Information for Hospitals wishing to join The Global Tracheostomy Collaborative (GTC)

UK & Europe

Information for Hospitals wishing to join
The Global Tracheostomy Collaborative (GTC)

What is a Quality Improvement Collaborative? (QIC)

A QIC is a group of hospitals who

- Agree to work together to rapidly disseminate improvement strategies
- Track their outcomes and share data
- Work together for the purpose of improving care for everyone

Why is a QIC needed around tracheostomy care?

- Tracheostomy care is high risk with significant mobility and mortality
- Some hospitals have shown great improvement around tracheostomy care including the implementation of tracheostomy teams
- Hospitals that would like to improve don't have ready access to experts and best practices
- It is currently difficult to benchmark tracheostomy care results across institutions

What is the Global Tracheostomy Collaborative? (www.globaltrach.org)

- A multidisciplinary team of physicians, nurses, allied health clinicians and patients/caregivers from 9 countries working together to disseminate best practices and improve outcomes. Dr David Roberson, ENT specialist, from Harvard is the lead on the collaborative.

What are the goals of the Global Tracheostomy Collaborative (GTC)?

To improve tracheostomy care for children and adults worldwide by:

- Rapidly disseminating evidence-based protocols and checklists for tracheostomy care from successful hospitals.
- Encouraging all hospitals to create multidisciplinary trach care teams
- Creating outcome-based metrics and gathering data to allow hospitals to compare their performance and track improvement.
- Conduct worldwide research projects to guide future improvements.

Why Should My Centre Join the GTC?

- Implement or expand upon best practices at your centre
- Participate in the GTC tracheostomy database which will allow you to
    - track your tracheostomy care across your centre
    - benchmark with others centres
    - monitor adverse events
    - track changes in outcomes as you implement interventions
- Receive support and education from international experts

Should we still join if we already have a Tracheostomy Team or systems in place?

- Absolutely – all centres regardless of level of expertise or coordination will benefit from joining the GTC to allow their centre to benchmark, to try new interventions and to evaluate risks, improve quality. If your centre already has teams and protocols in place, the GTC will give you the opportunity to share what you have learned with many other centres worldwide.

What is required to participate in the GTC?

Part One: To join and to get started

- Institutional-level commitment. Please provide a letter signed by an appropriate leadership individual (CEO, COO, Patient Safety Officer) at your institution committing to full participation in the collaborative, specifically mentioning:
    - A commitment to send the "champions" to a kickoff meeting.
    - A commitment to an institution-wide, multidisciplinary trach care management process
    - A commitment to entering, at a minimum, all new tracheostomy patients into the collaborative database.
    - A commitment to paying for collaborative membership for at least two years ($3500 for year one, $5000 for subsequent years)
- Name a minimum of two "champions" to lead the process. At a minimum, one physician and one allied health professional with both tracheostomy and leadership experience. We encourage you to consider including a patient or family representative as a champion.
- Respond to a questionnaire from the GTC with information on your centre including type of facility, case mix, number of beds, existing tracheostomy care models/protocols.
- If required by your institution, inform your IRB, Caldicott Guardian or ethics committee.

Part Two: Commitment by champions

- At least two champions from each institution must attend one kickoff meeting. Currently, meetings are planned for 2014 in Boston in April, London in July and in Australia in October.
- Champions must attend monthly conference calls of all participating institutions on their continent to update each other on progress, discuss problems or concerns, educate each other.
- Champions commit to working with all services to improve processes and overcome obstacles.

Part Three: Commitment to change at your institution

- Establish a tracheostomy care leadership team, including
    - The "champions" you have named to lead the process
    - Representation from all physician and non-physician departments who are significantly involved in tracheostomy care at your institution. These will vary by institution but might include ENT, General Surgery, Thoracic Surgery, Critical Care, Respiratory, Nursing, Speech pathology, Respiratory Therapy, Physiotherapy, and others.
    - We encourage institutions to include a patient or family members as a champion and/or member of the leadership team.
- Set local goals for care improvement. These will be institution-specific, but might include
    - Shorter time to decannulation
    - Fewer critical incidents on inpatient wards
    - Fewer ED visits / admissions for patients living at home with tracheostomies
    - Better patient satisfaction with care
- Develop institution-wide uniform protocols for tracheostomy management and care, aimed at improvement in your institution's goals
- Audit compliance with these protocols.
- Enter (at a minimum) all new tracheostomy patients into the collaborative database
- Regularly review your data, and revise processes based on outcomes.
- Share your findings and processes with the collaborative on monthly conference calls.

What Happens Once You Join? Step 1: Interventions menu

Interventions Menu

Each institution will choose those interventions they feel are applicable and likely to create the biggest impact at their institution. **It is not necessary to adopt all of the following interventions to participate in the collaborative.**

A. Create a coordinated approach to tracheostomy care across disciplines

- Your tracheostomy leadership team should meet to discussing these issues
- Options of suggested models of care include
    - Documentation of how all parties work together
    - Formation of Tracheostomy Team
    - Specialist wards for tracheostomy care
    - Specialist nurse liaison role (Respiratory, ICU or ENT)

B. Create/Implement Centrewide Interdisciplinary Tracheostomy Policy and Procedures

- This set of documents should be unique to the institution and patient mix
- Topics and examples available via GTC
- Regularly audit compliance with tracheostomy policies and procedures

C. Provide Coordinated Interdisciplinary Education

- The education must reflect the policies and procedures in place at your institution

D. Implement Tracheostomy Quality and Risk Management Systems

- Record all significant incidents
- Emergency management training including simulation
- Adverse events monitoring and algorithms

E. Consumer Participation

- Establish patient advocates, family input for policy, procedure and education material
- Use surveys to establish where problems exist and to evaluate changes in service
- Have formal process for accessing these consumers

What Happens Once You Join?
Step 2: GTC database and support

The GTC Database and Support

- Entering, at a minimum, all new tracheostomy patients into the Collaborative database is mandatory.
- Collection of data on readmitted patients and outpatient care is optional.
- The GTC database uses REDCap software (www.redcap.com) and is HIPPA compliant. Data is owned by the GTC and is stored at Vanderbilt University. You do not need to purchase REDCap at your centre.
- You will download the database interface and enter data on a desktop, laptop or tablet.
- You will have the ability (working with GTC staff) to customize additional data elements at your institution if you desire.
- The GTC will provide database support
- All data is de-identified at the source. Only your centre have access to the original de-identified patient data from your institutions. You will have direct access to all your local data listed on the REDCap database.
- You will always own your own centre's data and will always be free to publish using your own data. However, the Collaborative will own the aggregate data and will analyse and publish aggregate results.
- Your centre's data will never be shared with other centres, identified to other centres or identified in any publications or presentations.
- The Collaborative will issue regular reports allowing you to
    - Track your progress from year to year
    - Compare yourself against the aggregate performance of other institutions.

Monthly calls or webinars

- The GTC will host monthly conference calls or webinars for collaborative members to share their experiences, provide feedback to the GTC and each other

We are incorporated as a 501(c)(3) not for profit in the US. IRS determination on tax deductibility of donations is pending as of September 2013.

Please visit our website www.globaltrach.org or email info@globaltrach.org for more information.

our team

LEADERSHIP

David Roberson, MD
Founder and President
Boston, MA, United States

Rahul Shah, MD
Executive Director
Potomac, MD, United States

Tanis Cameron, MA
Vice President
Melbourne, Australia

Antony Narula, MD
Co-Founder and Vice President
London, United Kingdom

Michael Brenner, MD
Treasurer
Ann Arbor, MI, United States

BOARD OF DIRECTORS

Asit Arora, MD
Co-Founder
London, United Kingdom

Jo Harrison, MD
Melbourne, Australia

Linda Moris, PhD
Chicago, IL, United States

William Oldfield, MD
London, United Kingdom

Erin Ward, MS
Methuen, MA, United States

STEERING COMMITTEE

Neil Bateman, MD
London, United Kingdom

Jay Berry, MD
Boston, MA, United States

Melissa Ciardulli, RN
Melbourne, Australia

Preety Das, MD
London, United Kingdom

Melody Felton, MS
Boston, MA, United States

Stacey Halum, MD
Indianapolis, IN, United States

Jeeve Kanagalingam, MD
Singapore, Singapore

Haytham Kubba, MD
Glasgow, Scotland

Al Merati, MD
Seattle, WA, United States

Brendan McGrath, MD
Manchester, United Kingdom

Christine Milano, BA
Chicago, IL, United States

Rosh Sethi, BS
Boston, MA, United States

Margaret Skinner, MD
Baltimore, MD, United States

Joanne Sweeney, MA
Melbourne, Australia

Alok Thakar, MD
Delhi, India

Natalie Viyaran
Waltham, MA, United States

Stephen Warrillow, MD
Melbourne, Australia

Karen Watters, MD
Boston, MA, United States

Ralph Woodhouse, MD
Stockholm, Sweden

Hannah Zhu, MD
London, United Kingdom

join us

1. Implement or expand upon best practices at your institution.
2. Participate in the Global Tracheostomy Collaborative (GTC) Database, allowing you to track your institution's tracheostomy care.
3. Benchmark with other centres.
4. Monitor adverse events.
5. Track changes in outcome as you implement interventions.
6. Receive support and education from international experts.
7. Learn directly from world leaders in tracheostomy care.

"It is incredibly exciting to work on a project of this magnitude; rarely in our careers do we have the opportunity to improve care for patients around the world."

- Dr. Rahul Shah, GTC Executive Director
Otolaryngologist, Children's National Medical Center

All centres, regardless of level of expertise or coordination, will benefit from joining the GTC to allow their centre to benchmark, to try new interventions and to evaluate risks and improve quality. If your centre already has teams and protocols in place, you will have the opportunity to share what you have learned with many other centres worldwide.

For more information, or to join, please visit our website or contact us at **info@globaltrach.org**

WWW.GLOBALTRACH.ORG

WWW.GLOBALTRACH.ORG

What is the Global Tracheostomy Collaborative?

We are a multidisciplinary team of physicians, nurses, allied health clinicians and patients/caregivers from around the world working together to disseminate best practices and improve tracheostomy outcomes.

We are incorporated as a 501(c)(3) not-for-profit organization in the USA.

"Leaders in our collaborative have demonstrated that tracheostomy related adverse events can be radically reduced through team care. We are partnering with hospitals around the world to help spread these innovative care models."

