



RTs Lead the Way in Decreasing the Length of Stay for Patients Discharged from the ED with Asthma

Mary Hart, BS, RRT, AE-C





Wheezing Room Only: Decreasing the Length of Stay in the Emergency Department for Patients Discharged With Asthma

Mary Hart, BS,RRT, RCP, AE-C



AIM Statement

Specific, Measurable, Actionable, Agreed Upon, Realistic, Time Bound

By June 2009, the Baylor University Medical Center Emergency Department (ED) will decrease the length of stay (LOS) for adult patients discharged from the ED with the diagnosis of asthma from an average of 278 minutes to 180 minutes by implementing and training staff on the national asthma education prevention program emergency guidelines.



Multidisciplinary Team Members

Team Leader : Mary Hart, BS, RRT, AE-C – Baylor Martha Foster Lung Care Center Manager

Executive Sponsor: Don Scarbrough

Facilitator: Johanna Bennoch, BHCS Quality Process Improvement Consultant

Jim d’Etienne, MD, BUMC Emergency Department

Eric Daniel, MD, BUMC Emergency Department

Mark Millard, MD – Baylor Martha Foster Lung Care Center

Vannie Johnson, RRT- Pulmonary Services – ED Days

Adelynn Gomes, RRT – Pulmonary Services- ED Nights

Teresa Mayes, RCP – Pulmonary Services - ICU Supervisor

Benny Bollin, RN – BUMC ED Director

Marta Tingdale, RN, RRT – Manager, Pulmonary Services



RT - RN - MD Brainstorming Session

RT called away from asthma
Patient to perform EKG

Urgent Resp. Assess
Algorithm
not used consistently

Handoff not
effective

No Asthma Protocol

Drs ordering
numerous
Tx's before
Assessing
pt

MD and PA not
In agreement
On orders

Decision to admit
Or discharge by MD
Not made in
Timely manner or
According to guidelines

FEV1 not
Performed as
Part of
assessment

Too many
Unnecessary treatments

No access to MDI in ED
For training patient

Discharge instructions / patient
Training not performed
Properly/effective

Therapist not allowed
to prioritize

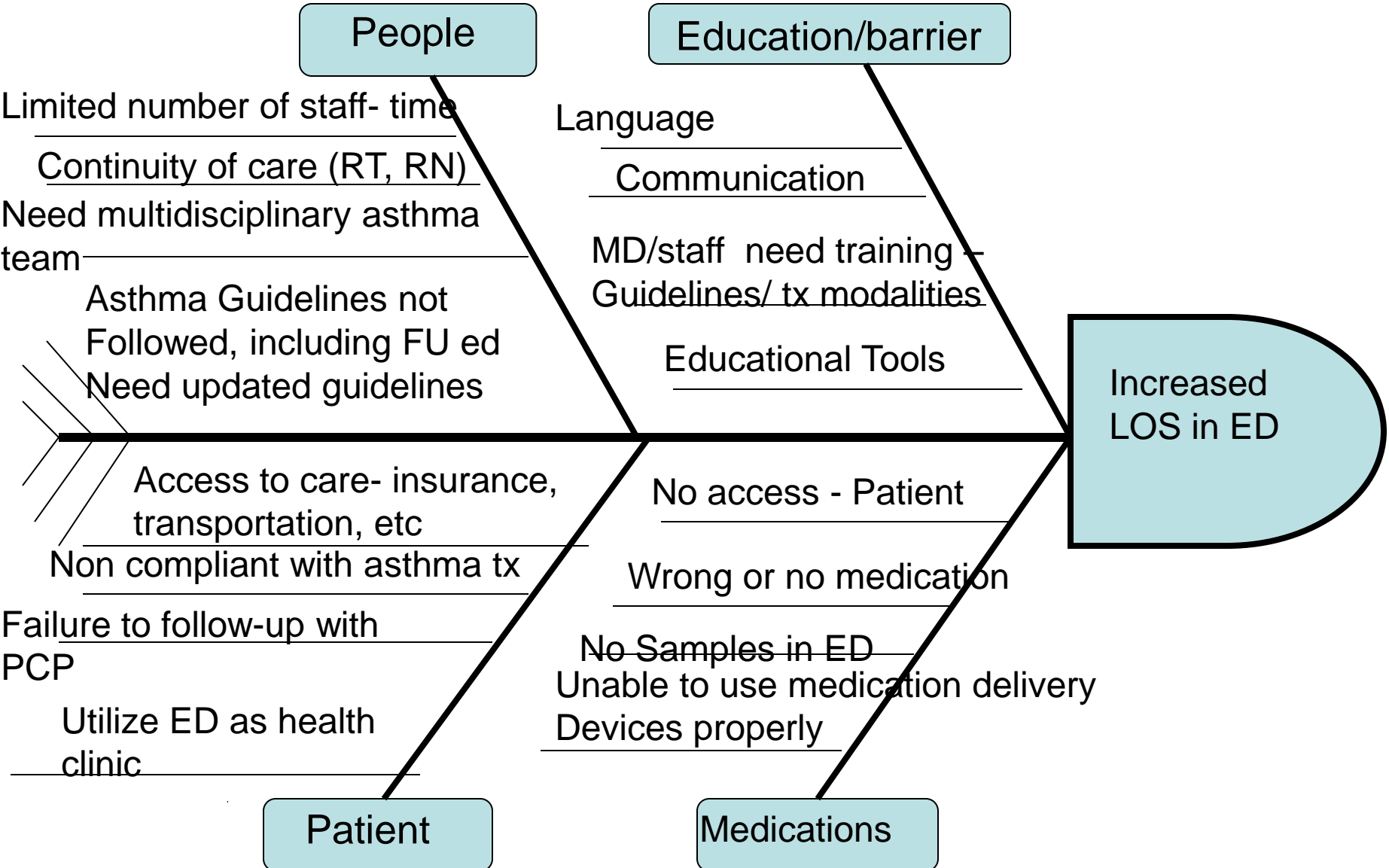
RTs should be providing
Discharge instructions/training
MDI, etc

