# Capital District Emergency Services Council "CDESC"

## **Quarterly Report**

**Quarter 4** 

With focus on the Emergency Departments of Cobequid Community Health Centre and Hants Community Hospital











#### 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> <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> <li>"avoidable" CTAS 3 (ED as safety net)</li> <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>
CTAS 4, 5	<ul> <li>DO NOT 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> <li>"inappropriate" ED visits (ED as gate keeper)</li> <li>Medication refill</li> <li>"sick note" for work or school</li> <li>Queue jumping to see specialist</li> </ul>

<sup>1.</sup> ACEP definition of Emergency Medicine: http://www.acep.org/Content.aspx?id=29164

**<sup>2.</sup> MYTH:** Emergency room overcrowding is caused by non-urgent cases - October 2009 Canadian Health Research Foundation Myth Buster of the year series

<sup>3.</sup> 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

<sup>4.</sup> THE COSTS OF VISITS TO EMERGENCY DEPARTMENTS ROBERT M. W ILLIAMS, M.D., .PhD (N Engl J Med 1996;334:642-6.)

<sup>5.</sup> Emergency Medical Care: 3 Myths Debunked, Huffington Post. Leigh Vinocur, M.D. Director of Strategic Initiatives at the University of Maryland School Medicine.

#### **Table of Contents**

#### 1. DEMAND

- A. Census
  - 1. Halifax Infirmary Emergency Department
  - 2. Dartmouth General Hospital Emergency Department
  - 3. Cobequid Community Health Center Emergency Department
  - 4. Hants Community Emergency Department

#### 2. FLOW AND NETWORK INTEGRATION

- A. Emergency Department Length of Stay for Admitted Patients
- B. Ambulance Offload / Transition
- C. Matching Capacity with Demand
- D. Pod Initial Destination Halifax Infirmary ED / Rapid Assessment Unit (RAU)
- E. Clinical Decision Unit (CDU) Utilization

#### 3. PATIENT EXPERIENCE

- A. Wait Times
  - 1. Halifax Infirmary Emergency Department
  - 2. Dartmouth General Hospital Emergency Department
  - 3. Cobequid Community Health Centre Emergency Department
  - 4. Hants Community Emergency Department

#### 4. CLINICAL CARE

A. Diagnostic Imaging and Laboratory Reporting

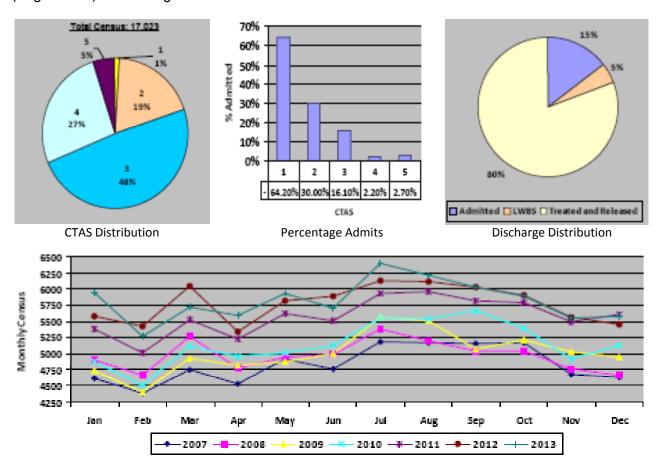
5. FOCUS: EMERGENCY DEPARTMENTS OF COBEQUID COMMUNITY HEALTH CENTRE AND HANTS COMMUNITY HOSPITAL

Reporting Date: Oct 1 – Dec 31, 2013

## **Census – Halifax Infirmary ED**

#### 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:**

After a record summer census, the census this fall was almost exactly the same as last year. CTAS 3 remains the largest category in terms of acuity. Left without being seen has decreased from 7% in the last quarter to 5%, as might be expected with a lower census.