- Dr. David Roberson, GTC Founder and President
Otolaryngologist, Harvard Medical School

our vision

"Improving the care of adults and children with tracheostomies throughout the world"

our model

A Quality Improvement Collaborative is a group of hospitals who agree to rapidly disseminate improvement strategies, track outcomes, share data and work together to improve care.

our motivation

- Tracheostomy care is high risk with significant morbidity and mortality.[1,2]
- Patients with tracheostomy are often cared for on wards where staff have little, if any, of the specialist skills required to manage these patients.[3]
- Some hospitals have shown dramatic improvement around tracheostomy care through collaborative interventions such as the implementation of tracheostomy teams.[4]
- It is currently difficult to benchmark quality of care internationally.

[1] Das P et al. Tracheotomy-related catastrophic events: results of a national survey. *Laryngoscope*. 2012;122:30-37
[2] Halum SL et al. A multi-institutional analysis of tracheotomy complications. *Laryngoscope*.2012;122:38-45
[3] McGrath BA et al. Patient safety incidents associated with tracheostomies occuring in hospital wards. *Postgrad Med J*. 2010;86:522-25
[4] Cameron TS et al. Outcomes of patients with spinal cord injury before and after introduction of an interdisciplinary tracheostomy team. *Critical Care Resusc*. 2009;11:14-19

our methods

1. Assist member hospitals in tracking and benchmarking outcomes using a secure, HIPAA-compliant database.
2. Creating centre-wide, interdisciplinary tracheostomy policies and procedures.
3. Providing coordinated, interdisciplinary education.
4. Facilitating access to worldwide experts in high-quality tracheostomy care.
5. Implementing tracheostomy Quality and Risk management systems.
6. Advocating and providing support for families, patients and their caregivers.

"The aims of the GTC are great. Coordinated tracheostomy care improves safety, enhances outcomes and promotes excellence."

- Tanis Cameron, GTC Vice President
Speech-Language Pathologist, Melbourne, Australia

"As a parent and caregiver, it gives me great hope that the GTC is dedicated to improving the safety and quality of tracheostomy care."

- Erin Ward, GTC Board of Directors, Parent and Caregiver

The Global Tracheostomy Collaborative Database

[DATA REPORT: SITE E, AUGUST 2013]

TABLE OF CONTENTS

Global Tracheostomy Collaborative: Data Report (3/1/13 – 8/31/13)

Report Overview

The Global Tracheostomy Collaborative (GTC, www.globaltrach.org) is a multidisciplinary team of physicians, nurses, allied health clinicians and patients/caregivers worldwide working together to disseminate best practices and improve outcomes on tracheostomy care worldwide.

What does this report contain?

Contained in this document is the data report for all clinical entries between 3/1/2013 – 8/31/2013. This report contains summary statistics, raw data tables, and process control charts for important variables. These analyses will help the GTC answer critical questions about tracheostomy patients' clinical care and their care process. Over time, these reports will be useful in helping individual institutions and the Collaborative as a whole track outcomes and benchmark progress. It is important to note that these results are largely descriptive at this point and do not involve statistical association or correlation. As this data is collected on an ongoing basis, the Collaborative can establish statistically valid evidence of improvement within institutions and as a whole.

How is Data Collected?

All patient data is collected prospectively for each tracheotomy procedure. Clinical outcomes are collected until the time of patient discharge and for 30-days beyond. Once this time period has elapsed and all clinical data has been collected the patient record is finalized. *Only records which have been finalized as of August 31, 2013 are included in this report*.

All clinical data is hosted using secure web-based clinical research software called *REDCap (Research Electronic Data Capture)*. REDCap is a secure, web-based application for collection and management of research and clinical trial data. All program sites have access to REDCap via a secure web-link and all of the data collected is stored remotely.

How is Data Analyzed?

Data is analyzed using Statistical Analysis with SAS/SAT software. Graphical analysis was performed using GraphPad Prism. Statistical Process Control was performed using SQCpack EZ.

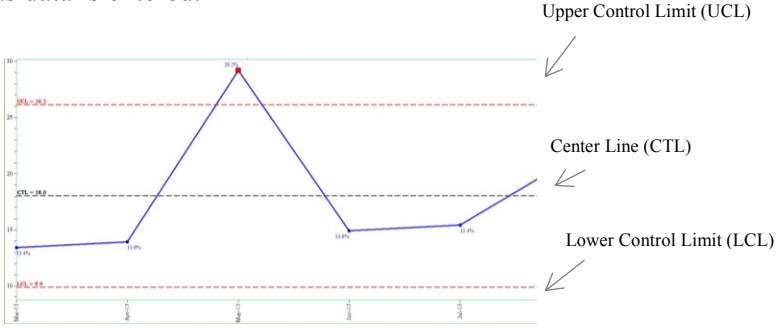
Report Interpretation:

Data is often displayed in tabular form like the example below.

Number- displays the raw number of instances an answer option is chosen.
Column Percent - calculated as number of patient responses divided by net number of entries for that particular item
All Sites – includes aggregate for all other sites in the GTC, minus the results of your site

Variable	**Site A**	**All Other Sites**	**Total**
Answer Option	*Number* *Column Percent*	*Number* *Column Percent*	*Number* *Percent of Total*
Total	*Number*	*Number*	*Number*

This report contains statistical process control chart which measures of a given metric in samples taken over different times. The mean of this statistic is used to calculate the **Center Line (CTL)** and the **Upper Control Limit (UCL) and Lower Control Limit (LCL)** are calculated to represent the three standard deviations above and below the center line. The center line is a moving average calculated as data is entered.



Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 1: Patient Distribution by Site

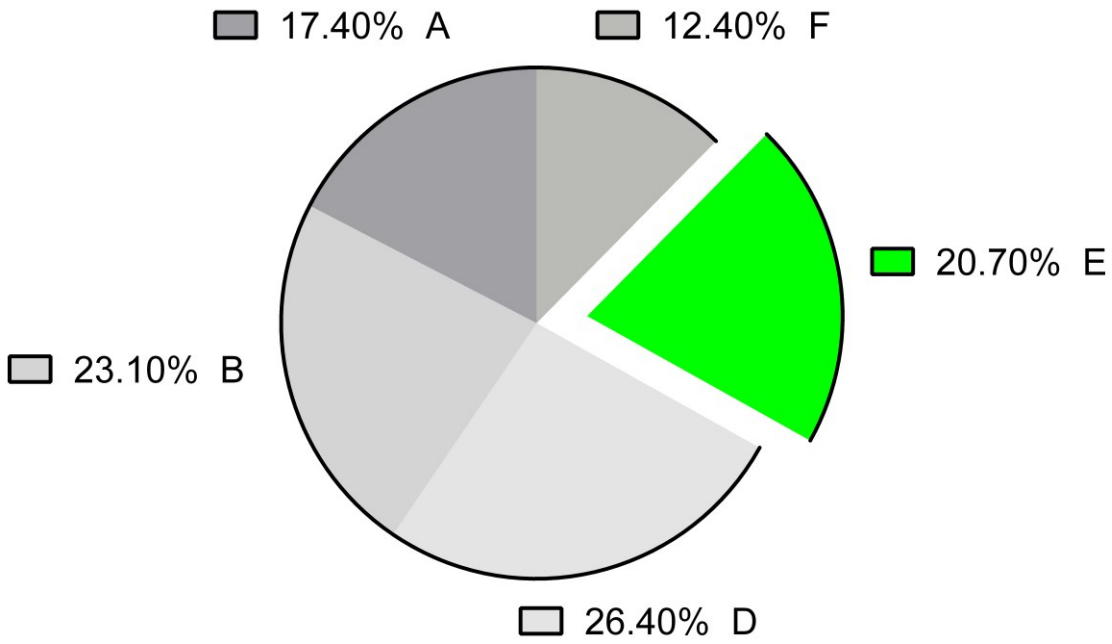
Summary:

During the report period (3/1/2013 – 8/31/2013) there were 250 tracheotomy procedures performed by the 5 members of the Global Tracheostomy Collaborative.

There were **250 tracheotomy procedures** performed at your site (Site E). Site E accounted for **20.7%** of all tracheotomy procedures during the report period.

Site ID	Patients	Percent
A	210	17.4%
B	280	23.1%
D	320	26.4%
E	250	20.7%
F	150	12.4%
	1,210	**100.0%**

Figure: Patients, By Site



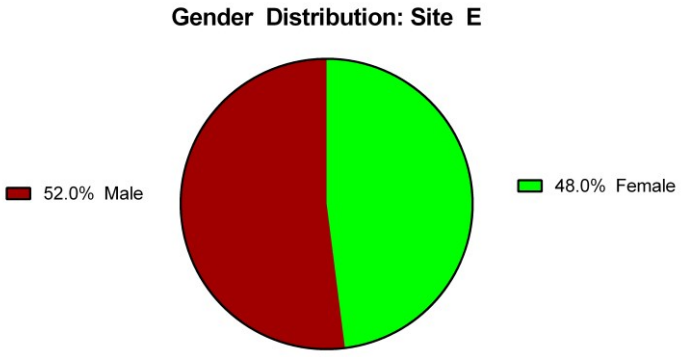
Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

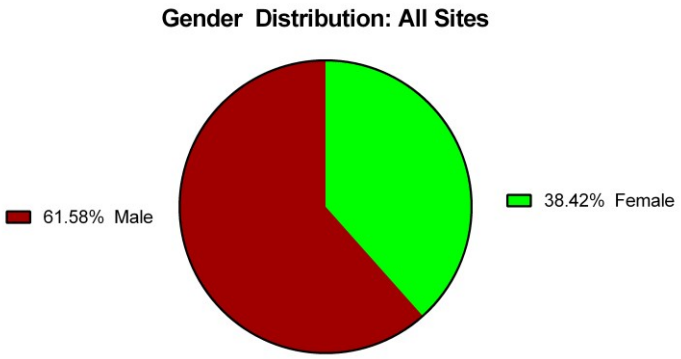
Analysis Variable 2: Gender Distribution

Summary:

At Site E **52.0%** of all patients were male. For all patients in the collaborative undergoing tracheotomy 61.2% were male.

Table of gender by site			
Gender	**Site**		
Number Percentage	**Site E**	**Other Sites**	**Total**
Male	130 52.0%	610 63.5%	740 61.2%
Female	120 48.0%	350 36.5%	470 38.8%
Total	250 20.7%	960 79.3%	1,210 100%





Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 3: Indication for Tracheotomy

Summary:
At your site the most common indication for tracheotomy is **Ventilation Insufficiency (81.6%).** For all patients in the collaborative the most common indication for tracheotomy was Ventilation Insufficiency (53.1%).

*Indication for tracheotomy is defined as the leading medical or surgical reason for requiring the establishment of an artificial airway.

