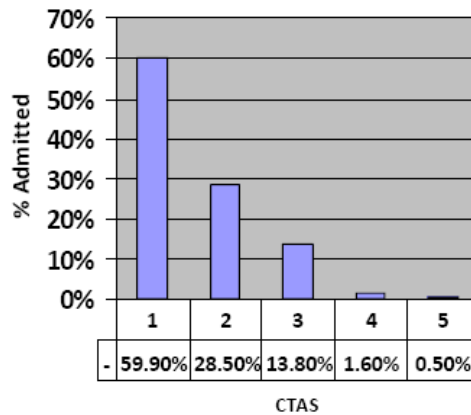
Reporting Date: July 1 – September 30, 2015

Context :

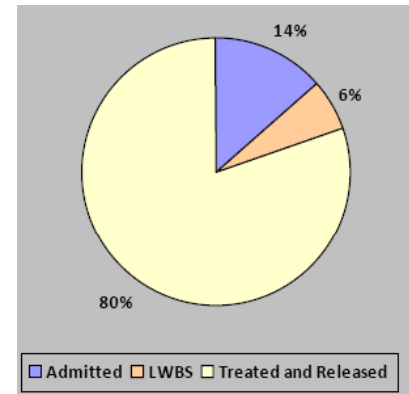
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left 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.



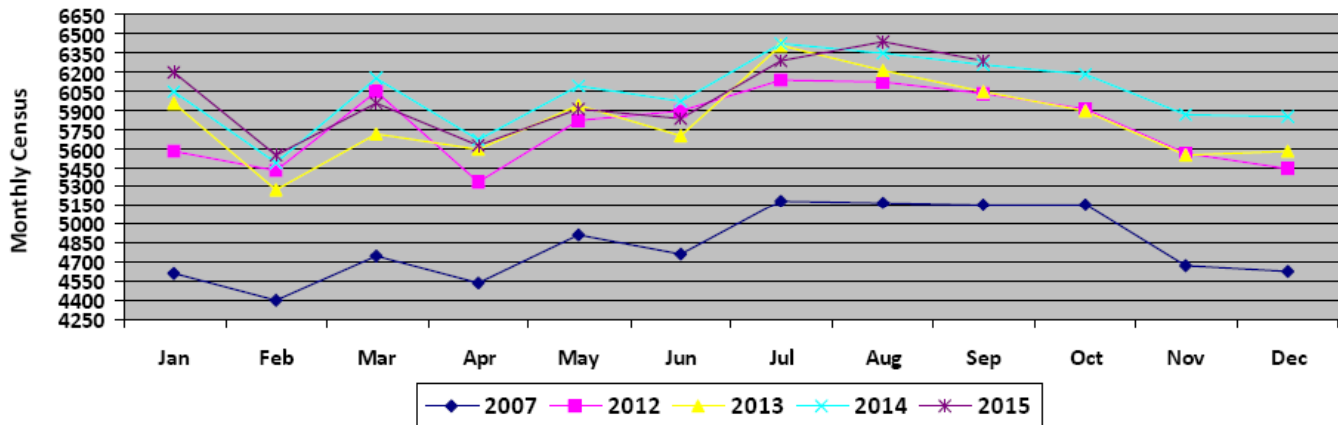
CTAS Distribution



Percentage Admits



Discharge Distribution



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%, (an increase of 1% from last quarter) indicating ongoing access block.

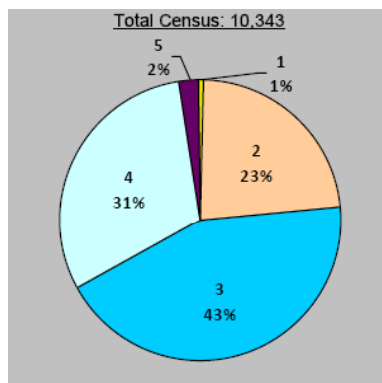
Sam Campbell, Site Chief, HI ED

Demand

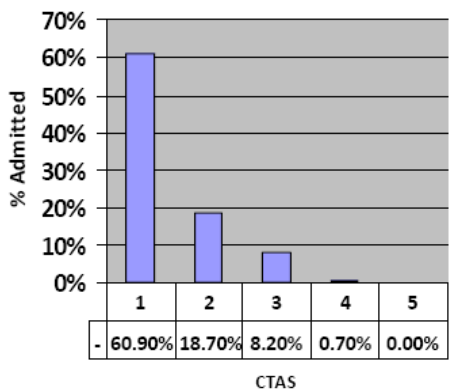
Census – Dartmouth General ED Reporting Date: July 1 to September 30, 2015

Context:

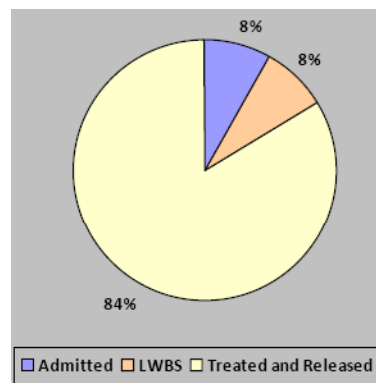
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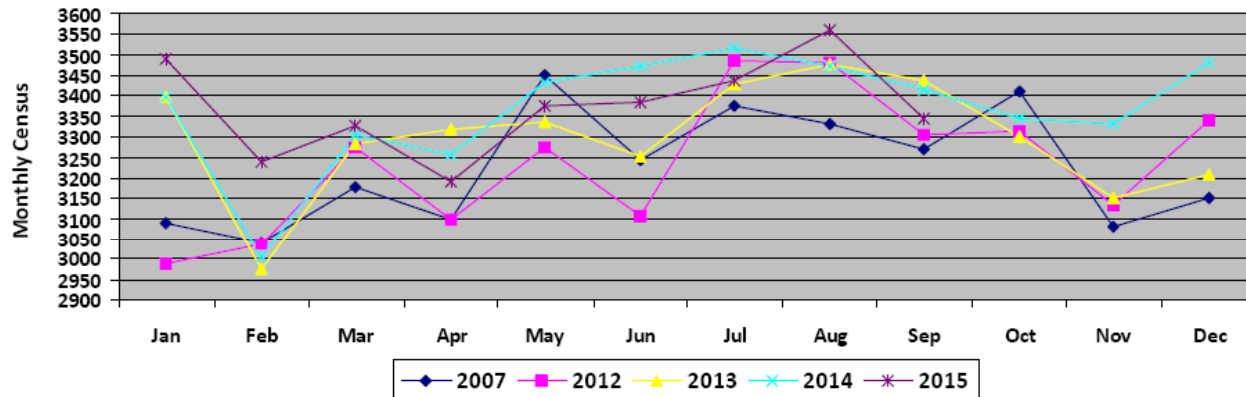
CTAS Distribution



