

*Capital District Emergency Services Council*  
*“CDESC”*

**Quarterly Report**

**Quarter 1 (January to March 2015)**

**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 CDHA/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"> <li>Often described as “real” emergencies 97% of fixed costs of ED to meet population burden of acute illness and injury&lt;4&gt;</li> <li>Does include exacerbations of chronic problems</li> </ul>	<ul style="list-style-type: none"> <li>“avoidable” CTAS 3 (ED as safety net)               <ul style="list-style-type: none"> <li>- frail elderly with no acute event or problem</li> <li>- partial diagnosis requiring further work up</li> <li>- chronic condition requiring follow up or has predictable clinical course</li> </ul> </li> </ul>
CTAS 4, 5	<ul style="list-style-type: none"> <li><b>DO NOT</b> cause ED overcrowding&lt;2,3&gt;</li> <li>Very low marginal cost to see in ED&lt;4,5&gt;</li> <li>9/10 most common successful lawsuits in EM</li> </ul>	<ul style="list-style-type: none"> <li>“inappropriate” ED visits (ED as gate keeper)               <ul style="list-style-type: none"> <li>- Medication refill</li> <li>- “sick note” for work or school</li> <li>- Queue jumping to see specialist</li> </ul> </li> </ul>

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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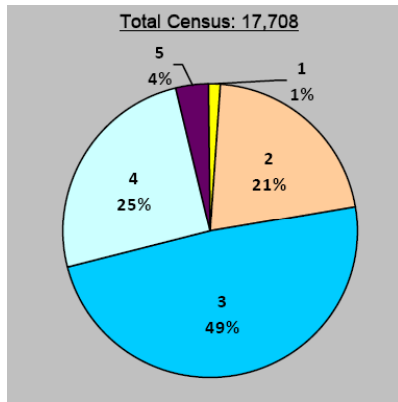
# Demand

## Census – Halifax Infirmary ED

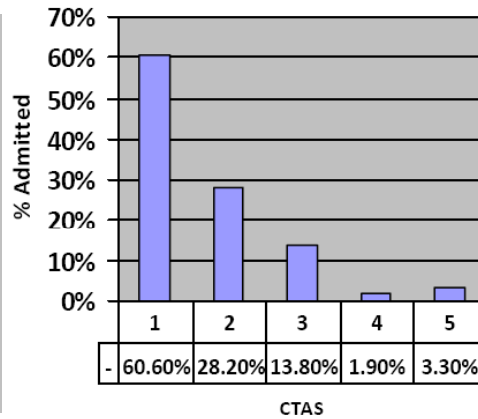
Reporting Date: January 1 – March 31, 2015

### Context :

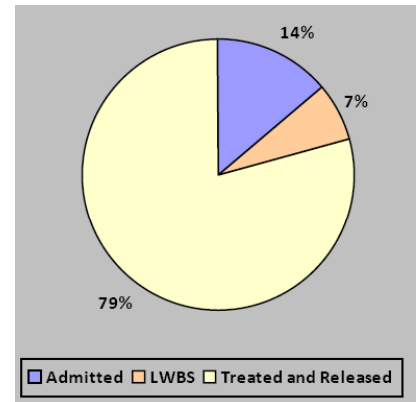
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left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



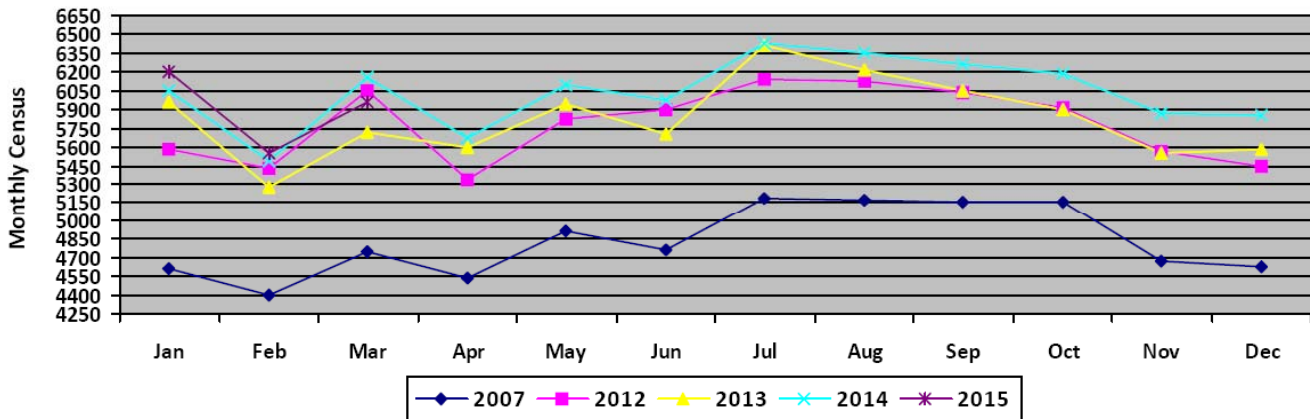
CTAS Distribution



Percentage Admits



Discharge Distribution



### Analysis:

Monthly census in February and March 2015 is similar to that in the previous three years, after a significant increase between August 2014 and January 2015. Half of our patients are CTAS 3, and 4/5 patients are discharged from the ED. LWOBS rates remain high at 7%, indicating ongoing access block.

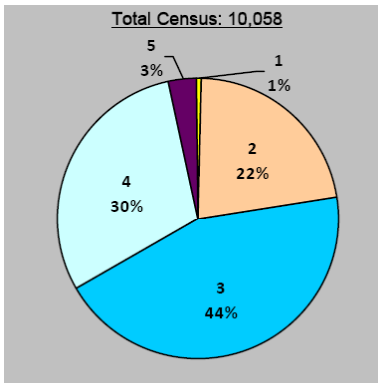
Sam Campbell, Site Chief, HI ED

# Demand

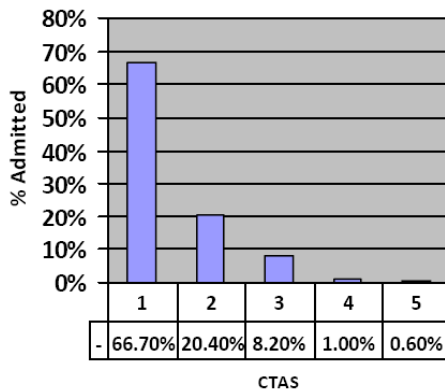
## Census – Dartmouth General ED Reporting Date: January 1 to March 31, 2015

### Context:

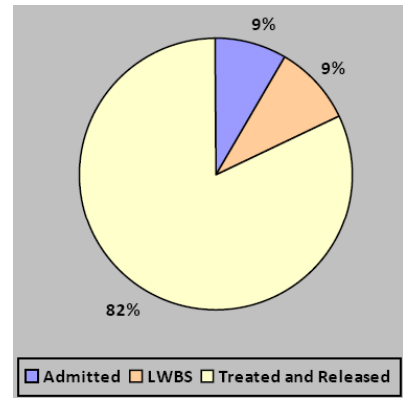
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left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