Table of reason by site		
Primary Reason for Current Tracheotomy	**Site**	
Number Percentage	**Site E**	**Total**
Airway Protection (aspiration)	8 3.2%	141 11.6%
Loss of Upper Airway Patency	22 8.8%	249 20.523%
Secretion Retention	6 2.4%	23 1.9%
Ventilation insufficiency	204 81.6%	643 53.1%
Other	24 9.6%	154 12.7%
Total	250	1,210

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 4: Percentage of Patients with Co-Morbidity

Summary:
At Site E the most common co-morbidities in patients undergoing tracheotomy are **Chronic Lung Disease (44.0%) and Chronic Neurologic Disease (22.0%)**. For all the patients in the collaborative the most common co-morbidities were Chronic Lung Disease (18.1%) and Chronic Neurologic Disease (13.2%).

*Comorbidities are defined as underlying medical conditions which the patient suffers, including but not limited to, the primary indication for the tracheotomy. There may be up to 8 medical co-morbidities entered for each patient.

#	Co-Morbidities	Site E Count	Percent of Site E Subjects with Co-Morbidity		All Sites Count	Percent of All Subjects with Co-Morbidity
1	Central Apnea	10	4.0%		35	2.9%
2	Obstructive Apnea	10	4.0%		121	10.0%
3	Chronic Lung Disease	110	44.0%		220	18.1%
4	Chronic Neurologic Disease	55	22.0%		167	13.8%
5	Respiratory Muscle Weakness	32	12.8%		56	4.6%
6	Subglottic Stenosis	9	3.6%		46	3.8%
7	Upper Airway Anomaly	21	8.4%		34	2.8%
8	Other	2	0.8%		531	43.9%
	TOTAL SUBJECTS	**250**			**1210**	

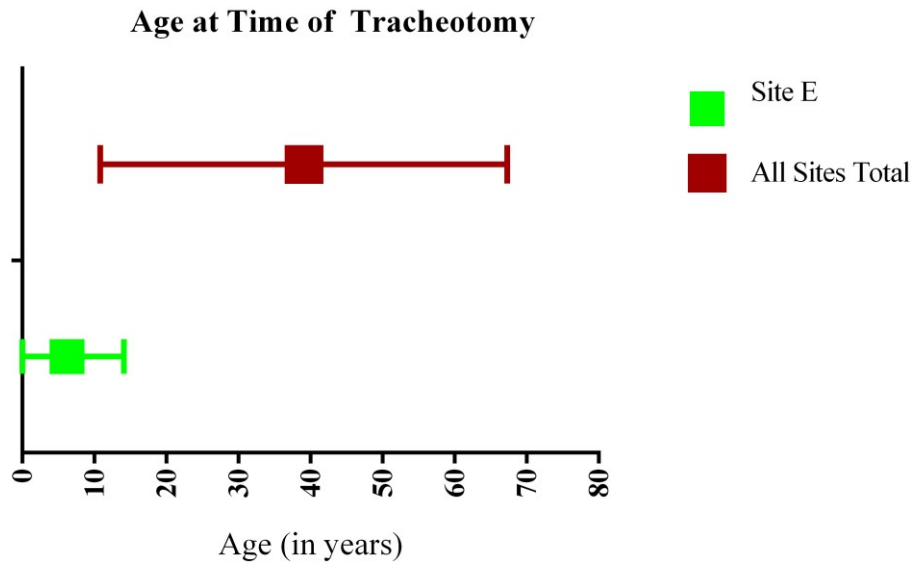
Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 5: Age at the time of Tracheostomy Tube Insertion

Summary:

At Site E the average age at the time of tracheotomy was 6.2 years. For all of the patients in the GTC the average age at the time of tracheotomy was 39.1 years.

Site	Count	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	6.19	7.93	0.35	1.19	12.94
All Sites	1210	39.07	28.24	8.49	43.06	63.99



Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 6: Adverse Events

Summary:

At Site E there were 42 Adverse Events and 16.5% of patients at Site E experienced at least one Adverse Event during the hospitalization following a tracheotomy. The most common type of adverse event was Tracheotomy Tube Obstruction (4.4% of patients at your site experienced this adverse event). **For all patients in the collaborative there were 217 Adverse Events and 17.9% of all patients in the collaborative experienced at least one Adverse Event during the hospitalization following a tracheotomy**. The most common types of adverse events for all patients in the collaborative were Accidental Decannulation (5.0% of all patients experienced this adverse event), Excessive Bleeding (4.9% of all patients experienced this adverse event), and Tracheotomy Tube Obstruction (3.4% of all patients experienced this adverse event).

#	Adverse Event	Site E Count	Percent of Site E Subjects with Adverse Event		All Sites Count	Percent of All Subjects with Adverse Event
1	Accidental Decannulation	3	1.2%		60	5.0%
2	Failed Decannulation	3	0.4%		24	2.0%
3	Tracheotomy Tube Obstruction	11	4.4%		42	3.4%
4	One-Way Valve Placed w Cuff Inflated	2	0.8%		3	0.3%
5	Excessive Bleeding	9	2.4%		59	4.9%
6	Tracheoesophageal Fistula	3	0.0%		3	0.3%
7	Tracheocutaneous Fistula	2	0.0%		1	0.1%
8	Other AEs	9	0.4%		25	2.1%
	TOTAL Adverse Events	**42**	**16.5%**		**217**	**18.0%**
	TOTAL SUBJECTS	**250**			**1210**	

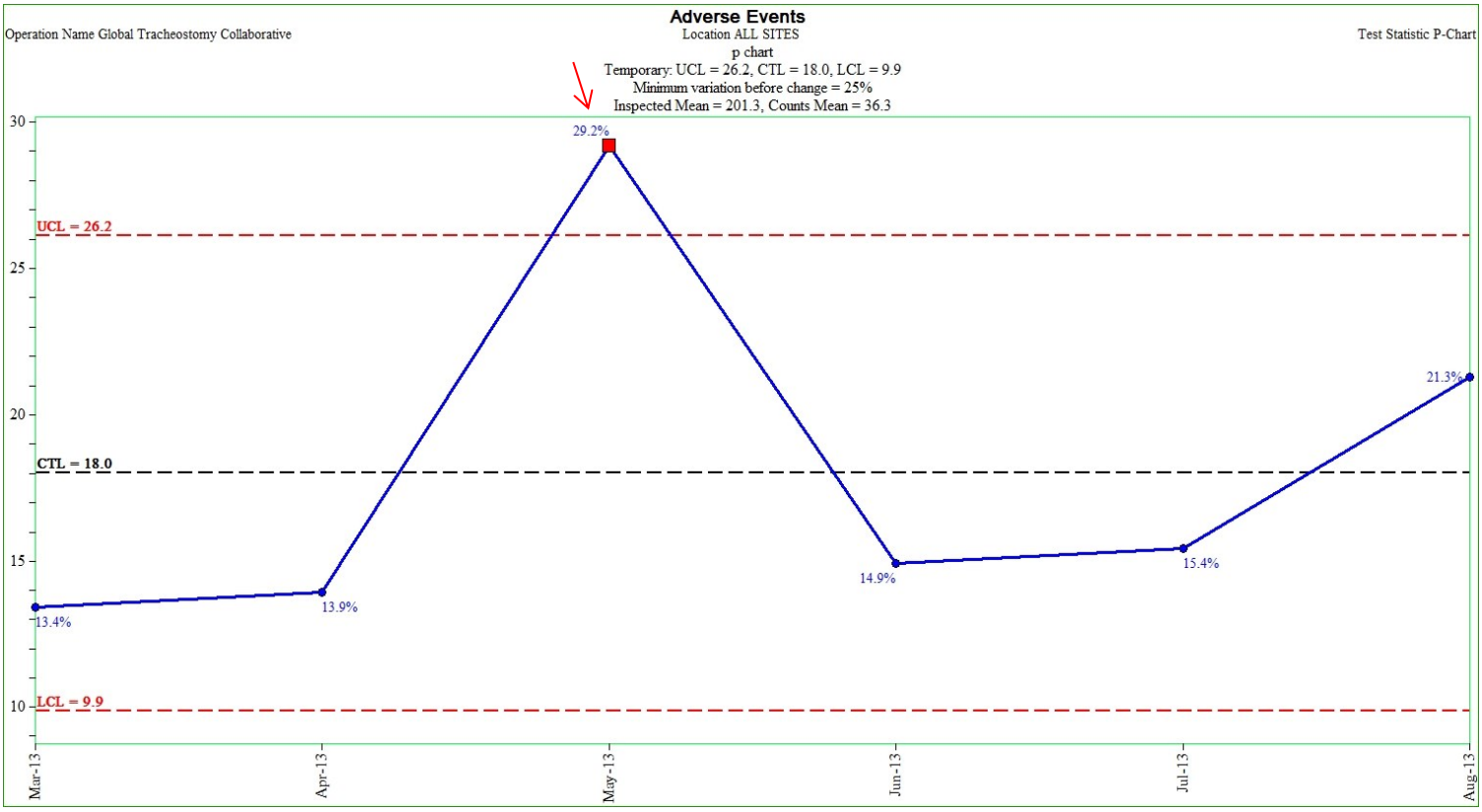
Adverse Events: All Sites

For the entire collaborative the average monthly adverse event rate was 18.0%. There was one month (May-13, 29.2%) where the adverse event rate was above the upper control limit (UCL; defined as 3 σ above the moving average). There were no month were the adverse event rate was below the lower control limit (LCL; defined as 3σ below the moving average).

The lowest monthly-adverse event rate for the time interval was 13.4% (Mar-13). The highest monthly-adverse event rate for the time interval was 29.2% (May-13).