Percentage Admitted



Discharge Distribution



Analysis:

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

Ravi Parkash, Site Chief, DGH ED

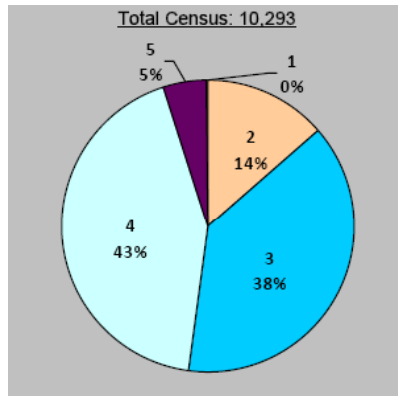
Demand

Census – Cobequid Community ED

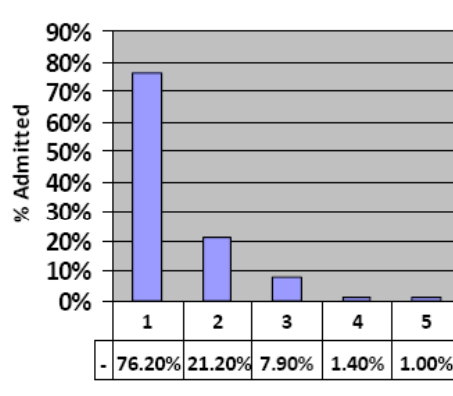
Reporting Date: July 1 to September 30, 2015

Context:

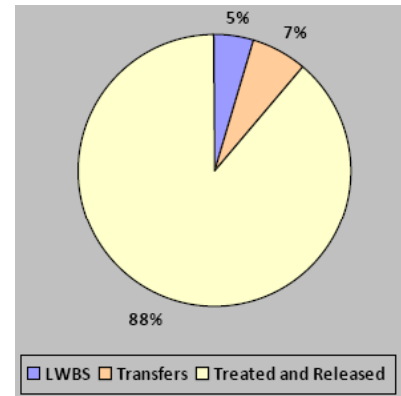
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left 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.



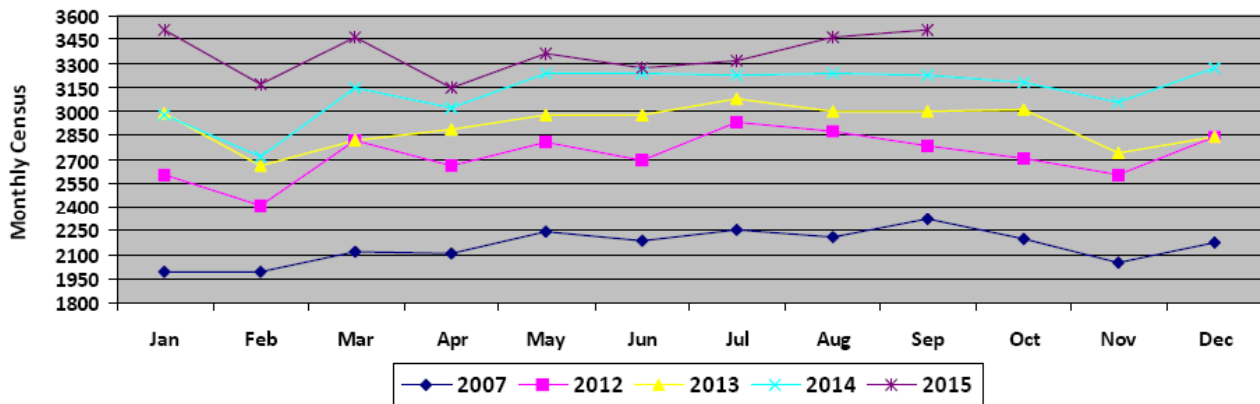
CTAS Distribution



Percentage Transferred



Discharge Distribution



Analysis:

Patient registrations continue to increase at CCHC. First quarter registrations are 15% higher than the same period last year. This has as a consequence an increase in the LWBS rate from 4% to 7%. The increased volume often necessitates double triage but nursing resources have not been able to accommodate this function during the early morning period of high volume registration. The transfer rate remains stable at 7%. We are hopeful that the increase in nursing complement approved for April 1 will help deal with these volumes.

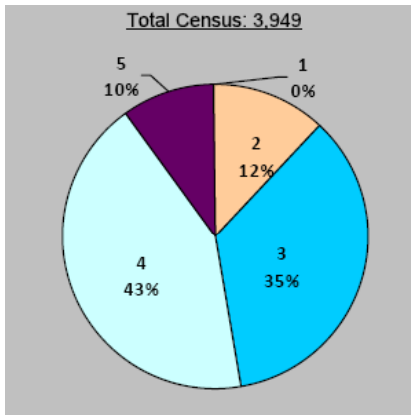
Mike Clory, Site Chief, CCHC ED.