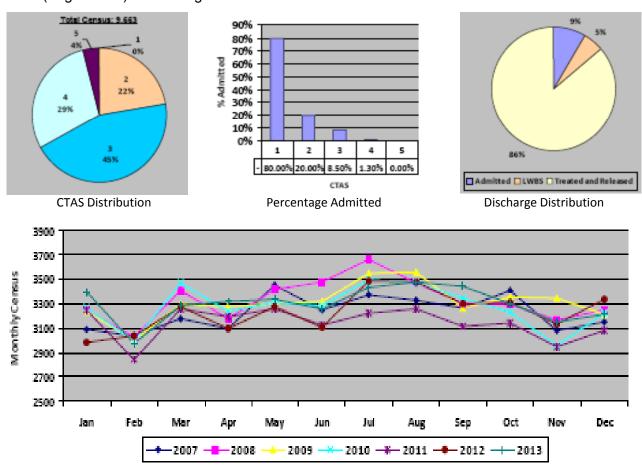
Sam Campbell, Site Chief, HI ED

#### Census – Dartmouth General ED

Reporting Date: Oct 1 to Dec 31, 2013

#### 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:

Prolonged wait times for admitted patients in the ED awaiting an inpatient bed continues to be the most urgent issue facing the Emergency Department. LWBS numbers have improved this quarter likely reflecting changes to the fast track area for low acuity patients. Admission rate and census numbers are in line with historical norms. However, the complexity of the patient population has increased. Patient flow initiatives continue, however, providing timely care for CTAS 2/3 patients in the face of ED overcrowding remains a challenge.

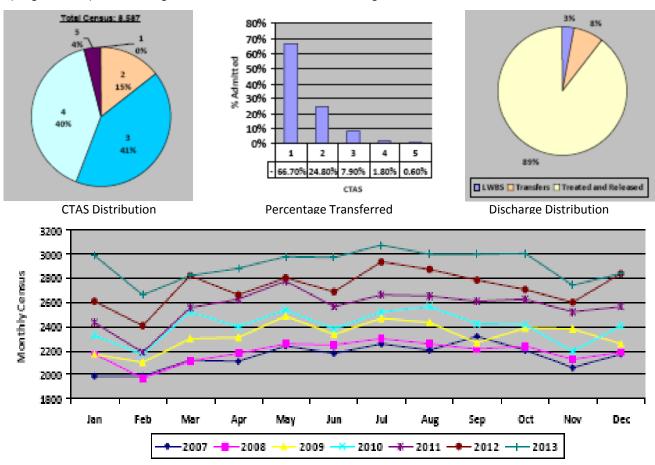
Ravi Parkash, Site Chief, DGH ED

## **Census – Cobequid Community ED**

Reporting Date: Oct 1 to Dec 31, 2013

#### 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:**

Volumes at CCHC continue to increase with a an 5.4 percentage increase in fourth quarter patient volumes from 2012 to 2013.(yearly volumes increased by 6.8%) Despite this increase utilization the LWBS percentage was reduced from 6% in fourth quarter of 2012 to 3% in fourth quarter of 2013. Factors contributing to this improvement include improved patient process procedures and deploying nursing and physician resource to best match volume distribution of patient presentations.

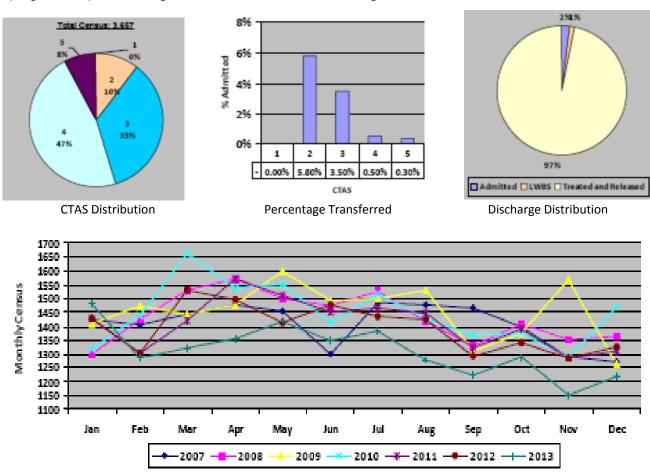
Patient acuity at CCHC continues to increase as reflected by the increase in proportion of patients level CTAS 1-3. This has increased from 52% in 2012 to 59% in 2013.