Staff needs education
On asthma
Protocol/
guidelines

MD not following
Asthma guidelines to
Treat pt in Ed



Cause & Effect Diagram (Fishbone)





Affinity Diagram

People

Develop Asthma Protocol

Train all Staff To use protocol

What and How to document

Improve Pt Discharge Plan

Communication

Allow RT to “drive”
Treat/assess/DC
Asthma Pt.

Time to Decide - MD

EKGs to be performed
by all ED team members

Team Communication

Patient

Understanding of
Asthma Medications

Refer to clinic for
Follow-up care

Supplies/Tools

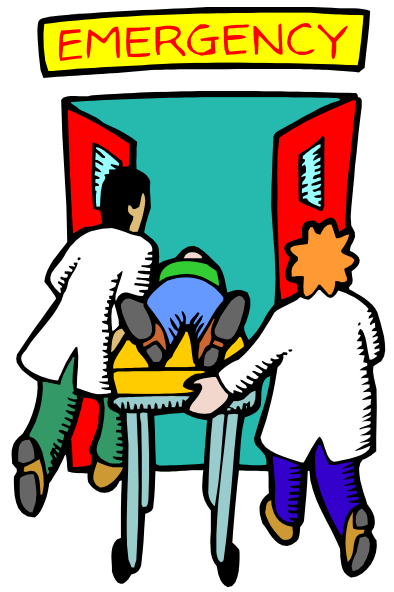
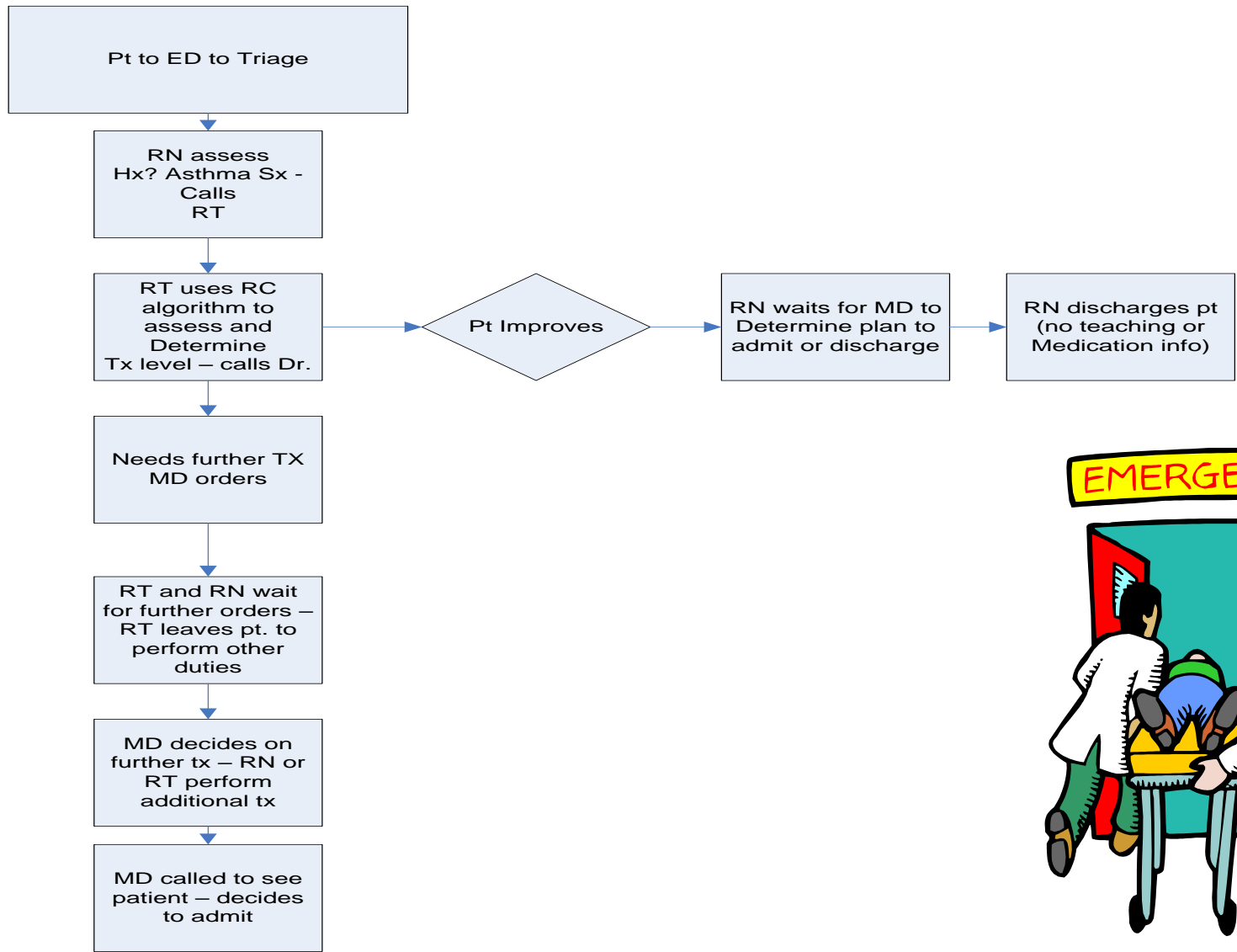
Stock BAN Nebs
For Asthma Pts

Each RT to have
FEV1 meter

Demo MDI for
Pt. training



ED Asthma Flow Chart





How does the problem of increased LOS for patients discharged from the ED with a diagnosis of Asthma fit into STEEP?

	Implications
Safe	Patients not provided assessment/treatment according to national asthma guidelines
Timely	Disorganized care, lack of communication
Effective	Potential for increased mortality
Efficient	Increased cost: Increased LOS, admissions, staff, supplies
Equitable	No established asthma treatment guidelines /plan of care based on severity of patient's asthma
Patient Centered	Patient and family not satisfied with care and outcome



**Baylor University Medical Center
Dallas, Texas
ED Asthma Treatment Protocol
Patients 12 Years Old or Older**

Initial Assessment:
History and Physical Examination:
Level of consciousness, auscultation, use of accessory muscles, color, heart rate, respiratory rate, SpO2, last exacerbation
PEF or FEV1 as soon as possible

PEF or FEV1 \geq 40% (Mild to Moderate)
-Oxygen to maintain SpO2 > 90%
-2.5 mg Albuterol solution (0.83%)
in BAN neb to sputter every 20 minutes for 3 doses in first hour