Demand

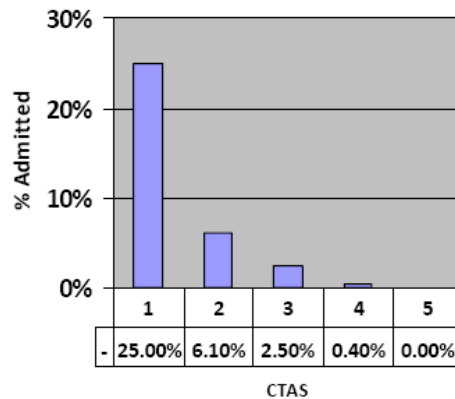
Census –Hants Community Hospital ED Reporting Date: July 1 to September 30, 2015

Context:

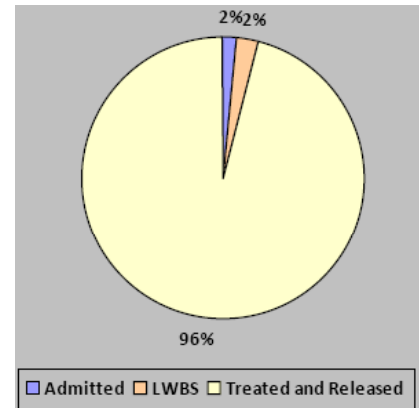
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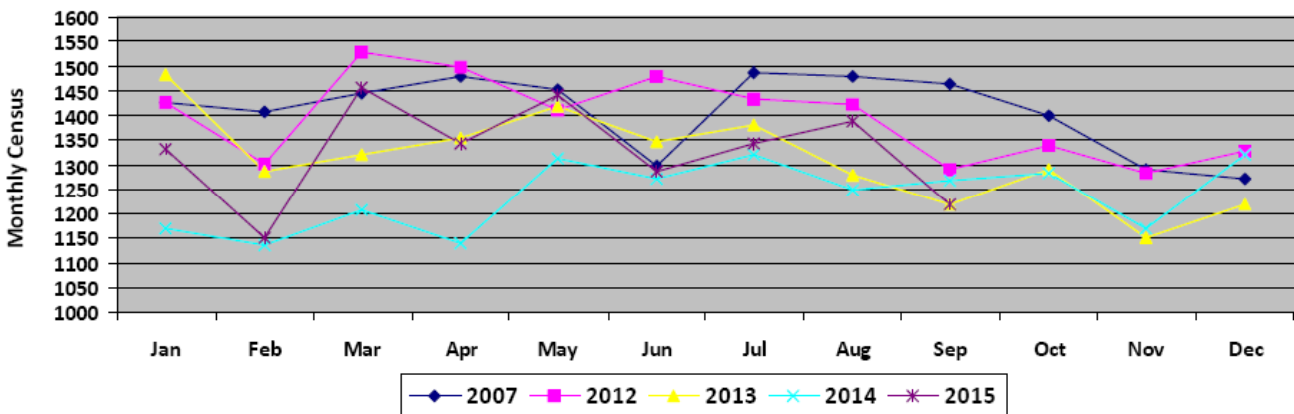
CTAS Distribution



Percentage Transferred



Discharge Distribution



Analysis:

Seeing an overall rise in our census this quarter however June saw a considerable decline.

The opening of an urgent care clinic – same day appointments would account for this.

Percentages of CTAS levels remains stable.

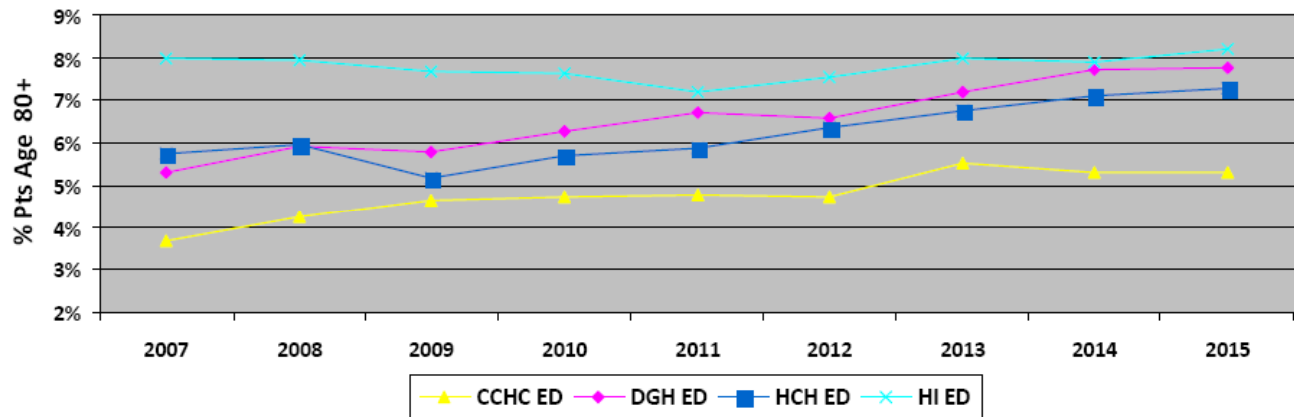
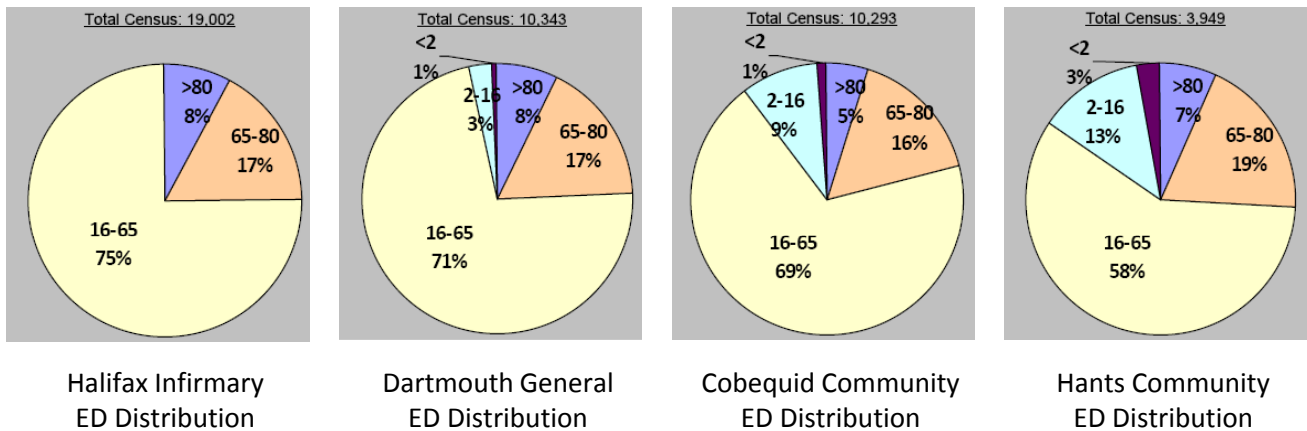
Tanya Penney, Health Services Manager, HCH ED

Demand

Emergency Department Demographics – Halifax Infirmery / 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, this 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.