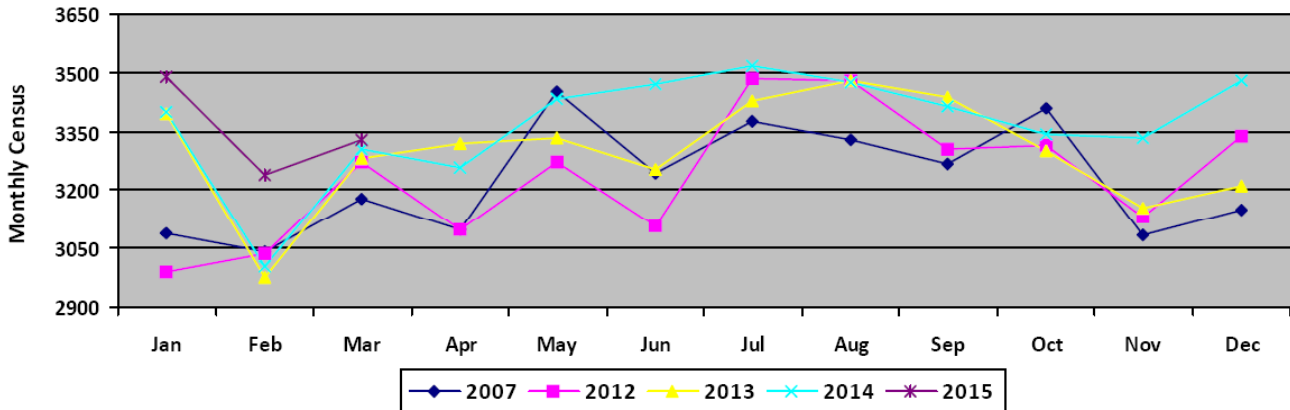
CTAS Distribution



Percentage 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

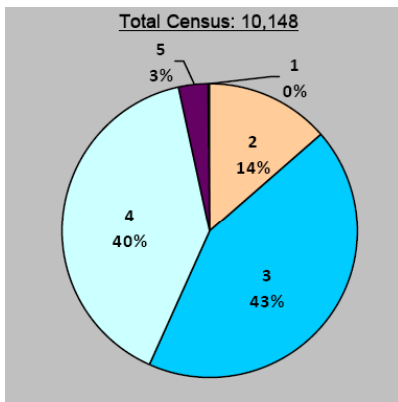
# Demand

## Census – Cobequid Community ED

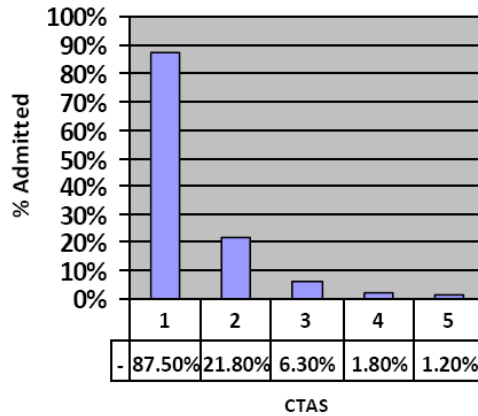
Reporting Date: January 1 to March 31, 2015

### Context:

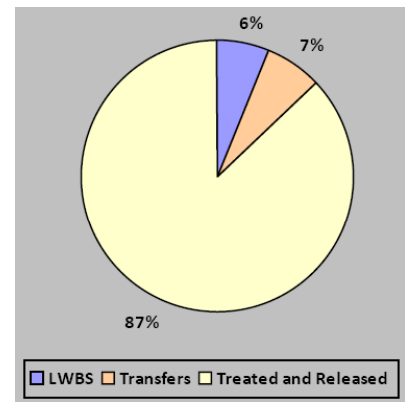
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left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



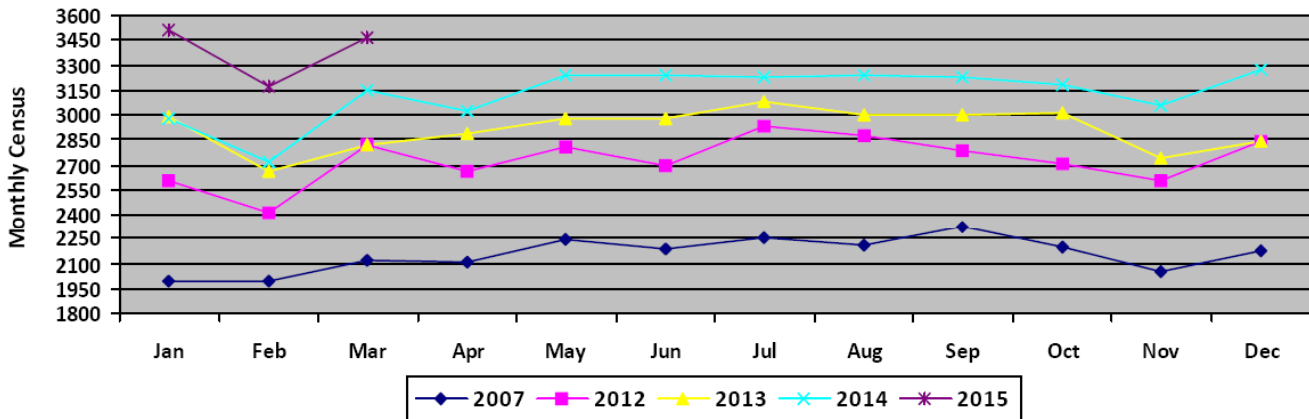
CTAS Distribution



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.

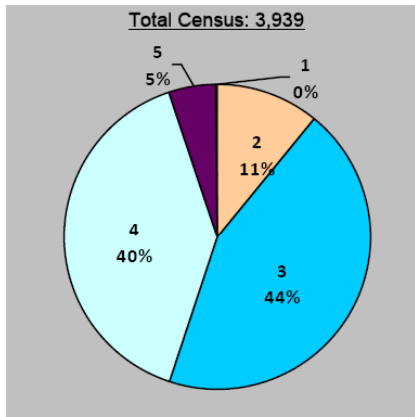
Mike Clory, Site Chief, CCHC ED.

# Demand

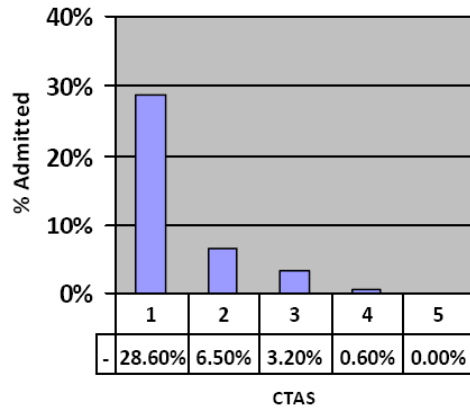
## Census –Hants Community Hospital ED Reporting Date: January 1 to March 31, 2015

### Context:

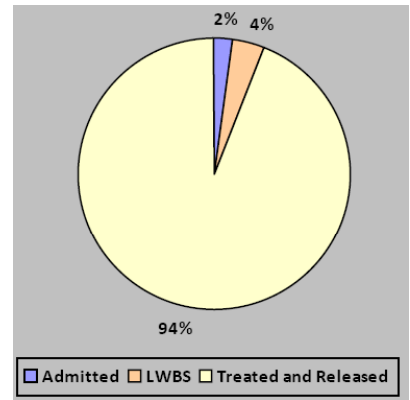
Emergency Departments are designed to meet the unscheduled (from life threatening to relatively minor) health care needs of the population. The 5 level CTAS score is used to differentiate acuity (1 being severe and time dependent) though it is only a surrogate marker for the complexity of care. Left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