## Census –Hants Community Hospital ED

Reporting Date: Oct 1 to Dec 31, 2013

#### 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.



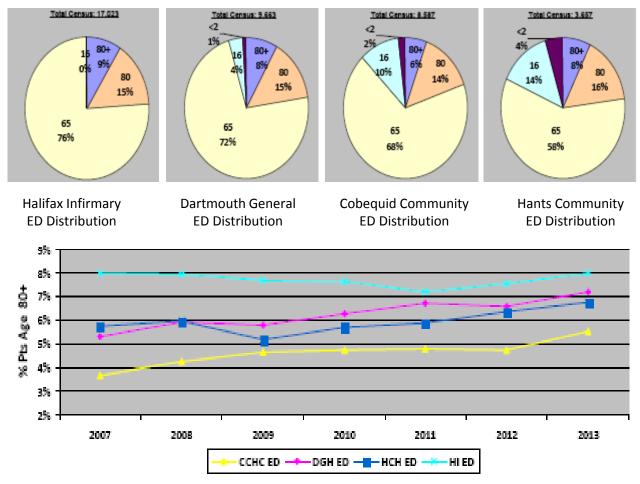
#### Analysis:

Hants' monthly census has declined from previous years. CTAS distribution has seen an increase in CTAS 3 patients from previous reports and CTAS 5 patients decreasing. Transfers to the HI site for tertiary care account for 5.80% of CTAS 2.

Tanya Penney, HCH ED

## Demographics — Halifax Infirmary ED / Dartmouth General ED / Cobequid Community ED / Hants Community ED 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:**

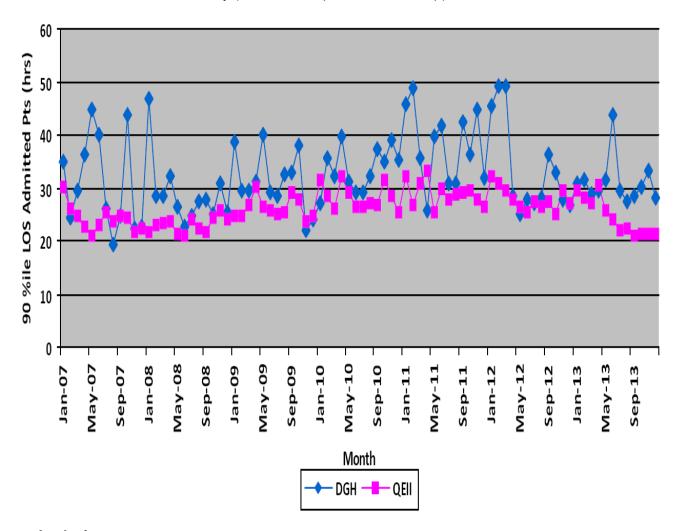
The volumes of patients are up significantly in the district and the proportion presenting to the Emergency Department over 80 years of age has risen slowly. The differences between sites is likely reflected by the geography of new families buying homes in the region and potentially the need for increasing levels of care for the elderly.

David Petrie, District Chief, Capital Health

## **ED Length of Stay for Admitted Patients**

#### Context:

ED LOS of admitted patients (i.e. "ED boarding") has been recognized as the main -75% of the variance - 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



#### Analysis:

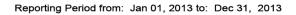
60% of Halifax Infirmary patients are admitted by 8 hours and 25% of Dartmouth General patients achieve this target. The 90<sup>th</sup> percentile performance for the Halifax Infirmary is 21 hours. Dartmouth General remains approximately 30 hours.