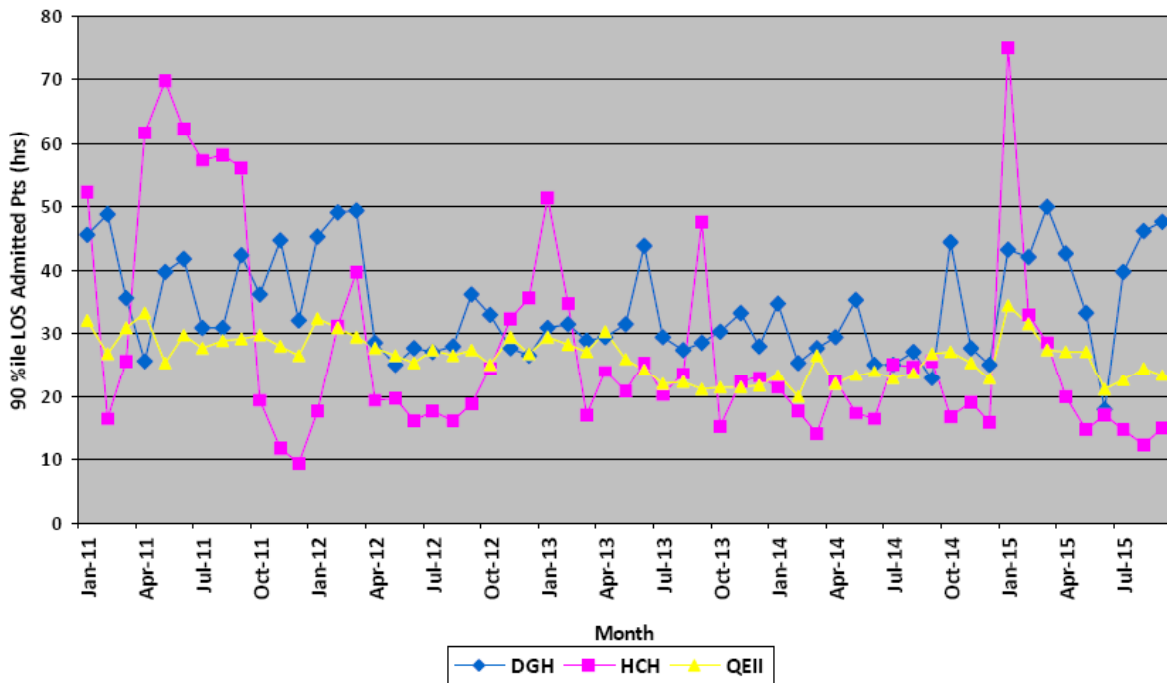
Sam Campbell, Acting CZESC Chair, NSHA

Flow and Network Integration

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 in the Emergency Departments continues to present a significant challenge to flow in throughout the Zone. Dartmouth General Emergency is faring the worst in this aspect. The current national target recommended by CAEP is 12 hours, and only Hants Emergency has been able to meet this (and even then, only on two occasions in the past year). The other Emergency Department's have not been able to reduce 90% boarding times to less than 20 hours over this period. The boarding of inpatients leads to longer waits for emergency patients, increased consumption of resources from the Emergency Department budget to pay for the care of inpatients and staff stress and burnout. Studies show that patients subjected to boarding have longer hospital stays and have poorer health outcomes.

Sam Campbell, Acting CZESC Chair, NSHA.

Flow and Network Integration

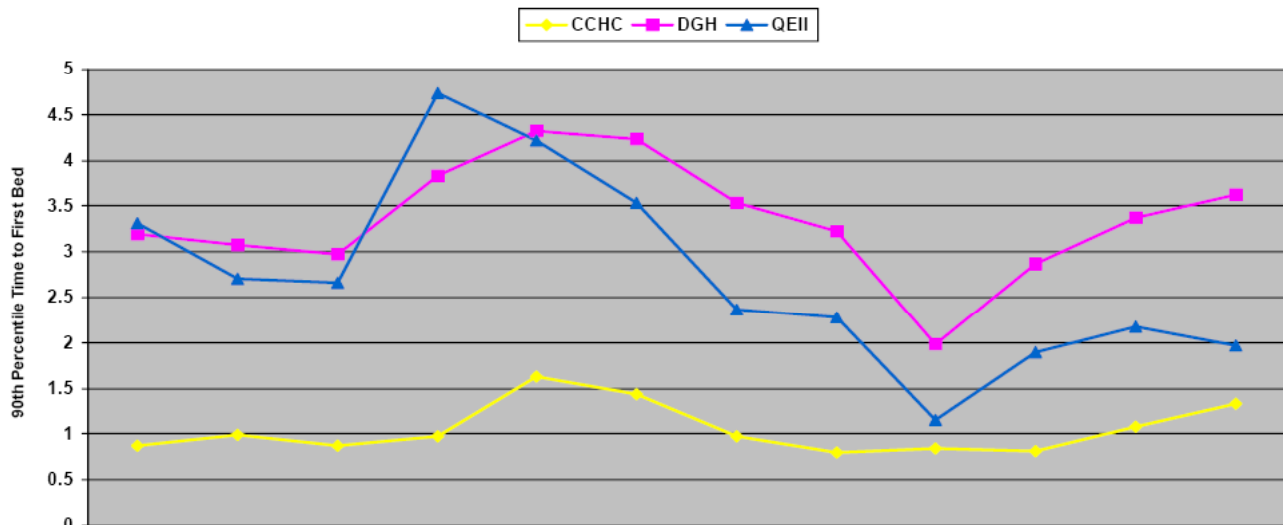
Ambulance Offload / Transition

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.