** Control limits are calculated by variances from the average monthly adverse event rate. Adverse events are allocated to month of tracheotomy placement. Statistical significance is a data point outside the control limits or ± 3 σ from the moving average

Adverse Event	Mar-13	Apr-13	May-13	June-13	Jul-13	Aug-13
All Sites	13.4%	13.9%	29.2%	14.9%	15.4%	21.3%
Site E	19.5%	22.0%	16.7%	19.0%	2.4%	19.5%



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

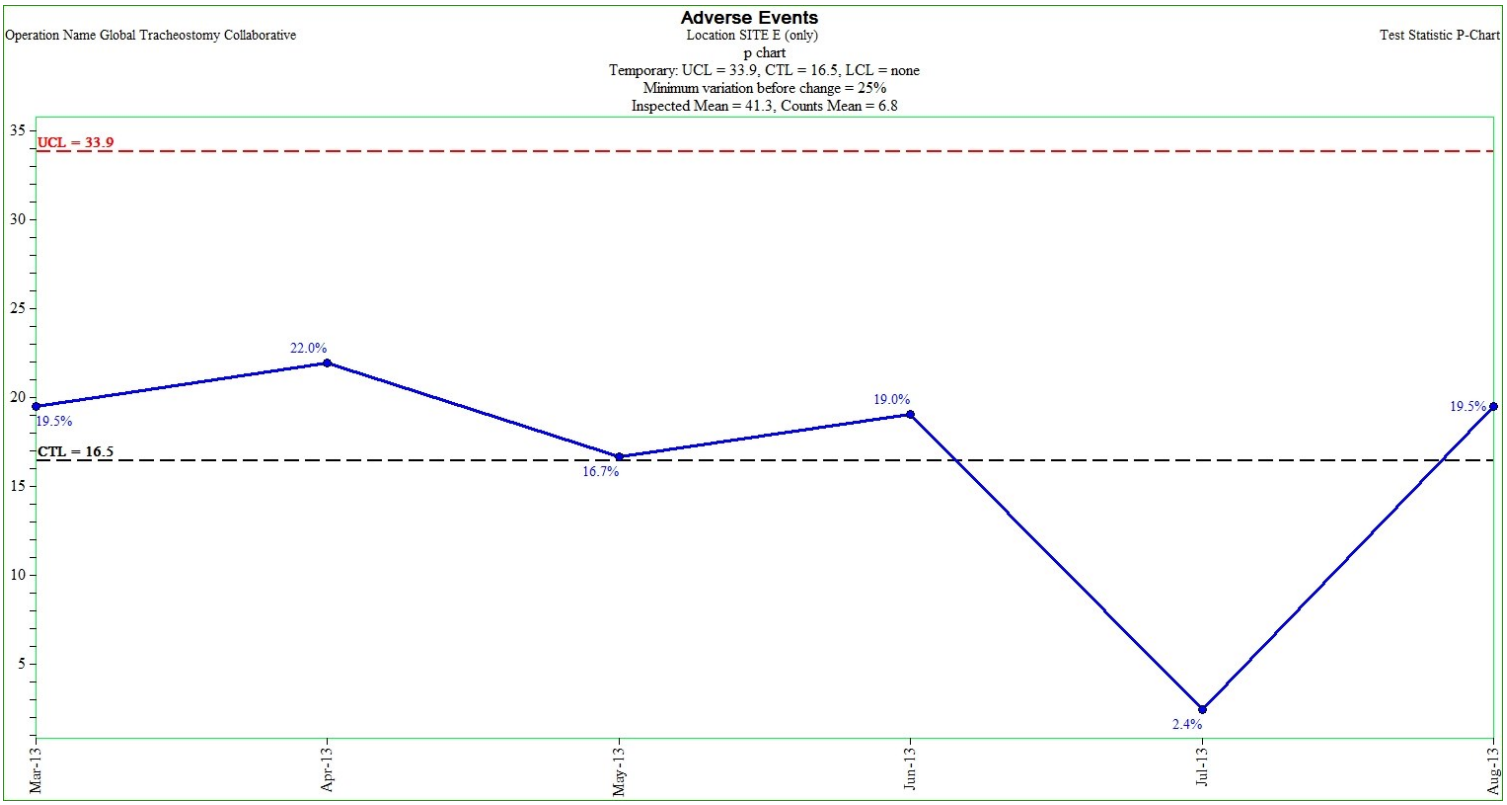
Adverse Events: Site-E Only

For the entire collaborative the average monthly adverse event rate was 16.5%. There were 0 months where the adverse event rate was above the upper control limit (UCL; defined as 3 σ above the moving average). There were 0 month were the adverse event rate was below the lower control limit (LCL; defined as 3σ below the moving average).

For Site E, the highest monthly adverse event rate was 22.0% (Apr-13). The lowest monthly adverse event rate was 2.4% (Jul-13).

** Control limits are calculated by variances from the average monthly adverse event rate. Adverse events are allocated to month of tracheotomy placement. Statistical significance is a data point outside the control limits or ± 3 σ from the moving average

Adverse Event	Mar-13	Apr-13	May-13	June-13	Jul-13	Aug-13
All Sites	13.4%	13.9%	29.2%	14.9%	15.4%	21.3%
Site E	19.5%	22.0%	16.7%	19.0%	2.4%	19.5%



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)
Analysis Variable 7: Survival To Hospital Discharge

Mortality Rate: All Sites

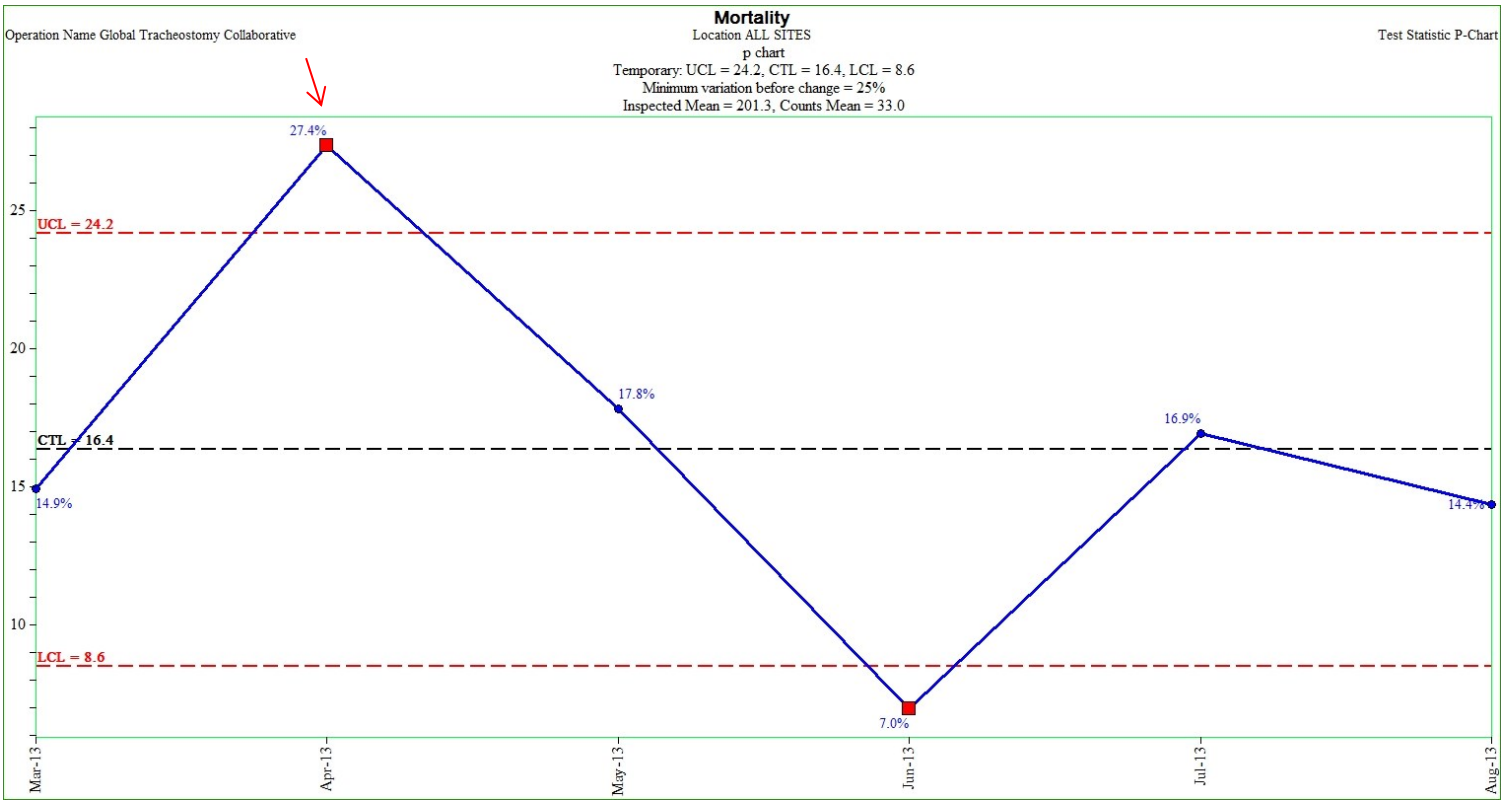
For all patients in the collaborative 83.6% of all GTC patients survived to hospital discharge following tracheotomy. For the entire collaborative there was one month (Apr-13, 27.4%) where the monthly mortality rate was above the upper control limit (UCL; 3 σ above the moving average). For the entire collaborative there was one month (Jul-13, 7.0%) where the mortality rate was below the lower control limit (LCL; 3 σ below the moving average).

For the collaborative, the highest monthly mortality rate was 27.4% (Apr-13). The lowest monthly mortality rate was 7.0% (Jul-13). The highest monthly mortality rate was 27.4% (Apr-13).

* Control limits are calculated by variances from the average monthly mortality rate. Deaths are allocated to month of tracheotomy placement. Statistical significance is a data point outside control limits, ± 3 σ from the moving average.

Survive to Hospital Discharge	Site	
Number , Percentage	**Site E**	**Total**
No	38 15.2%	199 16.4%
Yes	212 84.8%	1,011 83.6%
Total	250	1,210

Mortality Rate	Mar-13	Apr-13	May-13	June-13	Jul-13	Aug-13
All Sites	14.9%	27.4%	17.8%	7.0%	16.9%	14.4%
Site E	19.5%	22.0%	16.7%	19.0%	2.4%	19.5%



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)
Analysis Variable 7: Survival To Hospital Discharge