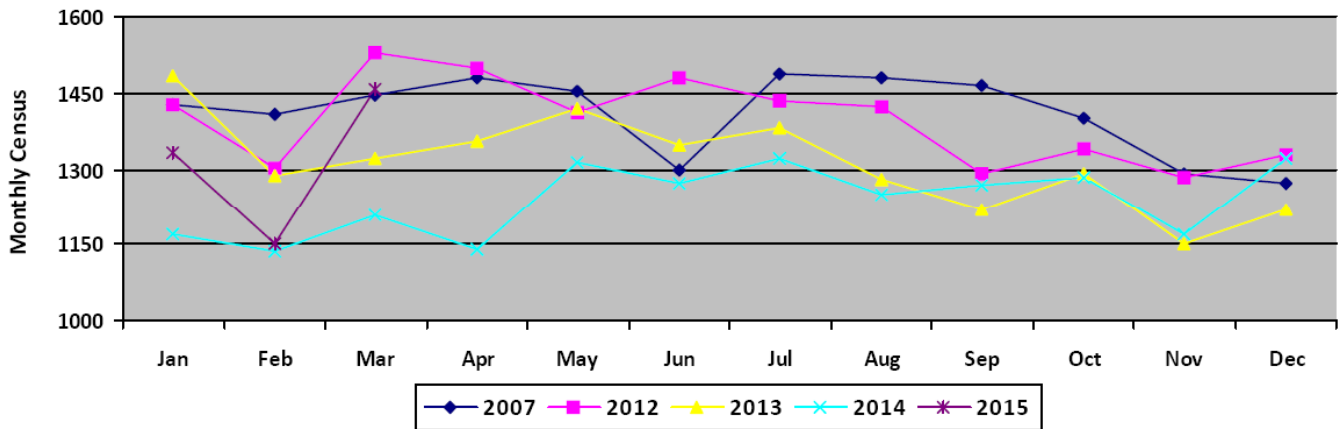
CTAS Distribution



Percentage Transferred



Discharge Distribution



### Analysis:

Seeing an overall rise in our census this quarter.

CTAS % remain relatively stable; slight increase in 3 to 44%

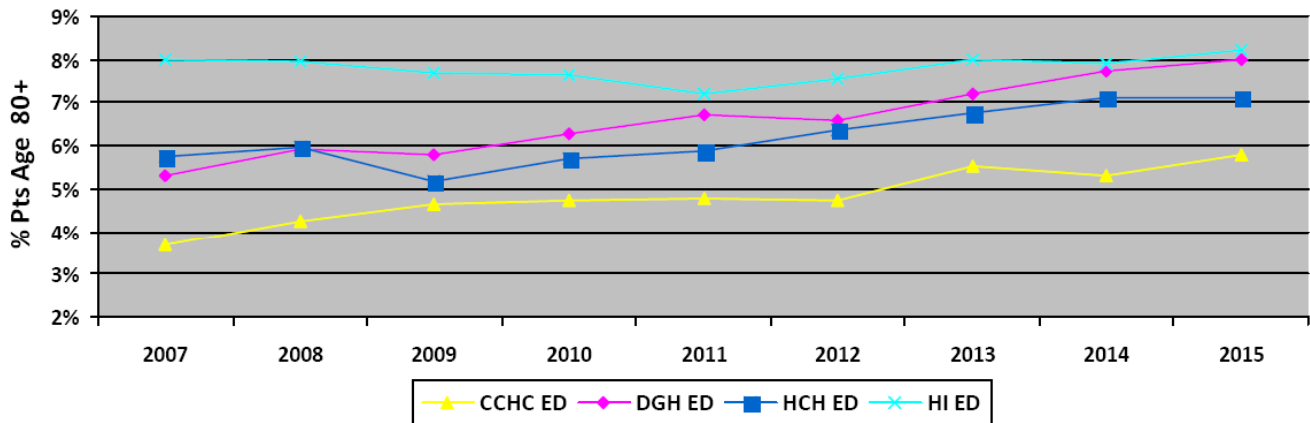
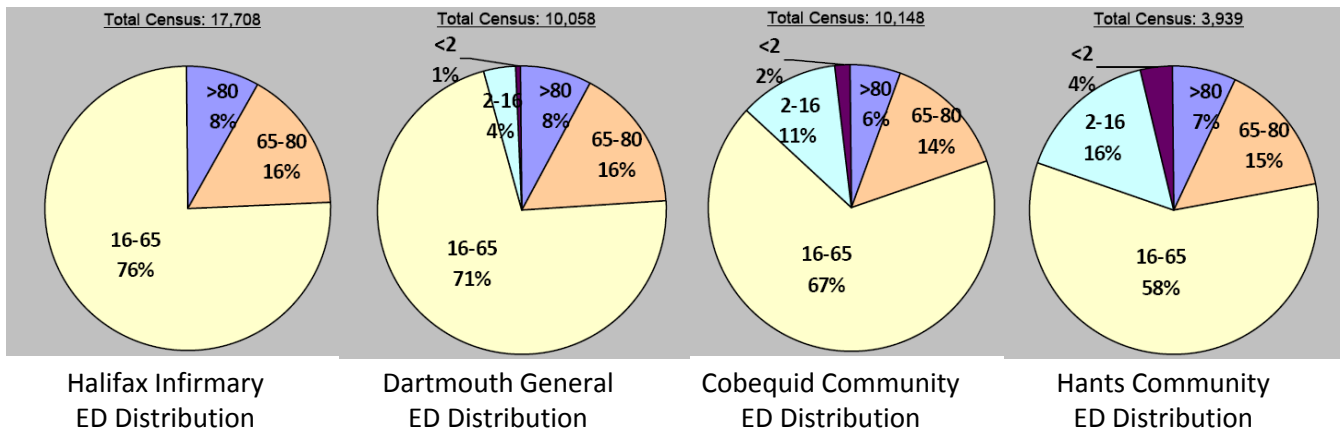
Tanya Penney, Health Services Manager, HCH ED

# 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:

The volumes of patients continues to rise, year over year, in the district and the proportion presenting to the Emergency Department over 80 years of age has risen slowly.