Reporting Period from: Oct 01, 2014 to: Sep 30, 2015



	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15
CCHC	0.87	0.99	0.87	0.96	1.63	1.43	0.97	0.8	0.85	0.82	1.08	1.33
DGH	3.19	3.08	2.98	3.83	4.32	4.23	3.53	3.23	1.98	2.87	3.38	3.62
QEII	3.32	2.7	2.67	4.73	4.21	3.53	2.37	2.28	1.15	1.9	2.17	1.97

90th Percentile Time to Bed (hr)

CCHC	260	260	235	313	306	305	261	247	203	262	253	262
DGH	548	600	574	648	626	613	562	550	546	571	553	487
QEII	1279	1310	1326	1397	1273	1432	1260	1302	1318	1379	1471	1375

Ambulance Volume

Analysis:

Initial success with offload intervals seems to be waning as times seem to be rising again, specifically approaching previous levels of over 4 hours 90% offload times at both large sites.

Sam Campbell, Acting CZESC Chair, NSHA.

Flow and Network Integration

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 Green ED.

QEII	DGH	%
GREEN	RED	20.53%
YELLOW	RED	15.18%
GREEN	YELLOW	14.63%
GREEN	GREEN	13.04%
GREEN	ORANGE	8.92%
YELLOW	YELLOW	6.70%
ORANGE	RED	4.84%
YELLOW	ORANGE	4.74%
YELLOW	GREEN	4.48%
ORANGE	YELLOW	2.10%
ORANGE	ORANGE	1.39%
ORANGE	GREEN	1.29%
RED	RED	1.16%
RED	YELLOW	0.45%
RED	GREEN	0.31%
RED	ORANGE	0.23%

Analysis:

During July to September 2015, Dartmouth General 'Red' / Halifax Infirmary 'Green' jumped to 20.53% of the time (almost three times that of the previous quarter) and Halifax Infirmary 'Red' / Dartmouth General 'Green' occurred 0.31%. That Dartmouth General is 60 times more likely to be on a trip diversion status is an indication of the significant issues with ED access at that site.) The Dartmouth General Emergency was in 'Red' status 41.71% of the time (Halifax Infirmary 6.16%)

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.

Flow and Network Integration

Pod of Initial Destination at the Halifax Infirmiry ED / RAU

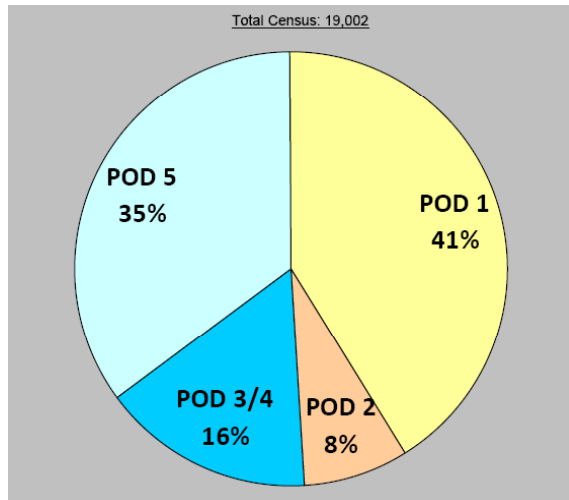
Context:

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

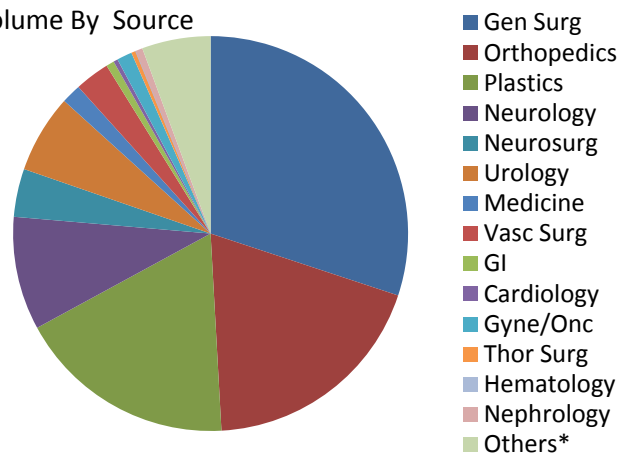
The HI ED has innovated (chair centric Pod 1, fast track/paramedic assisted pod 5) to meet the needs of this demand. The Rapid Assessment Unit (RAU) is another aspect of the ED which has evolved to meet the needs of transferred patients and referred patients from our own ED. This allows expedited consultations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

HI ED- POD Utilization

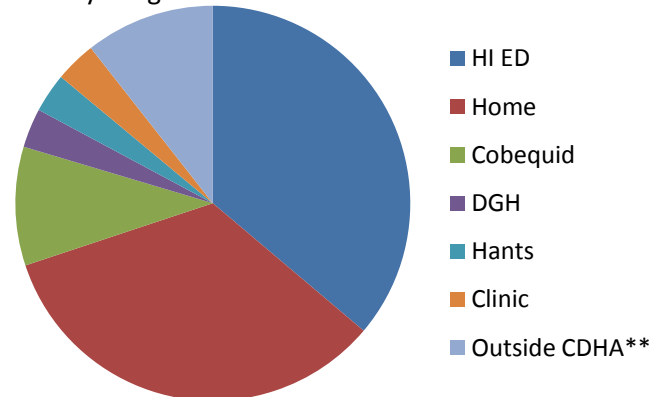
- Initial Location POD 1-2-3-4-5 or Psych
- Psych and Intake A part of Pod 1
- Intake B Part of Pod 5
- No Left Without Being Seen Counted



Volume By Source



Volume By Origin



Analysis:

'Chair-centric' pods 1 and 5 continue to serve 80% of patients, while only offering 40% of our bed capacity. This illustrates the pressure resulting from a restricted ability to empty beds after their emergency phase has been completed – in the vast majority of cases, this is due to admitted patients remaining the Emergency Department.