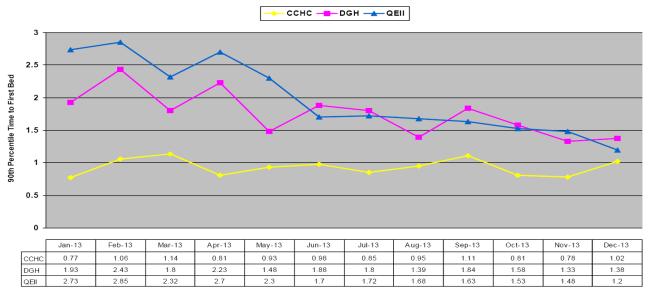
## **Ambulance Offload / Transition**

#### 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).





#### 90th Percentile Time to Bed (hr)

CCHC	281	270	228	253	236	267	212	188	206	207	189	250
DGH	627	548	612	628	584	515	546	605	569	543	506	576
QEII	1295	1242	1191	1177	1264	1280	1388	1294	1305	1337	1291	1332

Ambulance Volume

#### Analysis:

There seems to be a downward trend in time to first bed at both the Halifax Infirmary and Dartmouth General. The offload interval at the Cobequid Community Health Centre has been relatively stable.

## **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 ½ 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	GREEN	34.16%
GREEN	YELLOW	17.81%
YELLOW	GREEN	10.05%
GREEN	ORANGE	9.29%
GREEN	RED	8.52%
YELLOW	YELLOW	5.29%
YELLOW	RED	4.49%
YELLOW	ORANGE	3.03%
ORANGE	GREEN	2.22%
ORANGE	RED	1.75%
ORANGE	ORANGE	1.11%
ORANGE	YELLOW	1.11%
RED	GREEN	0.54%
RED	RED	0.24%
RED	YELLOW	0.24%
RED	ORANGE	0.14%

#### Analysis:

During Quarter 4, 2013, Dartmouth General Red / Halifax Infirmary Green occurred 8.52% of the time and Halifax Infirmary Red / Dartmouth General Green occurred 0.54% of the time. Ambulance smoothing may occur during these times. Cobequid Community Health Centre may receive CTAS 3, 4 or 5 ambulances during these Red times.

## Pod of Initial Destination at the HI ED / RAU Context:

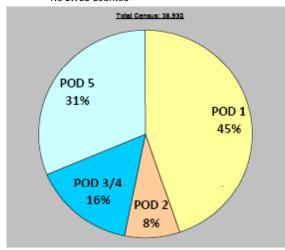
Internal flow within an ED needs to optimize available space/capacity to meet the volume/CTAS demands of the presenting patients.

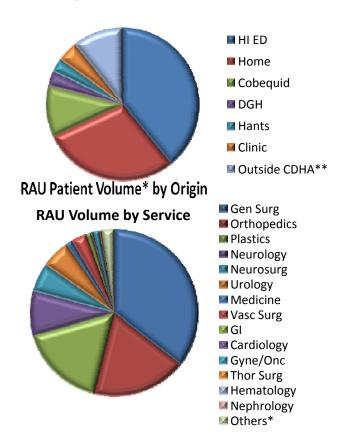
The HI ED has innovated (chair centric Pod 1, fast track/paramedic assisted pod 5) to meet the needs of this demand. The Rapid Assessment Unit is another aspect of the ED which has evolved to meet the needs of transferred patients and referred patients from our own ED. This allows expedited consultations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







#### **Analysis:**

- 1) The proportions of patients sent to each pod is similar to the previous quarter, with heavy use of Pod 1, an indicator of bed shortage/boarding (or 'protection)'in the other pods. This should become less of an issue as these beds are freed up by other initiatives. This does indicate that Pod 1 is keeping patients out of beds that they might not need, however it does suggest a possible 'normalization of deviance' where patients who should be in beds are sent to pod 1 routinely.
- 2) A significant portion of Rapid Assessment Unit patients continue to have come from home. Anecdotally it has been suggested that many of these could more appropriately have been seen at a clinic. Although further analysis may show whether, this is so investigation so far has been hampered by the subjective impression of patients and services as to the urgency of cases.