David Petrie, District Chief, Capital Health

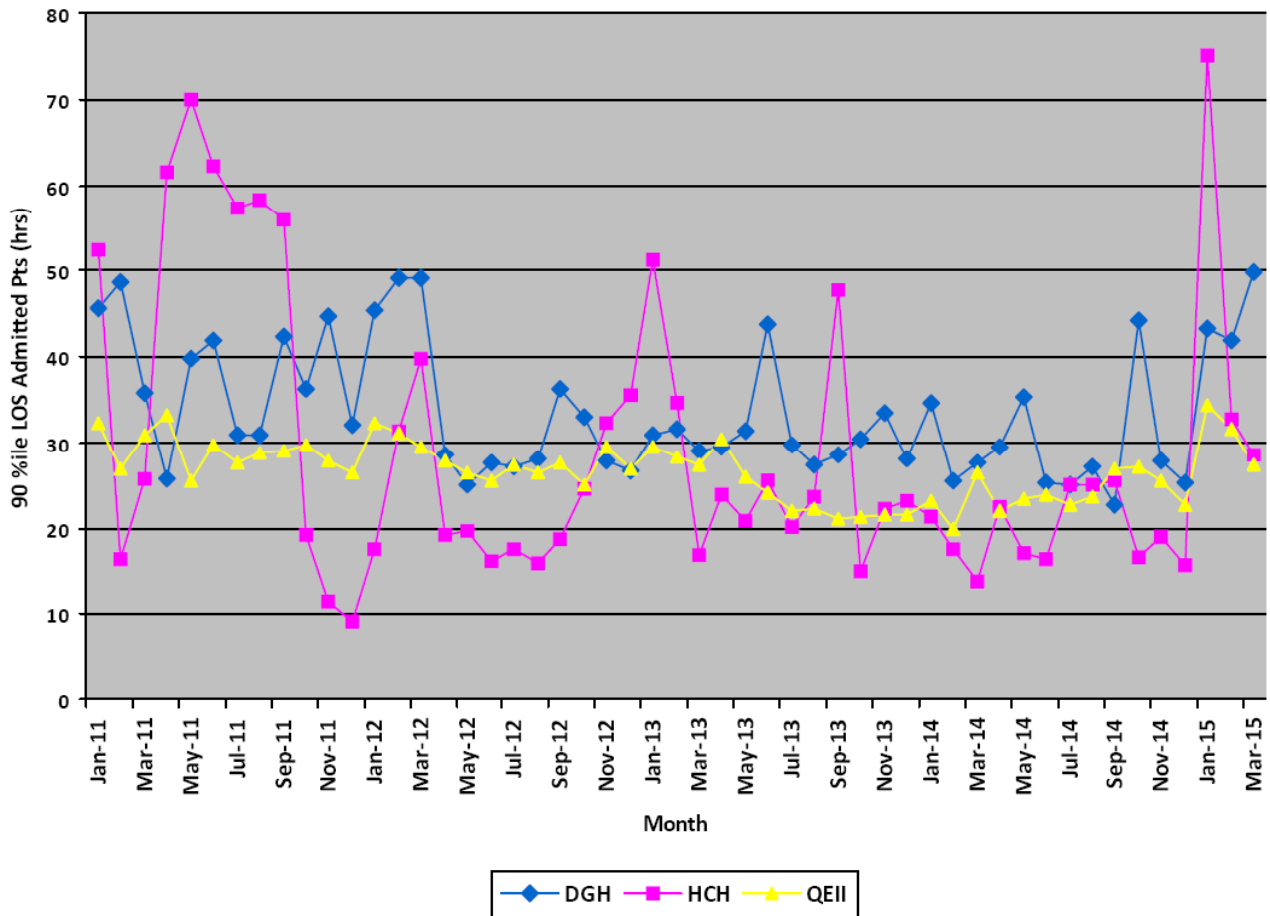


# Flow and Network Integration

## 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:

There was a significant spike in Emergency Department length of stay for admitted patients in the first quarter of 2015 with 90<sup>th</sup> percentile performance hitting greater than 72 hours in January and 50 hours in March at the Dartmouth General Emergency. The current national target recommended by CAEP is 12 hours.

David Petrie, District Chief, CDHA

# Flow and Network Integration

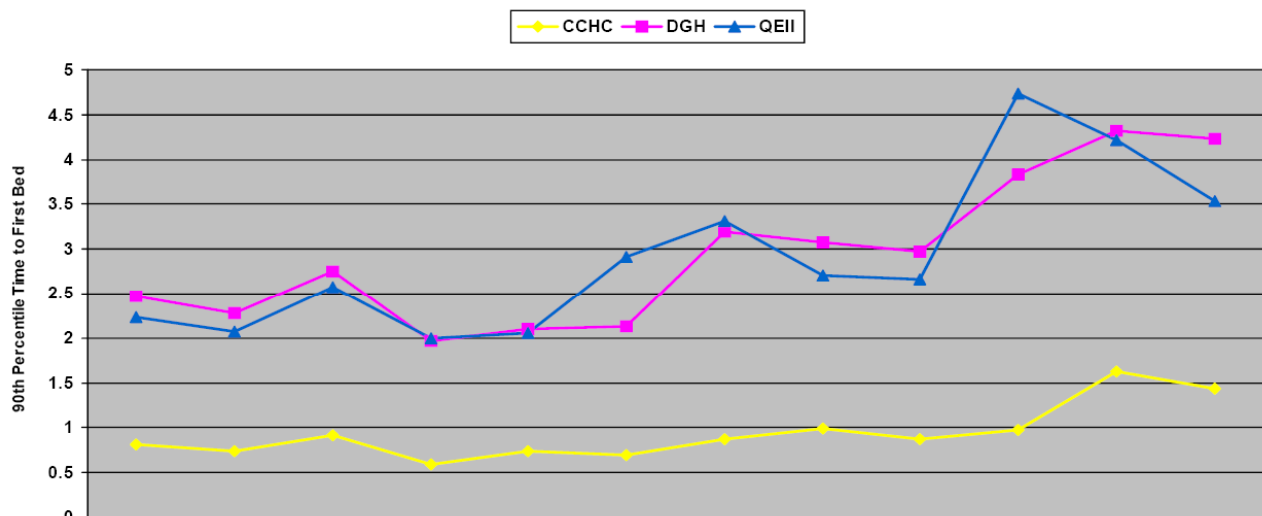
## Ambulance Offload / Transition

### 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: Apr 01, 2014 to: Mar 31, 2015



	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15
CCHC	0.82	0.74	0.92	0.59	0.74	0.7	0.87	0.99	0.87	0.98	1.63	1.43
DGH	2.47	2.28	2.75	1.97	2.1	2.13	3.19	3.08	2.98	3.83	4.32	4.23
QEII	2.23	2.07	2.58	2	2.05	2.92	3.32	2.7	2.67	4.73	4.21	3.53

90th Percentile Time to Bed (hr)

CCHC	231	238	250	216	198	224	260	260	235	313	306	305
DGH	586	594	537	598	571	562	548	600	574	648	626	613
QEII	1283	1390	1279	1341	1319	1274	1279	1310	1326	1397	1273	1432

Ambulance Volume

### Analysis:

After a prolonged period of improved ambulance offload times there is a consistent increase in the 90<sup>th</sup> percentile performance. Offload times in January to March of 2015 spiked along with all overcrowding metrics.

David Petrie, District Chief, CDHA

# 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	%
RED	RED	19.92%
YELLOW	RED	14.34%
ORANGE	RED	11.08%
GREEN	RED	7.72%
YELLOW	ORANGE	6.23%
YELLOW	YELLOW	5.31%
RED	YELLOW	4.77%
RED	ORANGE	4.67%
GREEN	YELLOW	4.41%
GREEN	ORANGE	3.92%
GREEN	GREEN	3.55%
ORANGE	YELLOW	3.50%
ORANGE	ORANGE	3.46%
YELLOW	GREEN	3.03%
RED	GREEN	2.71%
ORANGE	GREEN	1.38%

### Analysis:

During January to March 2015, Dartmouth General Red / Halifax Infirmary Green jumped to 7.72% of the time (from 6.41% last quarter) and Halifax Infirmary Red / Dartmouth General Green occurred 2.71% (up from 1.99% (ie: The Dartmouth General is 3 times more likely to be on a trip diversion status.) Ambulance smoothing may occur during these times. Cobequid Community Health Centre may receive CTAS 3, 4 or 5 ambulances during these Red times up until 15:00.