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, 35% of patients come from the Halifax Infirmiry Emergency Department and 33% of patients coming from home. The concern with this latter group is, they may represent the use of the RAU as a 'clinic' by consultant services.

Flow and Network Integration

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	285	47	16.5%	19007	1.5%	16.25
DGH ED	379	81	21.4%	10343	3.7%	16.06
CCHC ED	53	35	66.0%	10293	0.5%	9.32

Analysis:

While the Dartmouth General Emergency Department approaches the 4-5% benchmark for Clinical Decision Unit (Ontario), The Halifax Infirmary Emergency Department and Cobequid Community Health Centre continue to underuse (or under-document) this option.

The high admission rates of Clinical Decision Unit patients at Cobequid suggest that it is being used more heavily for patients waiting for transfer to the Halifax Infirmary for admission or consultation.

Sam Campbell, Acting CZESC Chair, NSHA.

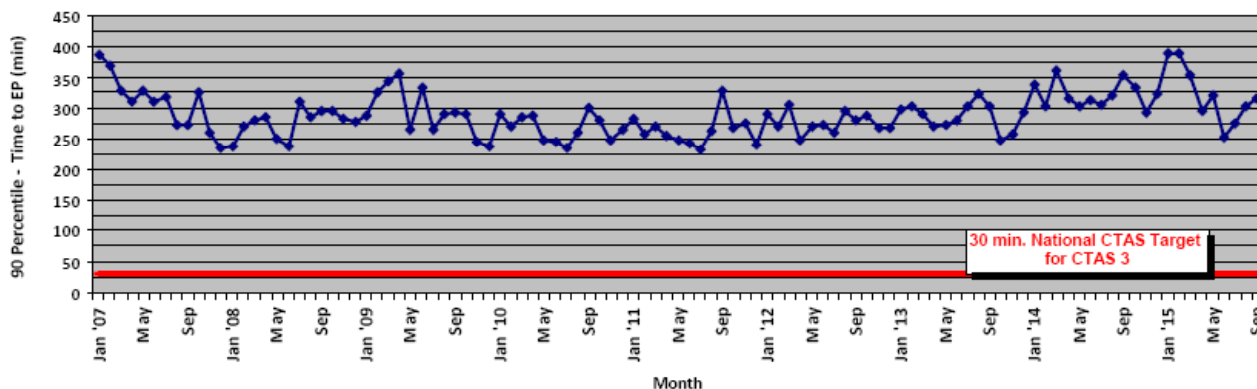
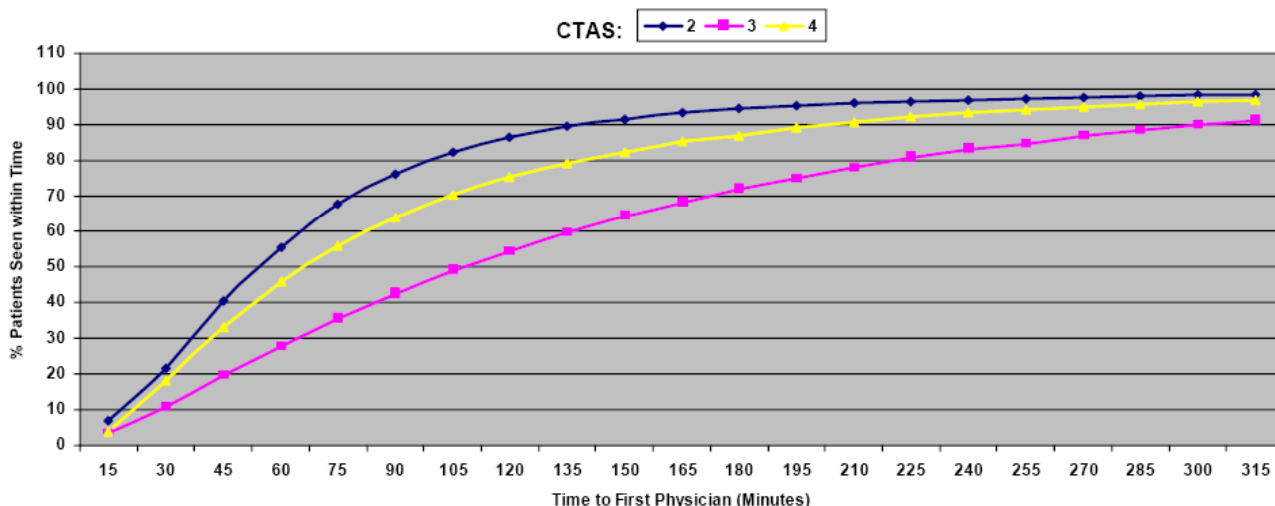
Patient Experience

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.