## **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 Patient Admitted	Percentage CDU Admitted	Total Site Patient Volume	Percentage Total Patients CDU	Median Length of Stay CDU No Admitted Patients
HI ED	222	41	18.5%	17023	1.3%	17.99
DGH ED	365	73	20.0%	9663	3.8%	15.52
CCHC ED	8	4	50.0%	8587	0.1%	7.78

#### **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.

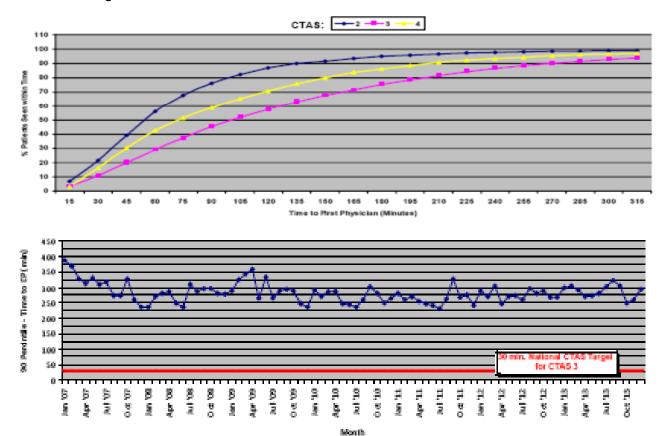
Clinical Decision Units has been shown to reduce Emergency Department length of Stay, reduce admission rates with no increase in Emergency Department revisit rates in a recent Academic Emergency Paper.

#### 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:**

Our patients continue to wait an unacceptably long time for their emergency care, with CTAS 3 patients being most affected. Even with improved flow for admitted patient, wait time improvements have been marginal.

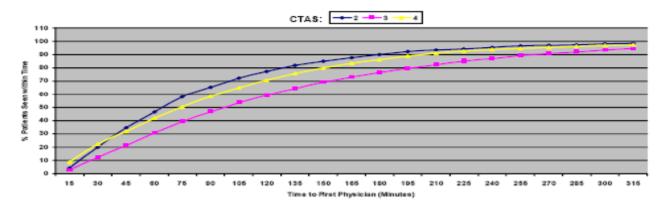
Sam Campbell, Site Chief, HI ED

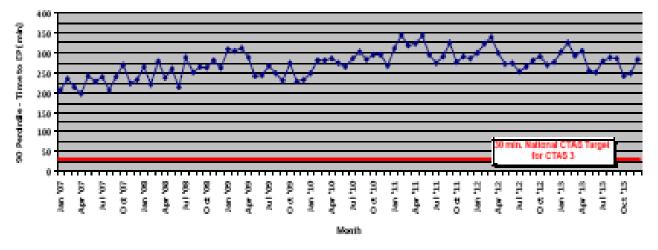
#### Wait Times - DGH ED

**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:**

Lack of inpatient capacity at DGH continues to be of primary concern. Large numbers of admitted patients in the ED results in long wait times for incoming patients as manifested by the prolonged waits for CTAS 3 patients in the graph above.

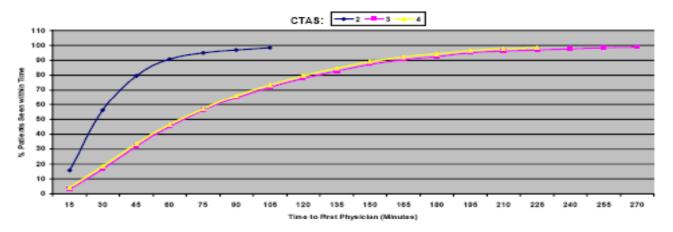
Ravi Parkash, Site Chief, DGH ED

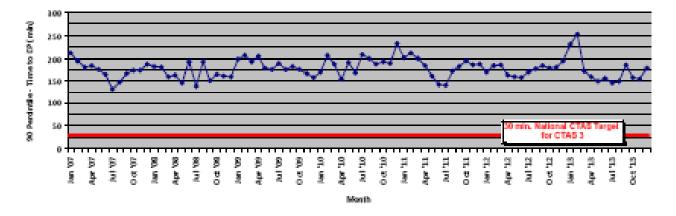
## Wait Times - Cobequid ED

**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:**

The 30 minute time to EP standard is not totally reflective of care delivery as often care is delivered via protocols by RNs. Existing resources and registration process contribute to this being a challenging (and in the opinion of many an unrealistic) standard. CCHC has been able to maintain an average of 150 min for CTAS 3 despite significant increased patient volumes and acuities.