Mortality Rate: Site E

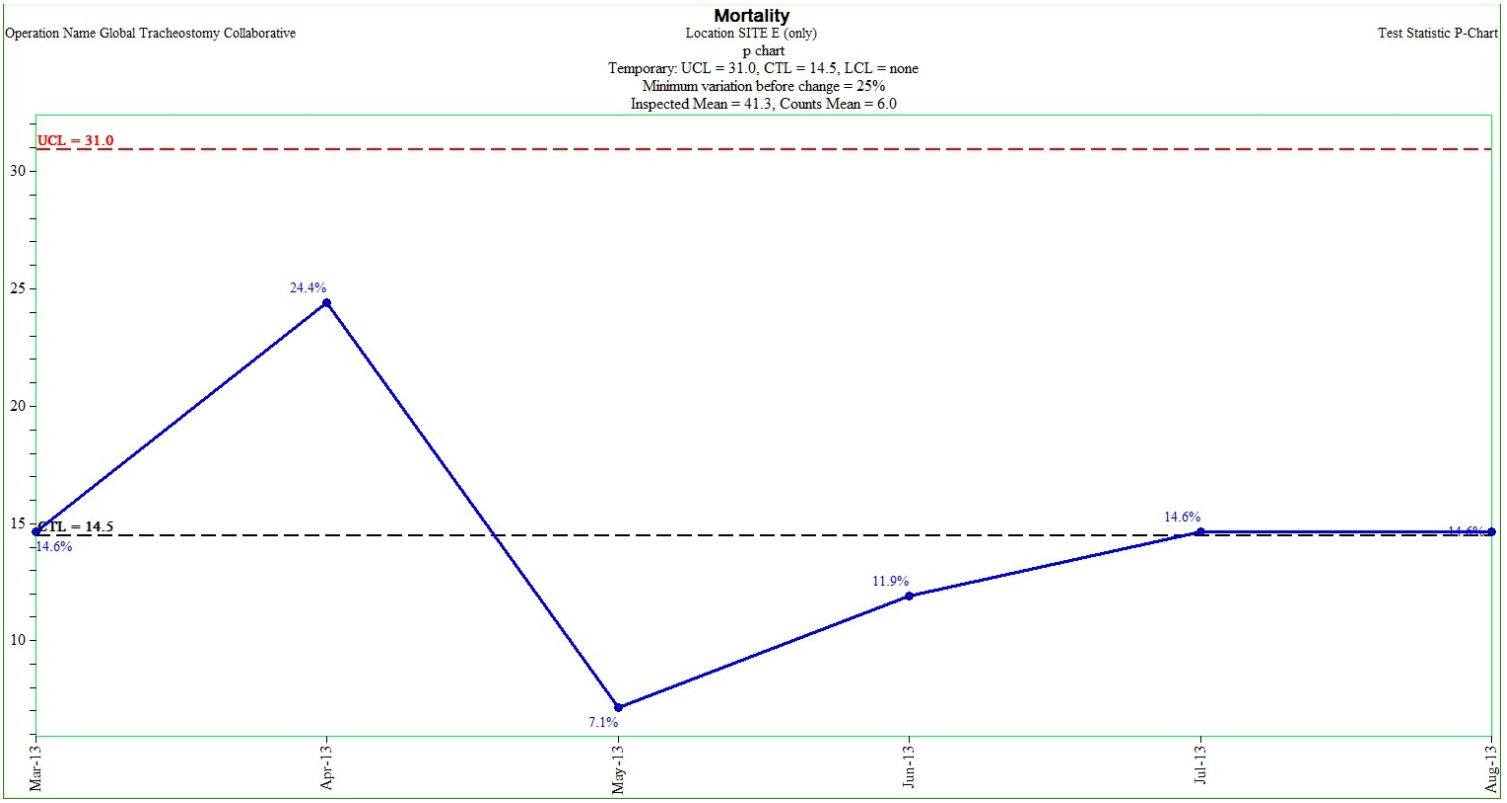
For Site E 84.8% of all GTC patients survived to hospital discharge following tracheotomy. For all patients in the collaborative 83.6% patients survived to hospital discharge following tracheotomy. There were 0 months where the mortality rate was above the upper control limit (UCL; defined as 3 σ above the moving average). There were 0 month were the mortality rate was below the lower control limit (LCL; defined as 3σ below the moving average).

For Site E, the highest monthly mortality rate was 24.4% (Apr-13). The lowest mortality rate was 7.1% (May-13).

* Control limits are calculated by variances from the average monthly mortality rate. Deaths are allocated to month of tracheotomy placement. Statistical significance is a data point outside control limits, ± 3 σ from the moving average.

Survive to Hospital Discharge	Site	
Number , Percentage	**Site E**	**Total**
No	38 15.2%	199 16.4%
Yes	212 84.8%	1,011 83.6%
Total	250	1,210

Mortality Rate	Mar-13	Apr-13	May-13	June-13	Jul-13	Aug-13
All Sites	14.9%	27.4%	17.8%	7.0%	16.9%	14.4%
Site E	14.6%	24.4%	7.1%	11.9%	14.6%	14.6%



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above.

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Variable 8: Tracheostomy Related Death as Related to Total Tracheotomy Time

Summary:
At Site E there were 38 patient deaths prior to hospital discharge following tracheotomy of which 21 deaths (55.5%) were related to tracheostomy tube placement. For all the patients in the collaborative there were 199 total deaths prior to hospital discharge following tracheotomy of which 82 deaths (41.2%) were related to tracheotomy.

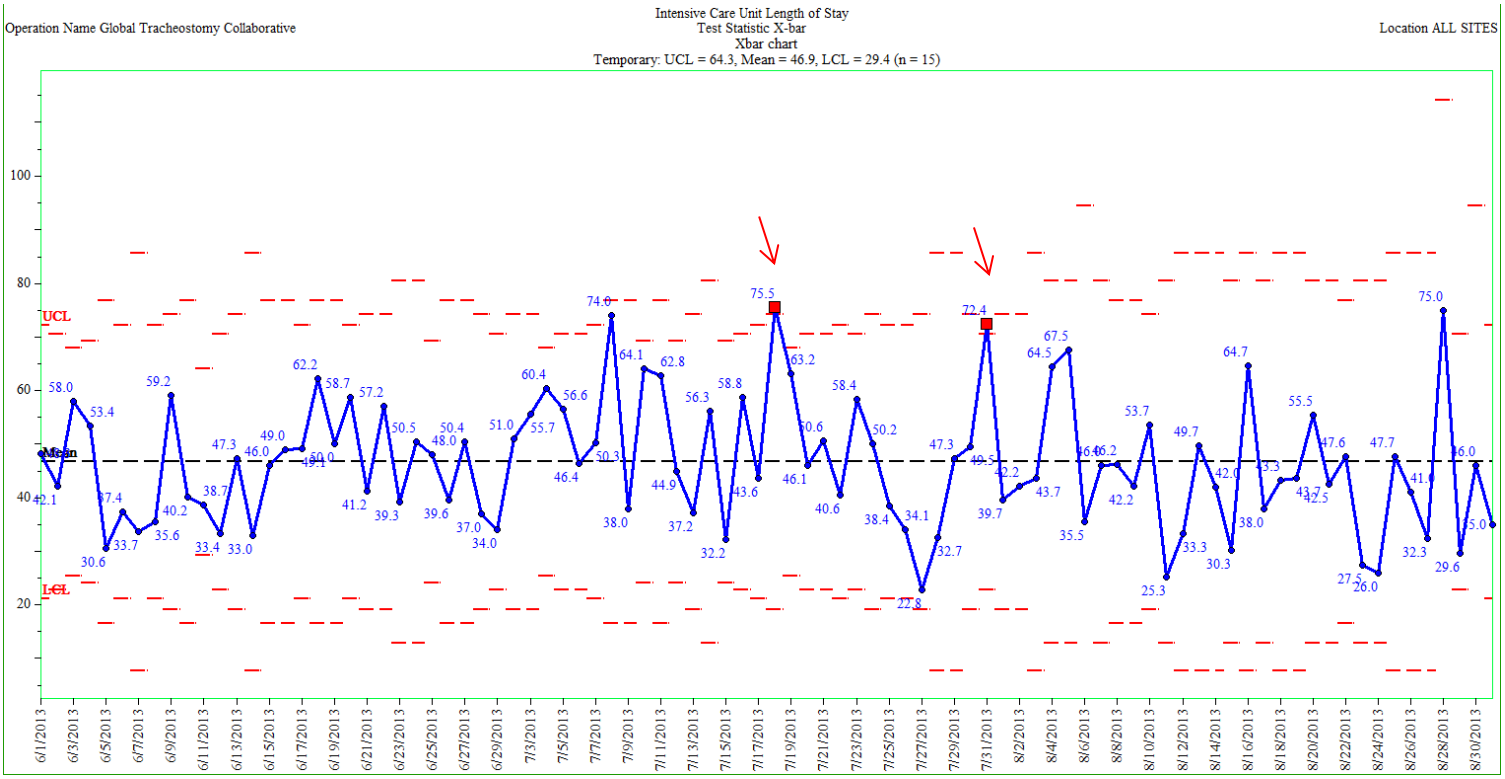
Death Prior to Hospital Discharge			Site E Total TT Days	ALL Sites Total TT Days
Survive to Hospital Discharge	**Death related to TT?**			
No	**No**	**N**	17	117
		Mean	40.7	38.1
		Std	12.7	12.4
		Lower Quartile	33.0	34.5
		Upper Quartile	74.4	70.2
	Yes	**N**	21	82
		Mean	50.1	62.3
		Std	15.2	17.6
		Lower Quartile	23.5	32.8
		Upper Quartile	79.5	84.5
	All	**N**	38	199
		Mean	45.2	49.9
		Std	11.6	12.7
		Lower Quartile	28.81	32.06
		Upper Quartile	75.4	80.2

Intensive Care Unit Length of Stay: All Sites

For all the patients in the collaborative the mean duration of Intensive Care Unit hospitalization was 46.9 days. The chart below shows the average Intensive Care Unit Length of Stay for the entire collaborative over the past 90 days. There were 2 dates where the average intensive care unit length of stay exceeded the upper control limit (7/18/13; 75.7 days), (7/31/13; 72.4 days).