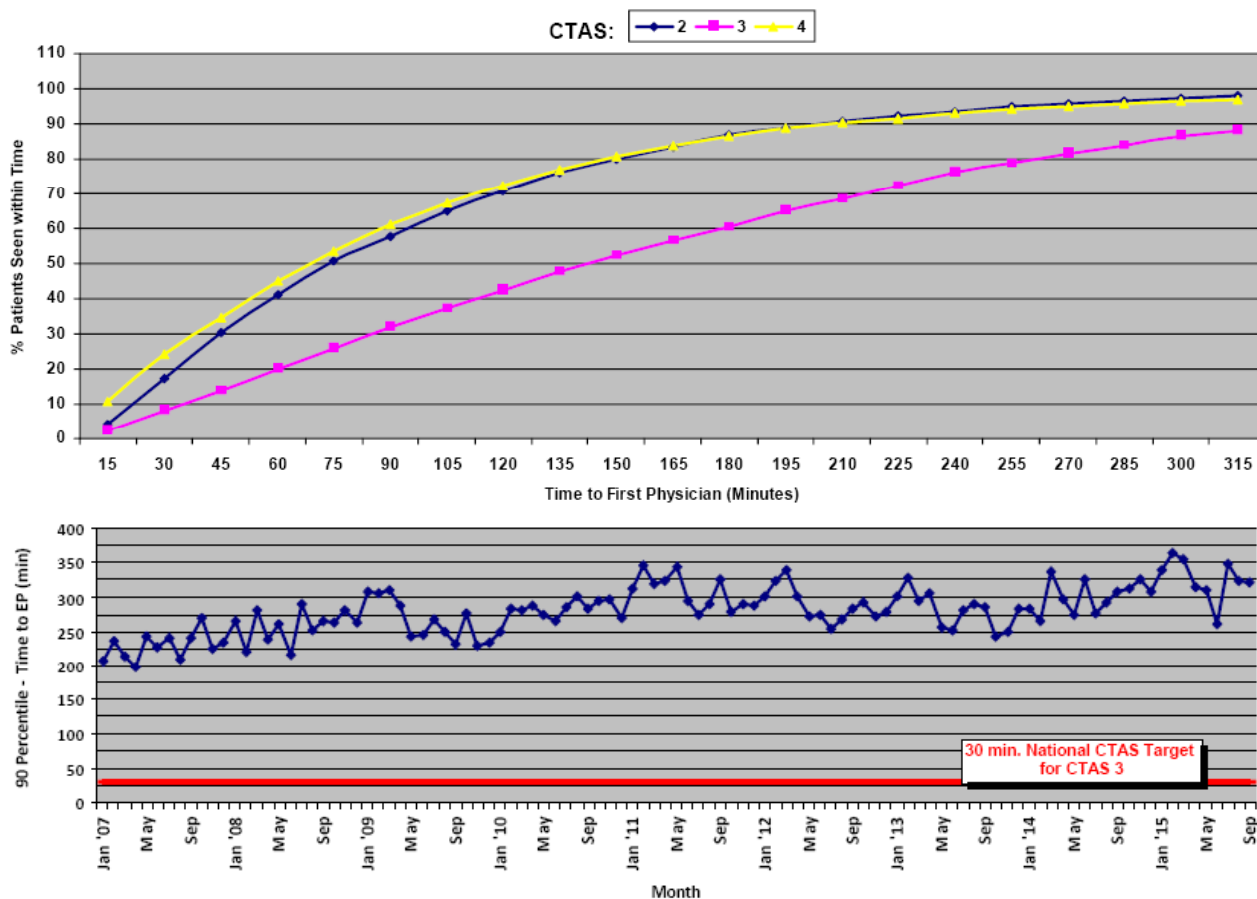
Patient Experience

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.