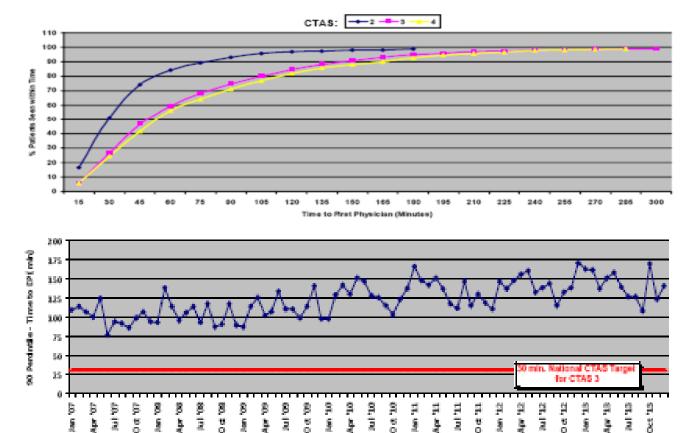
Mike Clory, Site Chief, CCHC ED

#### 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 within HCH exist due to:

- 1. Admitted bed shortages creates limited space.
- 2. Increases time to consult/tertiary care.
- 3. Physician dependent (1 ERP) limited flux.

Throughput initiative – increase initiation and use of nurse initiated protocols. LWBS rates remain above standard – time to physician (as per next slide) is a large cause of this rate.

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: Oct 01, 2013 to: Dec 31, 2013

DI Ordered								
Site	Pt Volume	CT Orders	US Orders	MRI Orders	XR Orders	Total Di Orders		
		(%Pt Volume)	(%Pt Volume)	(% Pt Volume)	(%Pt Volume)	(% Pt Volume)		
QEII	17023	2327 (13.7%)	913 (5.4%)	44 (0.3%)	7666 (45.0%)	10950 (64.3%)		
DGH	9663	1446 (15.0%)	403 (4.2%)	0 (0.0%)	5357 (55.4%)	7209 (74.6%)		
ССНС	8587	705 (8.2%)	214 (2.5%)	0 (0.0%)	4437 (51.7%)	5356 (62.4%)		
НСН	3657	8 (0.2%)	30 (0.8%)	0 (0.0%)	1191 (32.6%)	1226 (33.6%)		
Total	38930	4489 (11.5%)	1560 (4.0)	44 (0.1%)	18651 (47.9%)	24744 (63.6%)		

Labs Ordered						
Site	Patients with	% Patients	Volume			
	Labs Ordered	with Labs				
QEII	7709	43.3%	17023			
DGH	4964	51.4%	9663			
CCHC	3767	43.9%	8587			
НСН	1079	29.5%	3657			
Total	17519	45.00%	38930			

#### Analysis:

This is raw 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.