The percentage of time either Emergency Department was on Red in January to March increased significantly from the previous quarter.

# Flow and Network Integration

## Pod of Initial Destination at the Halifax Infirmiry ED / RAU

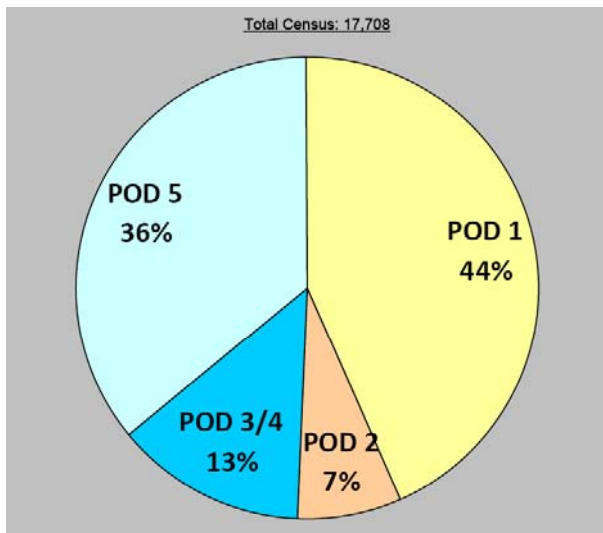
### Context:

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

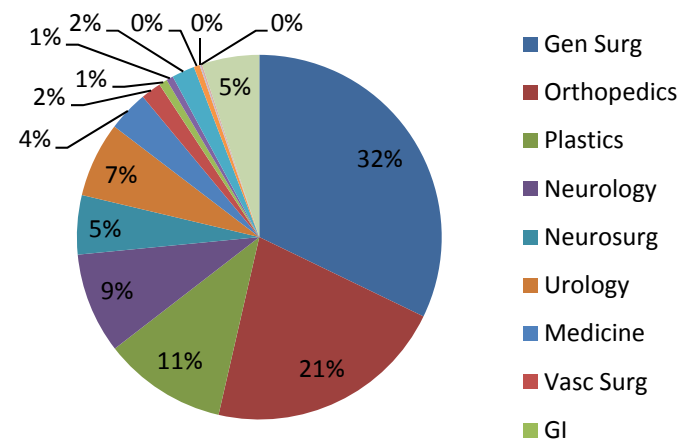
The HI ED has innovated (chair centric Pod 1, fast track/paramedic assisted pod 5) to meet the needs of this demand. The Rapid Assessment Unit is another aspect of the ED which has evolved to meet the needs of transferred patients and referred patients from our own ED. This allows expedited consultations 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

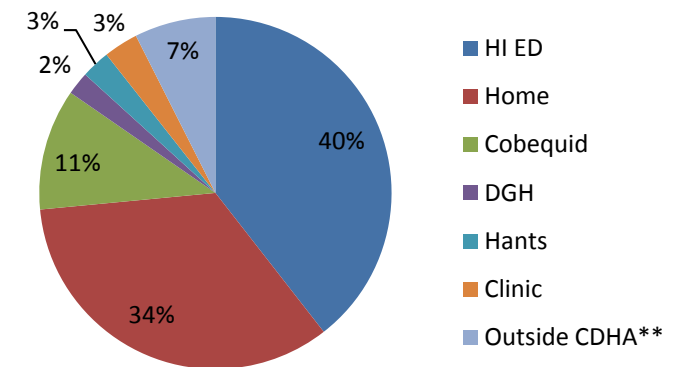
- Initial Location POD 1-2-3-4-5 or Psych
- Psych and Intake A part of Pod 1
- Intake B Part of Pod 5
- No Left Without Being Seen Counted



### 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 ED, but 'social' cases (not acutely ill, but unable to return home) continue to occupy beds for days at a time. Addressing both of these situations remains a focus of attention for ED administration. RAU continues to divert patients from ED beds, with 40% of patients coming from the HI ED. Almost half of all RAU patients are referred to orthopedics or general surgery.

# 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	246	52	21.1%	17709	1.4%	18.81
DGH ED	412	95	23.1%	10059	4.1%	17.99
CCHC ED	189	148	78.3%	10149	1.9%	11.02

### Analysis:

The benchmark for Clinical Decision Unit use in the province of Ontario is 4 – 5 %. Unfortunately, documentation of its use has not been very good at the Halifax Infirmary or the Cobequid Community Health Centre; but is approximately at the expected rate at the Dartmouth General.

Clinical Decision Units has been shown to reduce Emergency Department length of Stay, reduce admission rates with no increase in Emergency Department revisit rates in a recent Academic Emergency Paper.