Ravi Parkash, Site Chief, DGH ED

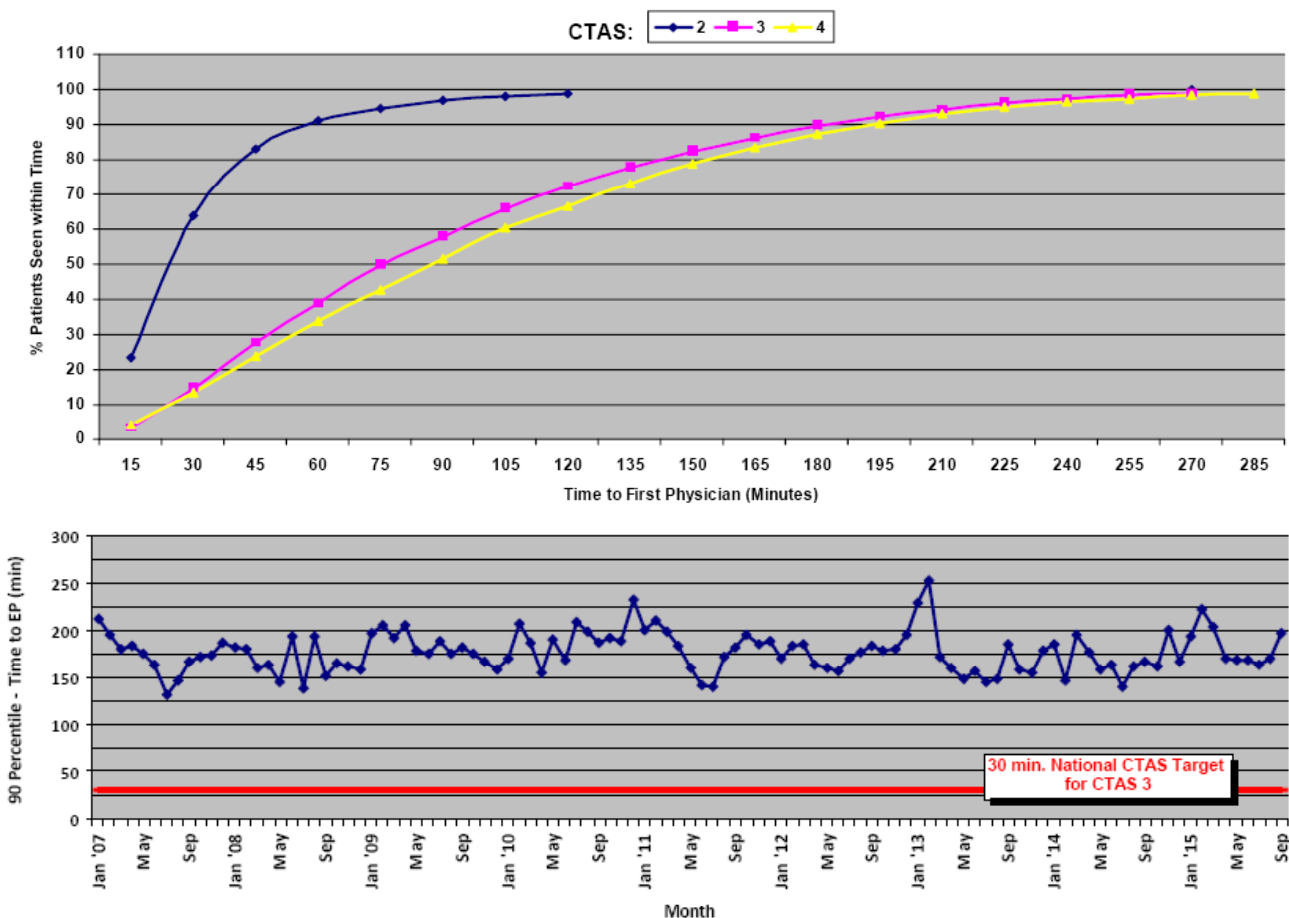
Patient Experience

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 increased slightly due to 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

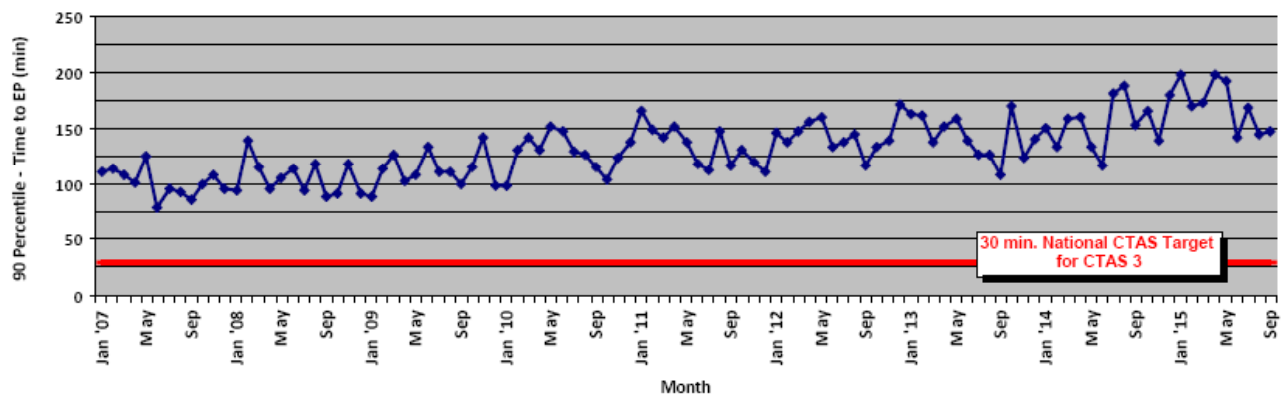
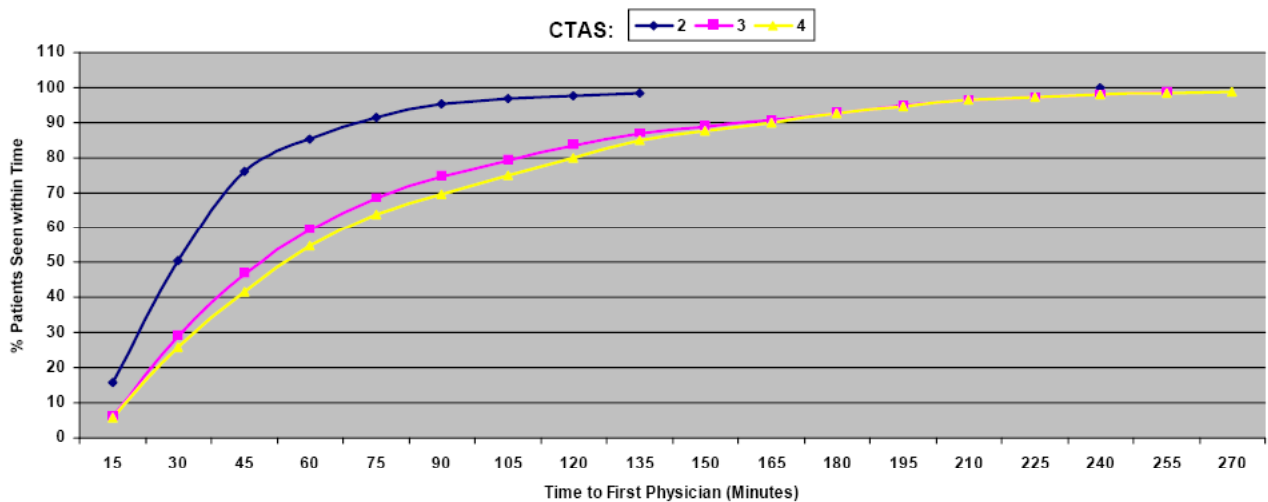
Patient Experience

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 a slight decrease 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
3. Delays to tertiary care and/or consultants within HI site – minimal delays over this quarter
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: Jul 01, 2015 to: Sep 30, 2015

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	19007	2682 (14.1%)	966 (5.1%)	47 (0.2%)	7771 (40.9%)	11466 (60.3%)
DGH	10343	1656 (16.0%)	492 (4.8%)	0 (0.0%)	5175 (50.0%)	7323 (70.8%)
HCH	3949	2 (0.1%)	78 (2.0%)	0 (0.0%)	1229 (31.1%)	1309 (33.1%)
CCHC	10293	893 (8.7%)	140 (1.4%)	0 (0.0%)	4700 (45.7%)	5733 (55.7%)
Total	43592	5233 (12.0%)	1676 (3.8%)	47 (0.1%)	18875 (43.3%)	25831 (59.3%)

Labs Ordered			
Site	Patients with Labs Ordered	% Patients with Labs	Patient Volume
QEII	9044	47.6%	19007
DGH	5524	53.4%	10343
HCH	1161	29.4%	3949
CCHC	4617	44.9%	10293
Total	20346	46.67%	43592

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.