*Control limits are calculated by variances from the average intensive care unit length of stay, per patient, per day. Patients are allocated to date of tracheotomy placement. Statistical significance is a data point outside the control limits or ± 3 σ from the moving average.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	45.2	20.3	14.5	40.0	62.0
All Sites	1210	46.9	25.5	29.4	48.0	64.3



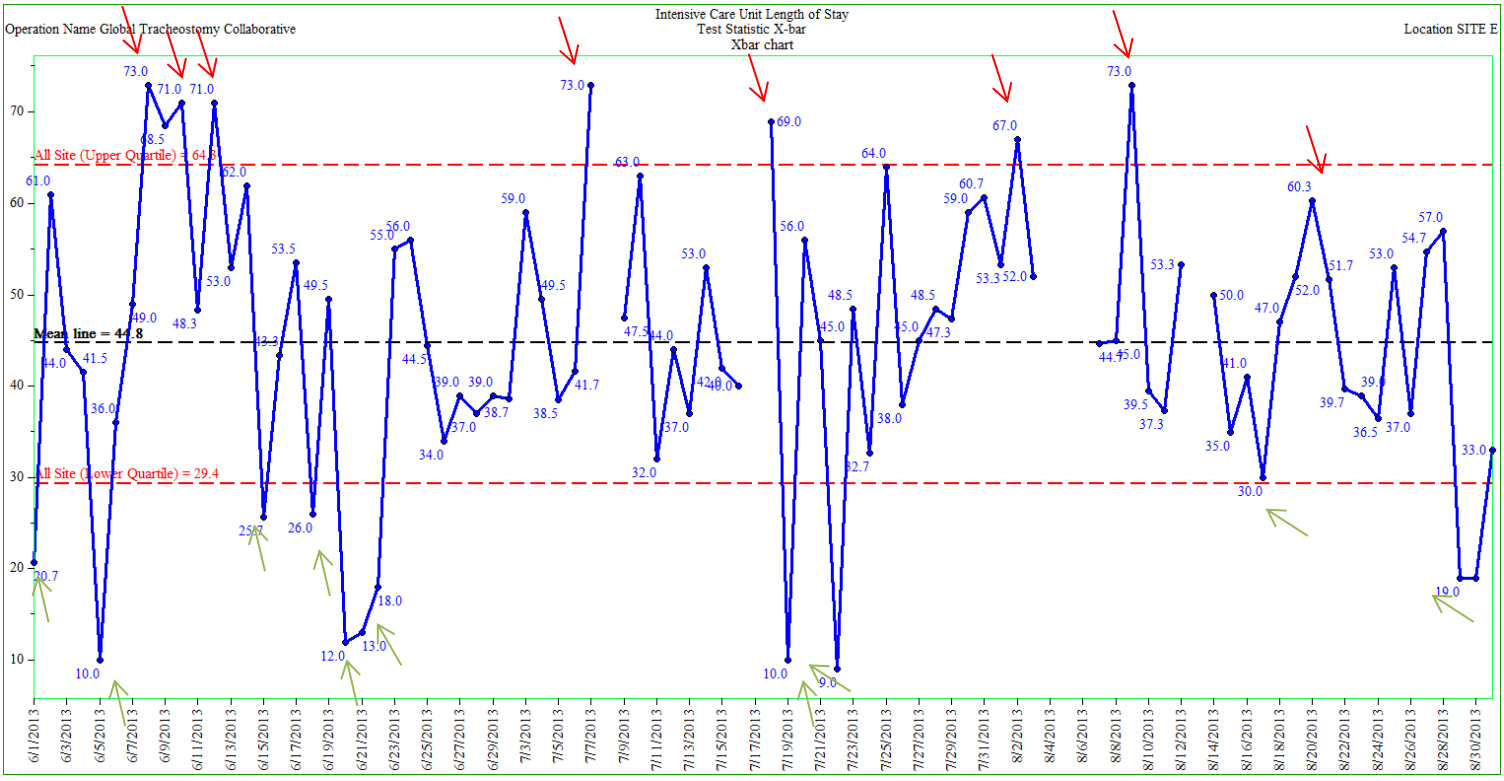
Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Intensive Care Unit Length of Stay: Site E

At Site E the mean duration of Intensive Care Unit hospitalization was 45.2 days. For all the patients in the collaborative the mean duration of Intensive Care Unit hospitalization was 46.9 days. The chart below shows the average Intensive Care Unit Length of Stay for the entire collaborative over the past 90 days. **There were 8 dates (9.0%) where the average intensive care unit length of stay was above the upper control limit of the entire collaborative. There were 11 dates (12.2%) where the average intensive care unit length of stay was above the upper control limit of the entire collaborative.**

*These control limits are extrapolated from the collaborative-wide sample. These should be interpreted as approximations as they have not been case-mix adjusted nor statistically matched to your population.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	45.2	20.3	14.5	40.0	62.0
All Sites	1210	46.9	25.5	25.0	48.0	75.0



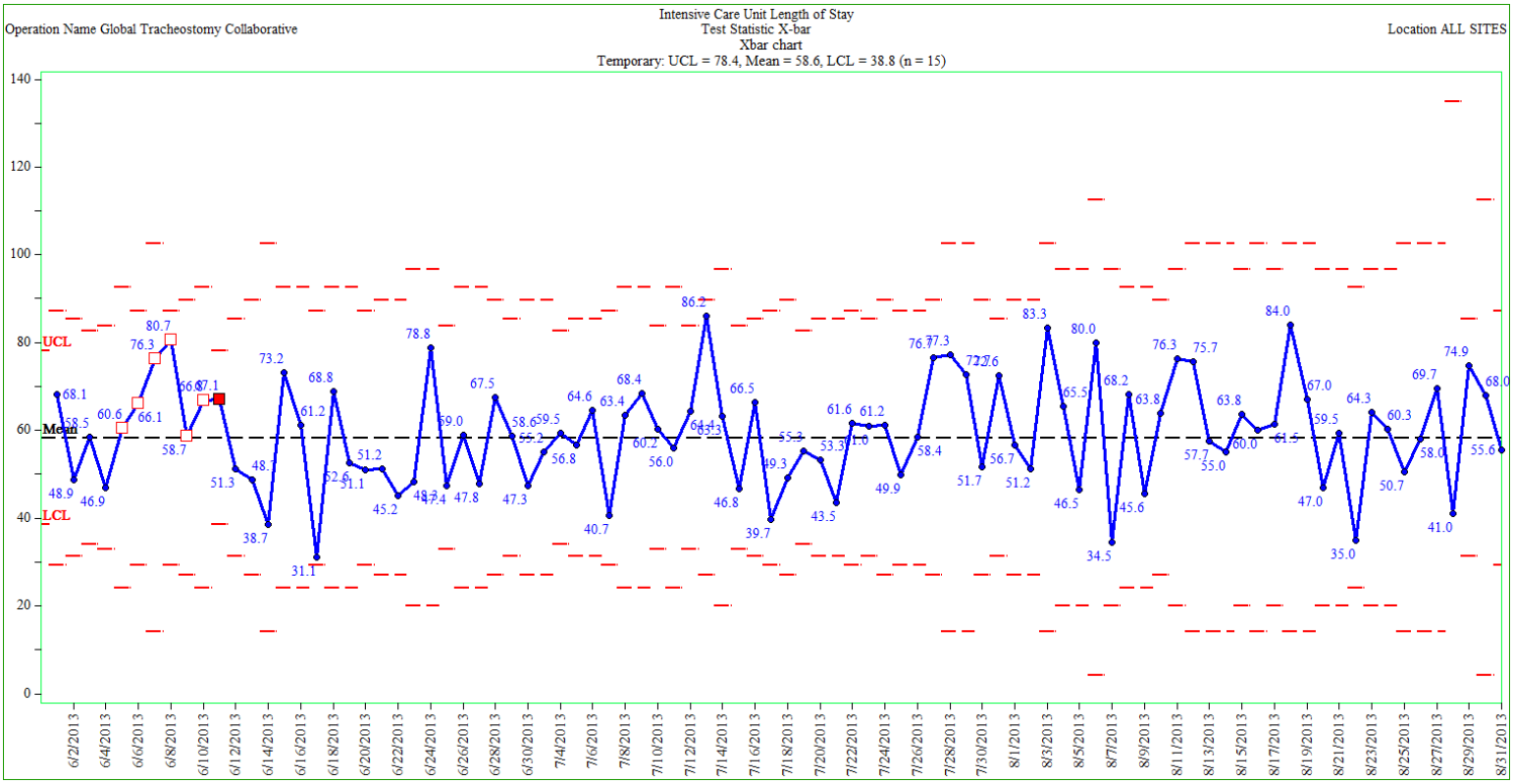
Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Total Hospital Length of Stay: All Sites

For all the patients in the collaborative the mean duration of hospitalization was 58.6 days. The chart below shows the average Hospital Length of Stay for the entire collaborative over the past 90 days. There were 0 dates where the average intensive care unit length of stay for all patients exceeded the upper control limit.

*Control limits are calculated by variances from the average total hospital length of stay, per patient, per day. Patients are allocated to date of tracheotomy placement are allocated to month of tracheotomy placement. Statistical significance is a data point outside the control limits or ± 3 σ from the moving average.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	57.1	29.1	35.0	55.0	80.0
All Sites	1210	58.6	26.4	38.8	60.0	78.4



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

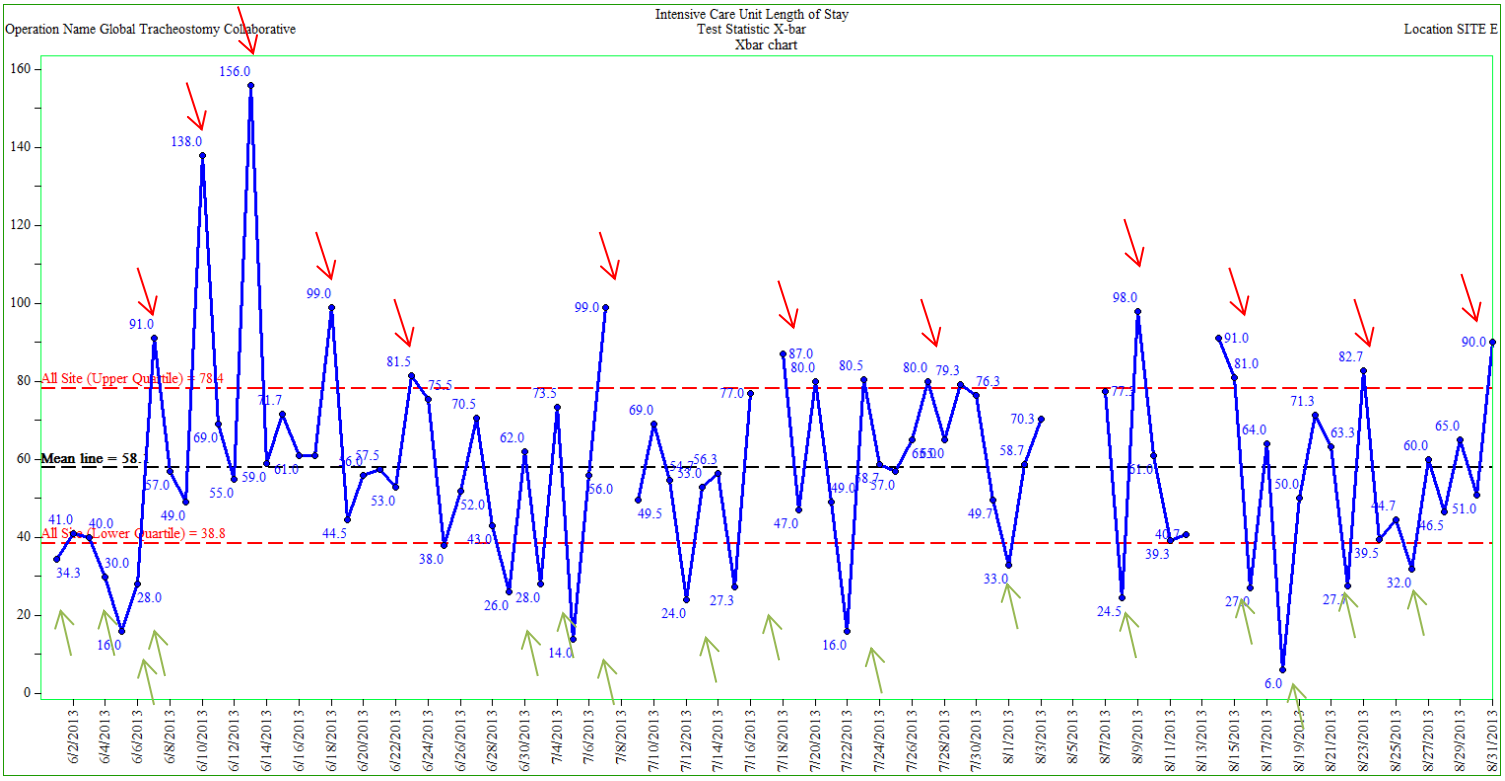
Analysis Metric 9: Total Hospital Length of Stay