David Petrie, District Chief, CDHA

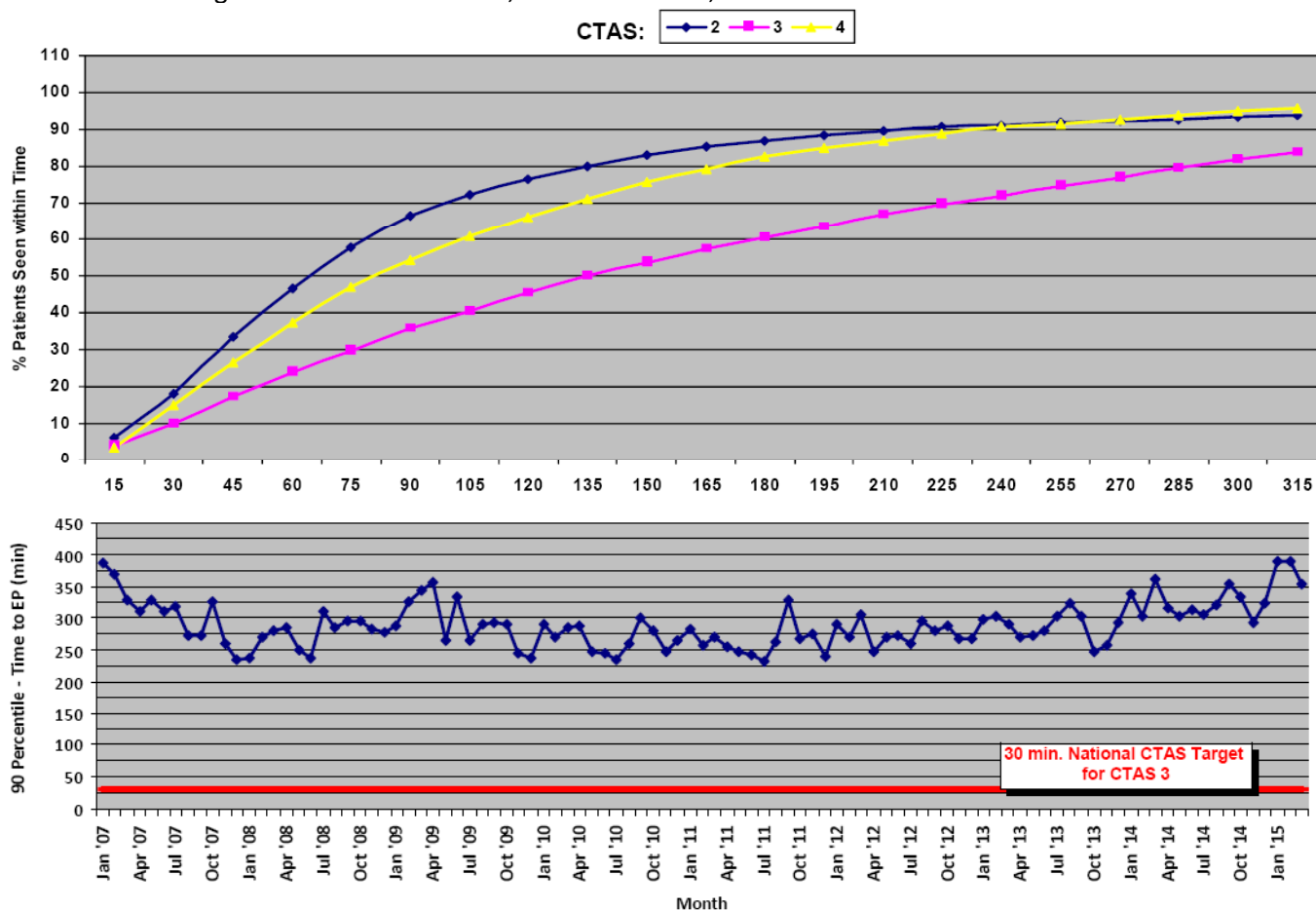
# Patient Experience

## 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 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.

Sam Campbell, Site Chief, HI ED

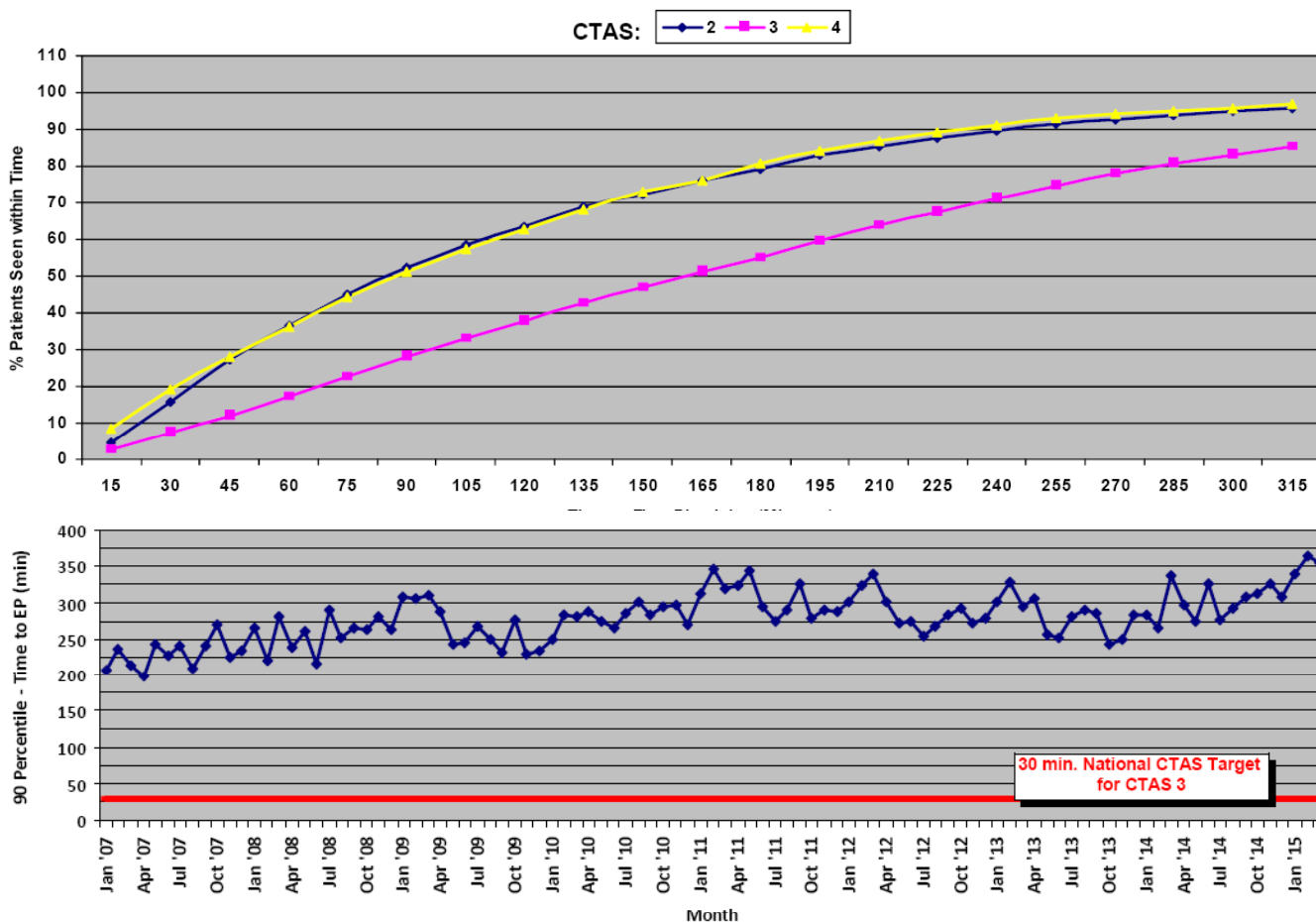
# Patient Experience

## 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

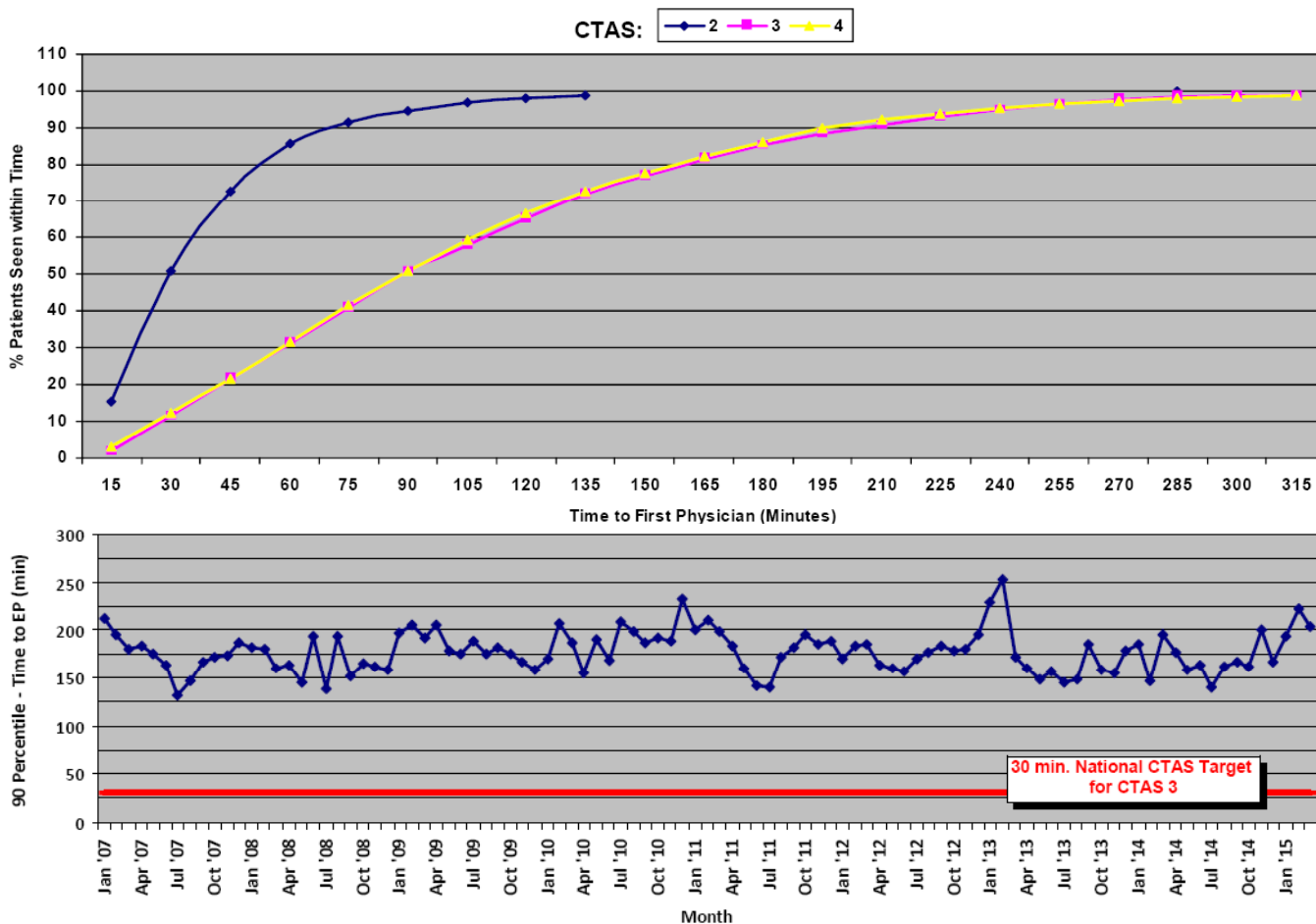
# Patient Experience

## 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



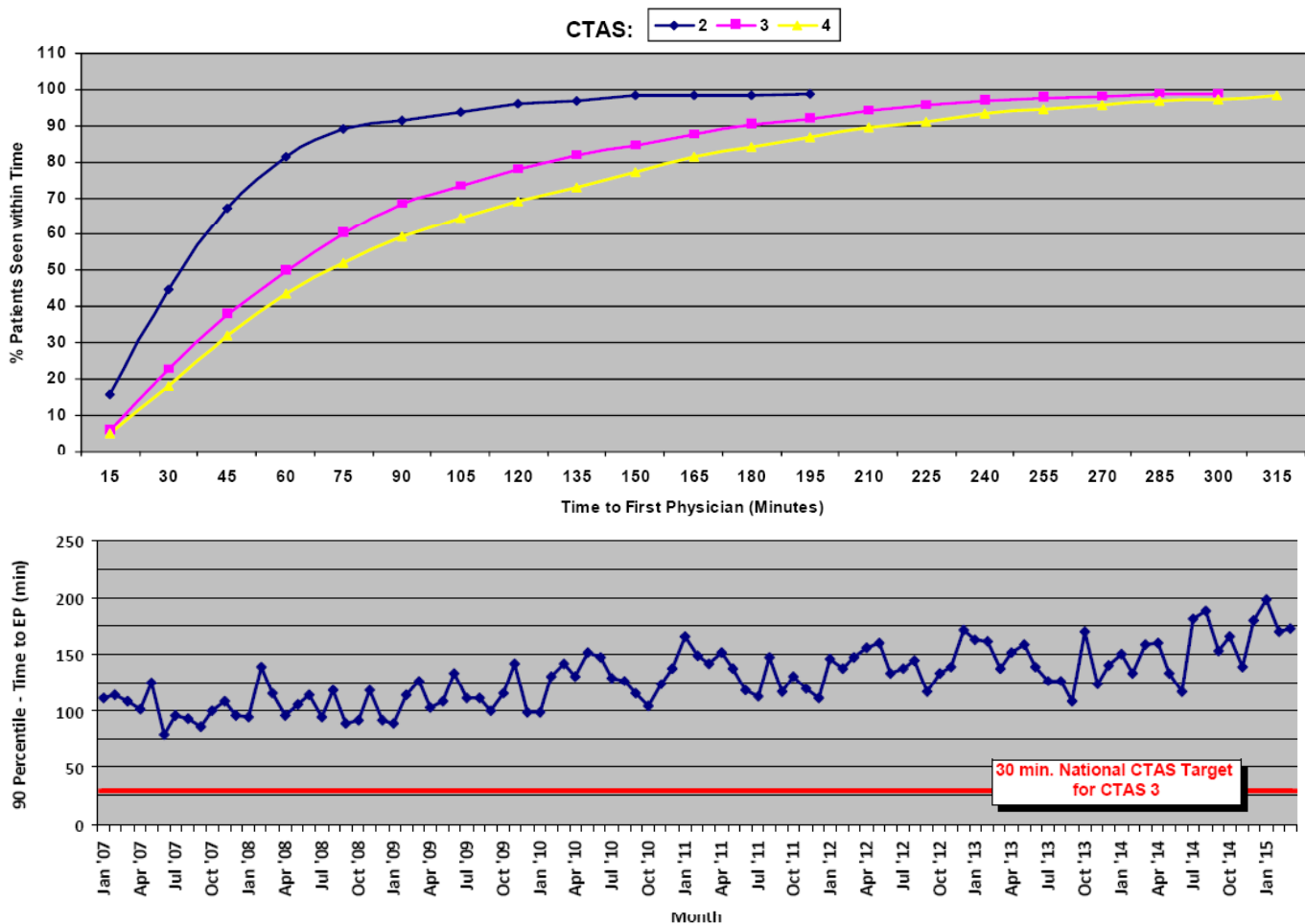
# Patient Experience

## 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 increase over last quarter. Wait times within HCH exist due to:

1. Admitted bed shortages – creates limited space.
2. Physician dependent (1 ERP) – limited flux.
3. Delays to tertiary care and/or consultants within HI site
4. Increased census

Tanya Penney, Health Services Manager, HCH ED

# 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, 2015 to: Mar 31, 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	17709	2176 (12.3%)	869 (4.9%)	48 (0.3%)	7906 (44.6%)	10999 (62.1%)
DGH	10059	1543 (15.3%)	393 (3.9%)	0 (0.0%)	5662 (56.3%)	7598 (75.5%)