PEF or FEV1 < 40% (Severe)
-Oxygen to maintain SpO2 > 90%
-High Dose (5mg) Albuterol Solution + 0.5mg Ipratropium unit dose in BAN to sputter every 20 minutes for 3 doses in first hour or consider running the BAN on continuous at 10 -15 mg of albuterol for 1 hour
-If no immediate response, oral prednisone 60 mg (RN to order)
-Notify physician if condition worsens

Impending or true Respiratory Arrest
-Notify Physician & Nurse Immediately
-Resuscitate with ACLS Guidelines
-Continuous Albuterol Nebulizer
-Consider adjunct therapies

Likely ICU Admission, Treat per Physician Order

Repeat Assessment
-About 15 minutes post last tx or 1 hour post arrival
-Symptoms, physical examination, REPEAT PEF or EFV1, SpO2
-Communicate findings to team - **"Time To Decide" Admit or Discharge**

Good Response
-PEF or FEV1 \geq 70%
-Response sustained 1 hour after last therapy
-No distress & normal physical exam

Incomplete Response
-PEF or FEV1 \geq 40% but < 70%
-Mild to moderate symptoms remain

Poor Response
-FEF or FEV1 < 40%
-PcO2 \geq 44 mmhg
-Severe persistent symptoms, confused or drowsy

Report Condition
Discuss with Physician & Nurse,
Discuss and develop plan of care
"Time to Decide" -Discharge

Repeat tx with 2.5mg albuterol solution in BAN neb to sputter every 20 minutes for 3 doses or continuous tx

Report Condition to Physician & Nurse
-Discuss and develop Plan of care
"Time to Decide" - ADMIT

Reassess after treatment
Symptoms, REPEAT FEV1 or FEF, SpO2
-Report Condition to Physician and Nurse and discuss and develop plan of care
"Time to Decide" if no change Admit



**Baylor University Medical Center
Dallas, Texas
ED Asthma Treatment Protocol
Patients 12 Years Old or Older Page 2**

Plan of Care:
-If being admitted, discuss treatment plan with team and communicate with patient / family
-If discharge, complete patient education process:
 - review medication device use
 - review peak flow meter
- initiate and review action plan (Physician Signature Required)

Please Note:
-If at any time the patient's condition deteriorates, notify the physician and nurse
-If the patient has adverse reaction to the 2.5 mg Albuterol, discuss with physician

Abbreviation Key:

FEV1 = forced vital capacity in 1 second	EtCO2 = end-tidal carbon dioxide	tx = treatment
BAN = breath actuated nebulizer	mg = milligram	SpO2 = oxygen saturation
PEF = peak expiratory flow rate	Neb = nebulizer	ED = emergency department
ACLS = advanced cardiac life support	mmhg = millimeters of mercury	