Total Hospital Length of Stay: Site E

At Site E the mean hospital duration was 57.1 days. For all the patients in the collaborative the mean duration of hospitalization was 58.6 days. The chart below shows the average Hospital Length of Stay for Site E over the past 90 days. **There were 16 (17.7%) dates where the average intensive care unit length of stay for all patients exceeded the upper control limit. There were 15 (17%) dates where the average intensive care unit length of stay for all patients was below the lower control limit.**

*These control limits are extrapolated from the collaborative-wide sample. These should be interpreted as approximations as they have not been case-mix adjusted nor statistically matched to your population.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	57.1	29.1	35.0	55.0	80.0
All Sites	1,210	58.6	26.4	37.0	60.0	81.5



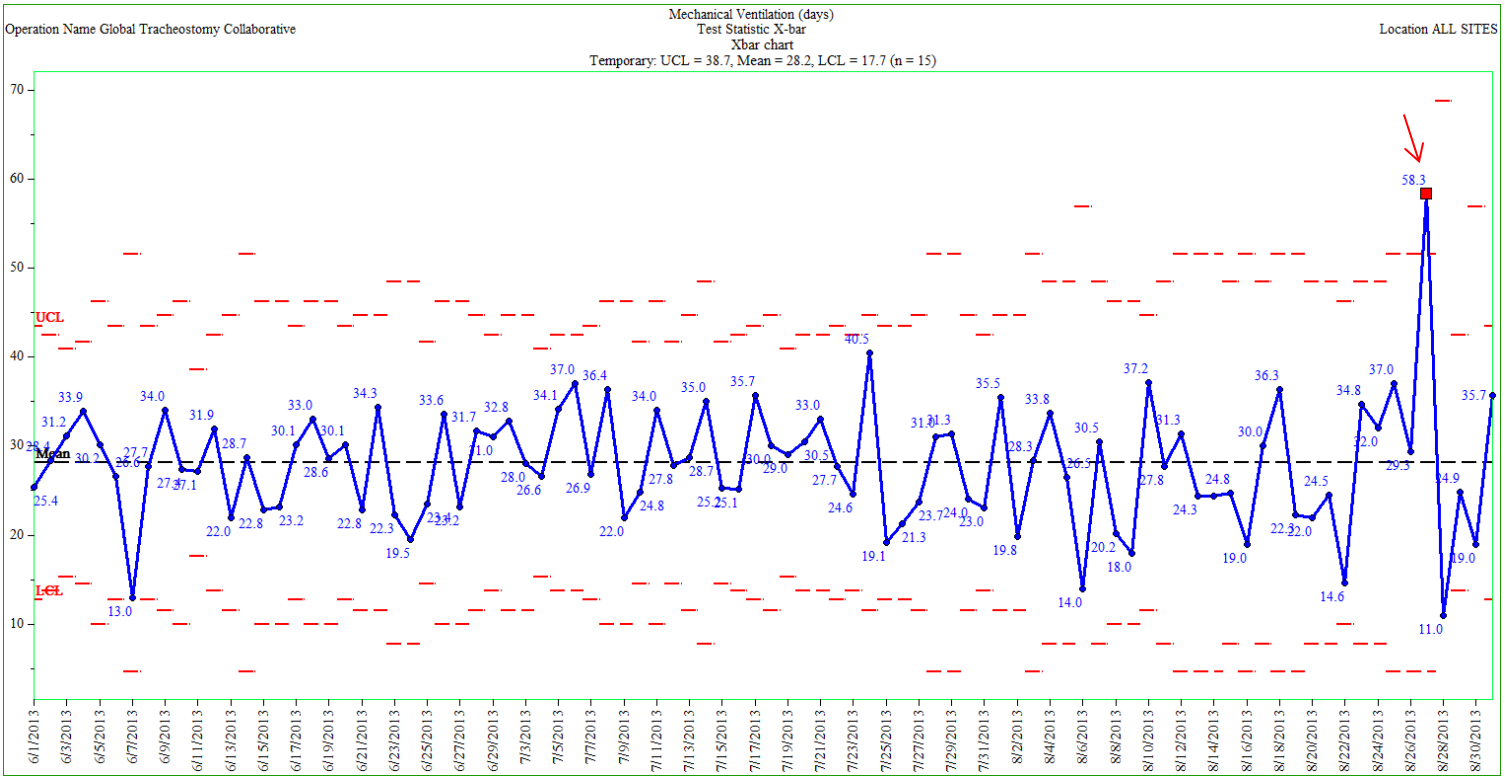
Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Duration of Mechanical Ventilation: All Sites

For all the patients in the collaborative the average duration of mechanical ventilation was 28.2 days. The chart below shows the average Duration of Mechanical Ventilation for the entire collaborative over the past 90 days. There was 1 date where the average duration of mechanical ventilation for all patients exceeded the upper control limit. There were 0 dates where the average duration of mechanical ventilation for all patients was below the lower control limit.

*Control limits are calculated by variances from the average ventilation duration, per patient, per day. Patients are allocated to date of tracheotomy placement. Statistical significance is a data point outside the control limits or ± 3 σ from the moving average.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	25.6	11.6	14	27	35
All Sites	1210	28.2	13.9	17.0	28.0	39



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

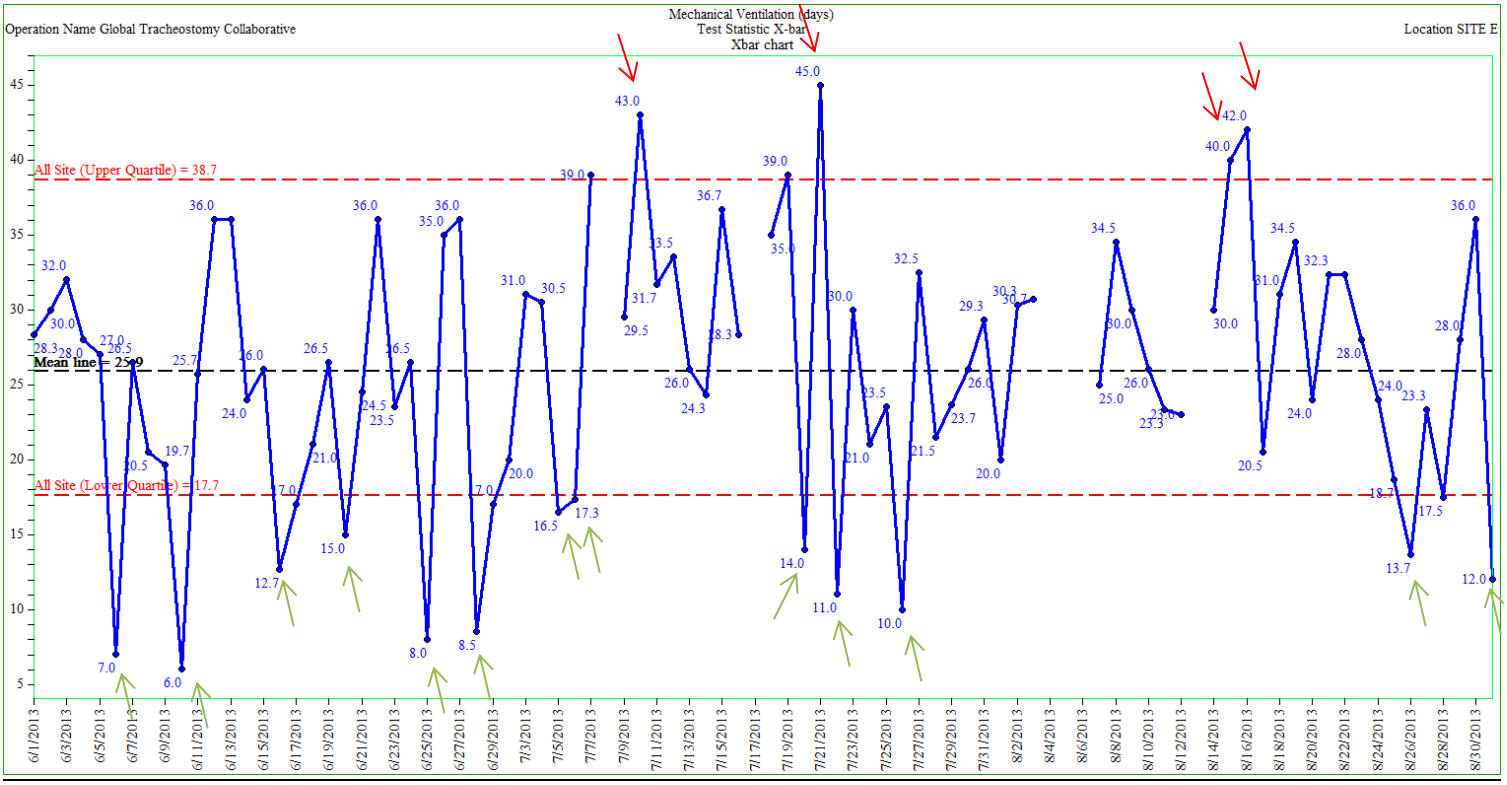
Analysis Metric 10: Duration of Mechanical Ventilation

Duration of Mechanical Ventilation: Site E

At Site E the average duration of mechanical ventilation was 25.6 days. For all the patients in the collaborative the average duration of hospitalization was 28.2 days. The chart below shows the average Duration of Mechanical Ventilation for Site E over the past 90 days. **There were 4 dates (4.4%) where the average duration of mechanical ventilation for all patients exceeded the upper control limit. There were 13 dates (14.4%) where the average duration of mechanical ventilation for all patients was below the lower control limit.**

*These control limits are extrapolated from the collaborative-wide sample. These should be interpreted as approximations as they have not been case-mix adjusted nor statistically matched to your site's population.