HCH	3939	1 (0.0%)	50 (1.3%)	3 (0.1%)	1344 (34.1%)	1398 (35.5%)
CCHC	10149	830 (8.2%)	134 (1.3%)	0 (0.0%)	5087 (50.1%)	6051 (59.6%)
Total	41856	4550 (10.9%)	1446 (3.5%)	51 (0.1%)	19999 (47.8%)	26046 (62.2%)

Labs Ordered			
Site	Patients with Labs Ordered	% Patients with Labs	Patient Volume
QEII	8275	46.7%	17709
DGH	5212	51.8%	10059
HCH	1117	28.4%	3939
CCHC	4319	42.6%	10149
Total	18923	45.21%	41856

### Analysis:

This is unadjusted data looking at the percentage of overall patients who receive a Cat Scan, Ultrasound, MRI (Magnetic Resonance Imaging), X-Ray or labs ordered during their assessments in the Emergency Departments. This data is not adjusted to acuity, complexity, or presenting complaint / diagnosis. There are no national benchmarks for these indications but they will allow for some comparison within the Capital Health Emergency Departments. With the Choosing Wisely campaign ramping up this may create an opportunity for improvements. Dartmouth General Hospital continues to order more lab and Diagnostic Imaging than the other centres (again, not adjusted to acuity / complexity) but have made significant reductions as compared to their peers.