#### **COBEQUID COMMUNITY HEALTH CENTRE**

#### **QUALITY ASSURANCE AUDIT REPORT**

Audit Date: Nov 2013	Department: Emergency Depa	rtment						
Audit Type: Retrospective	Audit Tools: EDIS Database/HPF  Audit Activity: Review of Acute Myocardial Infarctions at the CCHC ED referred for primary Percutaneous							
Sample Size:	Coronary Intervention (PCI) fro	m January 1-C	October 15, 20	013				
Standard Audited:	(1) Time to first ECG (2) Time of EHS Transport (3) ASA therapy (4) Time to decision							
Criteria Audited:	HPF record of emergency visit for all acute myocardial infarctions referred for PCI from Specific criteria included: (1) Time to first ECG  (2) Time of EHS transport  (3) Time from diagnostic ECG to consultation							
Results:		2013	2012	2011	2010	2009		
nesuits.	*Acute STEMI	9	19	10	15	17		
	ECG time Average (min.)	10.6	8.4	13.9	14.9	11.9		
	10 min ECG (%)	70	68	30	46.7	39		
	EHS Transfer time (min.)	54.2	50.4	51.9	51.3			
	**ED Consult Time (min)	15.4	16.9	14.8	14.6			
	Balloon time goal 120 min							
	80 <sup>%</sup> percentile (min)	108	121	115	114			
	120min balloon time %	67%	58%	70%	86%			
		2013	2012 2011		011	2010	7	
	ASA	9(100%)	19(100%)	) 10(	100%)	15(100%)		
Problems Identified: Significance:	*PCI **Time from diagnostic ECG to consult I.C.  ED consult time still not meeting standard set by ED group of 10 min.							
(How are your findings important)?	●100% compliance with ASA th	nerapy meets s	safety standar	rd goals.				
	Delayed PCI can cause increased morbidity.							
	•Improved 10 minute ECG time reflect improved processes and awareness by ED staff.							
	•ED consult time improvement can improve time to balloon time and thereby decrease myocardial tissue injury.							
Recommendations & follow up:	Emergency physicians will be recardiologist.	eminded of th	e importance	of early cons	sultation wit	h interventiona	al	

## Cobequid Community Health Centre Emergency Department Innovative Practices

#### 1. Emergency Department Adult Sepsis protocol:

The goal is to improve emergency department management of sepsis patients. A suspected severe sepsis medical directive applied by nurses for patients experiencing potential signs and symptoms of sepsis will:

- 1.Expedite patient care
- 2. Standardize the approach for early detection and management
- 3. Facilitate identification of patients for early goal directed therapy.

#### 2. Team Simulation Training:

Weekly ED staff simulation sessions were initiated in December 2013. These sessions are multidisciplinary with the goal to improve the quality of patient care. A consistent theme from case reviews at our regular Quality Assurance rounds has been a need to improve team communication during critical events and resuscitations. This led to our department obtaining a SIM-man and establishing a simulation program. To date the program has been a positive experience with participants identifying educational needs and improved team communication.

## HANTS COMMUNITY HEALTH CENTRE QUALITY ASSURANCE AUDIT REPORT

Audit Date: Jan 2014	Department: Emergency Department				
Audit Type: Retrospective	Audit Tools: EDIS Database/HPF				
Sample Size:	Audit Activity: Review of Acute Myocardial Infarctions at the HCH ED				
	receiving Thrombolytic treatment from January 1-D	ecember 31, 2013			
Standard Audited:	(1) Time to first ECG (2) Time to thrombolytic(Door to Needle Time) (3) ASA therapy				
Criteria Audited:	HPF record of emergency visits for all STEMI acute myocardial Infarctions: (1) Time to first ECG (2) Time to thrombolytic administration (3) ASA therapy				
Results:		2013			
regules.	Acute STEMI	10			
	ECG time -max (min.)	13			
	10 min ECG (%)	60			
	Thrombolytic time –90%tile (min.)	32			
	Thrombolytic time within 20 min (%)	50			
	ASA (%)	90			
Analysis:	<ul> <li>90% compliance with ASA therapy is above provir approaches goal of 100%.</li> <li>ECG time meeting standard of 10 min.</li> <li>Thrombolytic time meeting appropriate standard of</li> </ul>				
Recommendations & follow up:					

## Hants Community Hospital Emergency Department Innovative Practices

Hants Community Hospital's Emergency Department has been trialing the following innovations since mid January. There is no data available as yet to measure the impact these innovations have had since their implementation.

- 1. Emergency Department Adult Sepsis protocol:
  - 1.To improve emergency department management of sepsis patients. A suspected sepsis medical directive applied by nurses for patients experiencing potential signs and symptoms of sepsis will:
    - a.Expedite patient care
    - b.Standardize the approach for early detection and management
    - c.Facilitate identification of patients for early goal directed therapy.
- 2. Waiting Room Rounds:
  - 1.To improve communication between the triage area, department and waiting room patients in an effort to:
    - a. Keep patients waiting better informed
    - b.To allow patients waiting an opportunity to make informed decisions
    - c.Increase patient satisfaction
    - d.Decrease LWBS rates