Site	N	Mean	Std Dev	Lower Quartile	Median	Upper Quartile
Site E	250	25.6	11.6	14	27	35
All Sites	1210	28.2	13.9	17.0	28.0	39



Ref: "UCL" represents the upper control limit, "CTL" represents the mean, and "LCL" represents the lower control limit. LCL is < 0 is not reported in the graph above

Global Tracheostomy Collaborative: Quality Report (3/1/13-8/31/13)

Analysis Metric 11: Disposition Following Discharge

Summary:

At your site the most common disposition following discharge from the hospital was **Rehabilitation Hospital (36.3%) and Acute Care Hospital (31.1%).** For of all patients in the collaborative the leading disposition following discharge was Long Term Care Facility (25.8%) and Skilled Nursing Facility (18.9%). The "disposition" represents the place to where the patient was sent following discharge from the hospitalization during which the tracheotomy was performed.

Disposition	Site	
Number Percentage	Site E	Total
Acute Care Hospital	66 31.1%	181 17.9%
Home with home nursing	20 9.4%	123 12.2%
Home without home nursing	16 7.5%	126 12.4%
Long Term care facility	8 3.8%	261 25.8%
Rehabilitation hospital	77 36.3%	110 10.8%
Skilled nursing facility	11 5.2%	191 18.9%
Other	14 6.6%	19 1.9%
Total	212	1,011

APPENDIX


THE GLOBAL
TRACHEOSTOMY
COLLABORATIVE
BETTER CARE EVERYWHERE

Appendix 1: Adverse Events Outliers (Patient Listing)

At your site there were 42 Adverse Events and 16.5% of patients experienced at least one Adverse Event. Below are the GTC record numbers for the patients who experienced an adverse event.

Obs	Site ID	Date of TT Placement	Patient ID	Adverse Event Code	Adverse Event?
1	E	3/17/2013	E0001	1	Yes
2	E	3/20/2013	E0006	6	Yes
3	E	3/21/2013	E0007	9	Yes
4	E	3/23/2013	E0011	3	Yes
5	E	3/24/2013	E0014	4	Yes
6	E	3/24/2013	E0015	1	Yes
7	E	3/25/2013	E0016	2	Yes
8	E	3/26/2013	E0018	5	Yes
9	E	3/29/2013	E0017	6	Yes
10	E	4/2/2013	E0020	3	Yes
11	E	4/8/2013	E0021	5	Yes
12	E	4/13/2013	E0022	1	Yes
13	E	4/14/2013	E0028	7	Yes
14	E	4/16/2013	E0029	3	Yes
15	E	4/22/2013	E0031	4	Yes
16	E	5/11/2013	E0040	9	Yes
17	E	5/12/2013	E0041	2	Yes
18	E	5/25/2013	E0051	5	Yes
19	E	5/26/2013	E0052	3	Yes
20	E	6/1/2013	E0053	5	Yes
21	E	6/2/2013	E0056	3	Yes
22	E	6/4/2013	E0058	6	Yes
23	E	6/6/2013	E0059	5	Yes
24	E	6/17/2013	E0064	3	Yes
25	E	6/18/2013	E0065	9	Yes
26	E	6/23/2013	E0072	5	Yes
27	E	6/23/2013	E0073	3	Yes
28	E	7/7/2013	E0074	9	Yes
29	E	7/10/2013	E0078	9	Yes
30	E	7/16/2013	E0081	3	Yes
31	E	7/17/2013	E0082	9	Yes
32	E	7/18/2013	E0093	3	Yes
33	E	7/21/2013	E0095	5	Yes
34	E	7/25/2013	E0096	9	Yes
35	E	7/26/2013	E0101	3	Yes
36	E	8/4/2013	E0111	5	Yes
37	E	8/4/2013	E0113	7	Yes
38	E	8/5/2013	E0114	3	Yes
39	E	8/9/2013	E0122	9	Yes
40	E	8/14/2013	E0123	5	Yes
41	E	8/16/2013	E0123	9	Yes
42	E	8/18/2013	E0123	9	Yes

Legend:

#	Adverse Event
1	Accidental Decannulation
2	Failed Decannulation
3	Tracheotomy Tube Obstruction
4	One-Way Valve Placed w Cuff Inflated
5	Excessive Bleeding
6	Tracheoesophageal Fistula
7	Tracheocutaneous Fistula
8	Other AEs

Appendix 2: Mortality Rate Outliers (Patient Listings)

At your site there were 38 patients who did not survive to hospital discharge. Below are the GTC record numbers for the patients who experienced an adverse event.

Obs	Site ID	Date of TT Placement	Patient ID	Death	Death Related to TT
1	E	3/17/2013	E0001	Yes	Yes
2	E	3/20/2013	E0006	Yes	Yes
3	E	3/21/2013	E0007	Yes	Yes
4	E	3/23/2013	E0011	Yes	Yes
5	E	3/24/2013	E0015	Yes	No
6	E	3/25/2013	E0016	Yes	Yes
7	E	3/26/2013	E0018	Yes	No
8	E	3/29/2013	E0017	Yes	Yes
9	E	4/2/2013	E0020	Yes	No
10	E	4/8/2013	E0021	Yes	No
11	E	4/13/2013	E0022	Yes	Yes
12	E	4/14/2013	E0028	Yes	No
13	E	4/22/2013	E0031	Yes	Yes
14	E	5/11/2013	E0040	Yes	No
15	E	5/12/2013	E0041	Yes	No
16	E	5/25/2013	E0051	Yes	Yes
17	E	5/26/2013	E0052	Yes	Yes
18	E	6/1/2013	E0053	Yes	No
19	E	6/2/2013	E0056	Yes	Yes
20	E	6/4/2013	E0058	Yes	No
21	E	6/6/2013	E0059	Yes	Yes
22	E	6/18/2013	E0065	Yes	Yes
23	E	6/23/2013	E0072	Yes	No
24	E	6/23/2013	E0073	Yes	No
25	E	7/7/2013	E0074	Yes	Yes
26	E	7/10/2013	E0078	Yes	Yes
27	E	7/16/2013	E0081	Yes	No
28	E	7/17/2013	E0082	Yes	Yes
29	E	7/18/2013	E0093	Yes	No
30	E	7/21/2013	E0095	Yes	Yes
31	E	7/25/2013	E0096	Yes	Yes
32	E	7/26/2013	E0101	Yes	No
33	E	8/4/2013	E0111	Yes	Yes
34	E	8/4/2013	E0113	Yes	No
35	E	8/5/2013	E0114	Yes	Yes
36	E	8/9/2013	E0122	Yes	No
37	E	8/14/2013	E0123	Yes	Yes
38	E	8/16/2013	E0123	Yes	No

Appendix 3: ICU Length of Stay Outliers (Patient Listing)

At your site were 8 patients whose ICU length of stay was above the upper control limit of the entire collaborative. There were 11 patients whose average ICU length of stay was below the lower control limit of the entire collaborative. The control limits are calculated from the most recent data submitted by all collaborative members and is not directly correlated to your sample but a representative guide of the statistical variance from the mean.

A. ICU Length of Stay Above Upper Control Limit

Obs	Site ID	Date of TT Placement	Patient ID	ICU LOS (days)	Upper Limit (days)
1	E	3/17/2013	E0001	65	64.3
2	E	4/2/2013	E0015	68	64.3
3	E	4/22/2013	E0075	82	64.3
4	E	6/2/2013	E0087	95	64.3
5	E	6/4/2013	E0103	75	64.3
6	E	7/10/2013	E0114	102	64.3
7	E	7/25/2013	E0117	157	64.3
8	E	8/14/2013	E0145	100	64.3

B. ICU Length of Stay Below Lower Control Limit

Obs	Site ID	Date of TT Placement	Patient ID	ICU LOS (days)	Lower Limit (days)
1	E	3/17/2013	E0006	23	29.4
2	E	3/20/2013	E0017	21	29.4
3	E	4/13/2013	E0049	18	29.4
4	E	5/25/2013	E0057	25	29.4
5	E	6/18/2013	E0056	13	29.4
6	E	7/7/2013	E0067	15	29.4
7	E	7/17/2013	E0068	28	29.4
8	E	7/25/2013	E0078	15	29.4
9	E	8/5/2013	E0083	26	29.4
10	E	8/14/2013	E0097	21	29.4
11	E	8/16/2013	E0121	19	29.4

Appendix 4: Hospital Length of Stay (Outliers)

At your site were 16 patients whose hospital length of stay was above the upper control limit of the entire collaborative. There were 11 patients whose average hospital length of stay was below the lower control limit of the entire collaborative. The control limits are calculated from the most recent data submitted by all collaborative members and is not directly correlated to your sample but a representative guide of the statistical variance from the mean.

A. ICU Length of Stay Above Upper Control Limit

Obs	Site ID	Date of TT Placement	Patient ID	LOS (days)	Upper Limit (days)
1	E	3/8/2013	E0001	82	78.4
2	E	3/10/2013	E0006	89	78.4
3	E	3/12/2013	E0017	120	78.4
4	E	3/20/2013	E0049	89	78.4
5	E	4/9/2013	E0057	86	78.4
6	E	4/15/2013	E0093	90	78.4
7	E	5/6/2013	E0098	95	78.4
8	E	5/10/2013	E0101	102	78.4
9	E	5/30/2013	E102	94	78.4
10	E	6/24/2013	E105	86	78.4
11	E	7/2/2013	E107	81	78.4
12	E	7/7/2013	E110	93	78.4
13	E	7/20/2013	E111	102	78.4
14	E	8/1/2013	E0114	105	78.4
15	E	8/9/2013	E0117	177	78.4
16	E	8/11/2013	E0145	122	78.4

B. ICU Length of Stay Below Lower Control Limit

Obs	Site ID	Date of TT Placement	Patient ID	LOS (days)	Lower Limit (days)
1	E	3/17/2013	E0006	33	38.8
2	E	3/20/2013	E0017	32	38.8
3	E	4/13/2013	E0049	28	38.8
4	E	5/25/2013	E0057	35	38.8
5	E	6/18/2013	E0056	23	38.8
6	E	7/7/2013	E0067	19	38.8
7	E	7/17/2013	E0068	37	38.8
8	E	7/25/2013	E0078	25	38.8
9	E	8/5/2013	E0083	36	38.8
10	E	8/14/2013	E0097	32	38.8
11	E	8/16/2013	E0121	26	38.8