David Petrie, District Chief, CDHA

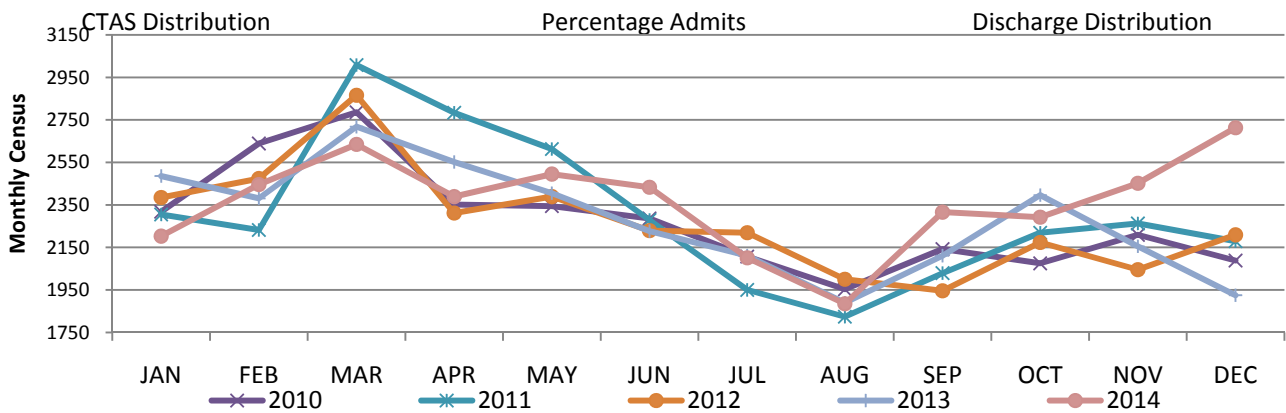
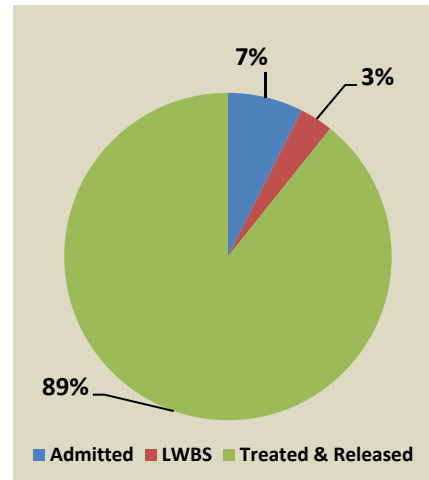
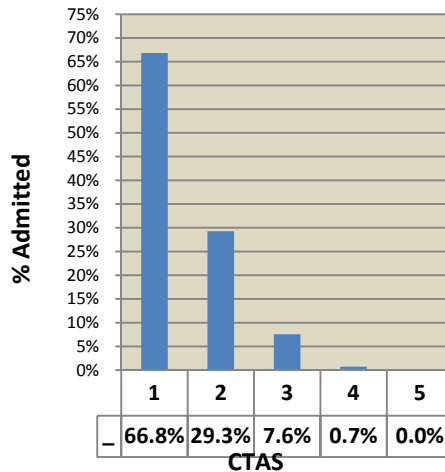
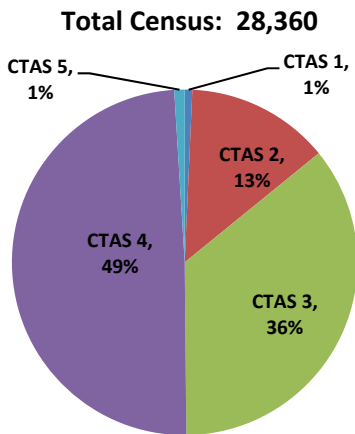
# Demand

## Census - IWK Health Centre ED

Reporting Date: Jan 1 - Dec 31, 2014

### Context:

Because the IWK Health Centre does not have an EDIS, data is not readily accessible and we are unable to report data for Jan - March 2015. We will instead be reporting data for the full calendar year of 2014. We reported last year that we were able to reduce our Left Without Being Seen (LWBS) numbers to 4%, which we felt was a major achievement. This number has remained low with a 3% LWBS rate for 2014. We anticipate that this number likely started to climb by the end of 2014 and will continue to do so into 2015 given our current staffing levels.



### Analysis:

Demand has been relatively stable over the past 5 years. Recent work we have done on CTAS training, has changed our distribution so that we are now 50% level I/II/III and 50% level IV/V. This brings us into closer alignment with other tertiary care pediatric EDs in Canada. Seasonal variation is evident in the above graph, with activity increasing in the fall and continuing through to the spring. Winter months bring a higher burden of infectious disease particularly in younger children. This past fall activity increased quickly and has risen to above average patient volume. This trend has continued into the initial months of 2015. With increased activity and gaps in both physician and nursing care, wait times are up and public satisfaction is down. This is expected to improve with recent hiring of both physician and nursing resources.

# Flow and Network Integration

## IWK Health Centre ED Admissions

Reporting Date: Jan 1 – Dec 31, 2014

### Context:

The ED admission rate has dropped from almost 9% last year to just over 7% this year as we continue to improve processes to discharge patients from ED. Our asthma management is an excellent example of this. Approximately 45% over the past two years go to the medical unit, which is down from 50% over previous years. Approximately 30% consistently go to the surgical unit. Approximately 15% over the past two years go to the psychiatric unit and this number continues to rise. The remaining 10% go to the pediatric intensive care units and oncology unit, with just over 1% admitted to the Women's Health Program.

Emergency Department Statistics	Jan to Mar 2014	April to Jun 2014	July to Sep 2014	Oct to Dec 2014	Total 2014
Total Emergency Department Admitted	559	545	443	532	<b>2,079</b>
Percent Admitted of Total Visits	7.67%	7.45%	7.03%	7.13%	<b>7.33%</b>
Average Length of Stay (minutes) (Triage to Admission to Inpt Unit)	283.4	299.1	262.8	296.0	<b>286.3</b>
Number of ED Admissions Length of Stay <= 8 hrs	509	486	410	487	<b>1,892</b>
Percentage of ED Admissions Length of Stay <= 8 hrs	<b>91.1%</b>	<b>89.2%</b>	<b>92.6%</b>	<b>91.5%</b>	<b>91.0%</b>

### 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, Length Of Stay (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, are working to move 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.

Our current largest issue affecting flow is our physical plant space, as we are only set up for one triage area and have no rapid assessment space. At times we have long line ups for triage with up to 90 minute wait times to see a triage nurse during the busy winter months.