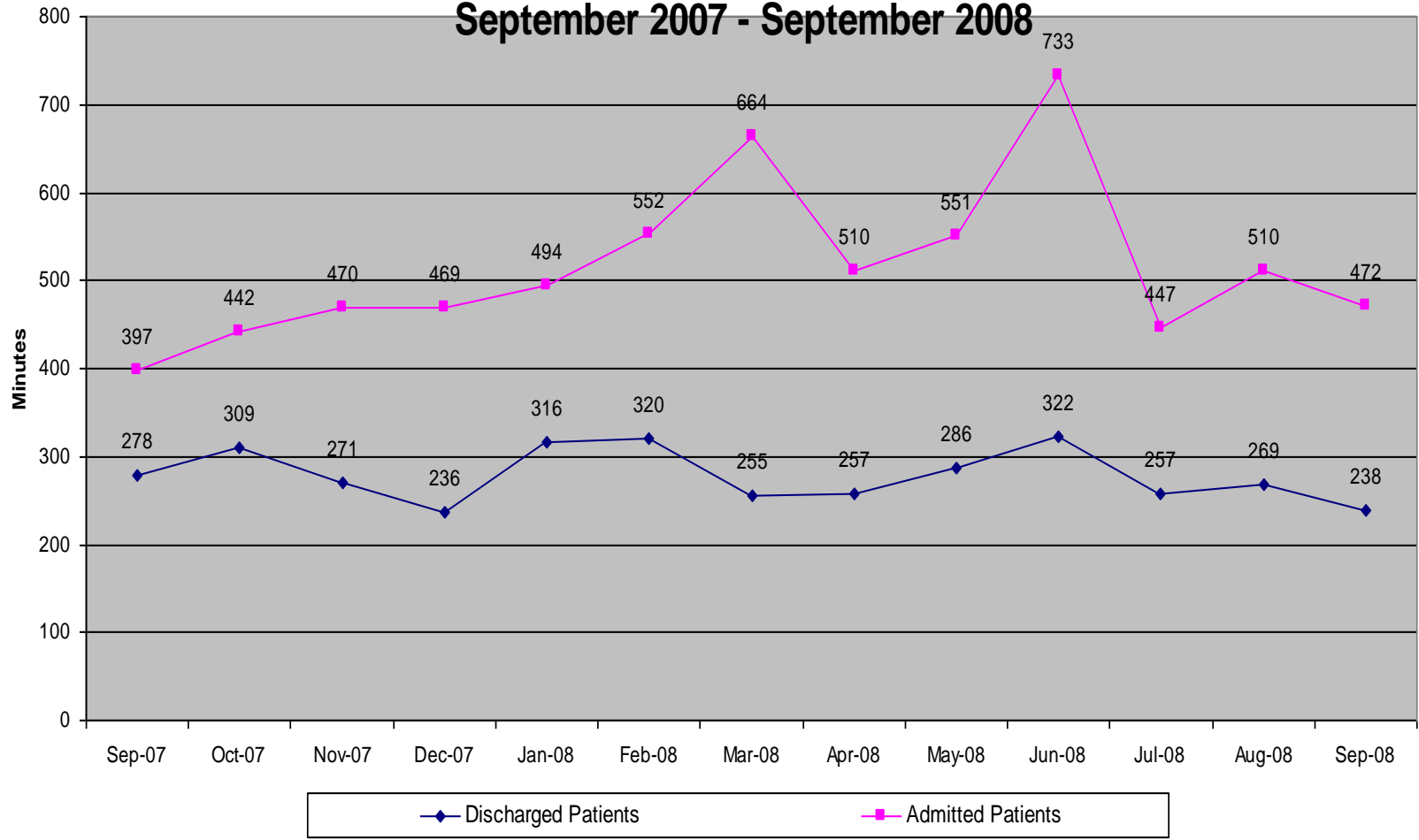
Data Collection Strategy -Points to Monitor

- Length of Stay in the ED for patients Discharged with the diagnosis of Asthma (minutes) From time of arrival – leaving ED (from MedHost)
- “Time To Decide” – How long does it take for the MD to determine (from MedHost – MD notes)
- Number of times RT called away from pt (RT to keep tally sheet)
- Number of Forced Expiratory Volume in 1 Second measurements performed by RT (documented in MedHost)
- Cost for asthma care before and after implementing asthma protocol



Baylor University Medical Center Emergency Department Average Length of Stay Diagnosis - Asthma

September 2007 - September 2008





PDCA Cycle I – Oct. 2008

- Plan:** Introduce protocol to all Respiratory Therapists working in ED. Review evidence-based literature
Meet with Pharmacy Director to discuss medication process, state laws, how to improve process
MedHost access/training – Mary (data collection)
- Do:** Held AM and PM meetings for RT staff to discuss protocol, in-serviced FEV1 monitoring and BAN therapy
Met with Baylor Pharmacy/ Out patient pharmacy
- Check:** Reviewed with staff on random days use of protocol and effectiveness of therapy. Identified areas needing improvement.
- Act:** Continue to work with staff, help them gain confidence and address issues.



PDCA Cycle II – Nov. 2008

- Plan:** Introduce Physician groups to ED Asthma Protocol

- Do:** Make Asthma protocol available to all ED/House physicians, assist with the implementation
Mary access/training – MedHost

- Check:** Randomly check with the physician staff and review charts to determine use and effectiveness of asthma protocol

- Act:** Continue to review, case by case discussions during Physician meeting



PDCA Cycle III – Dec. 2008

Plan: Meet with Nurse Educators to review asthma protocol

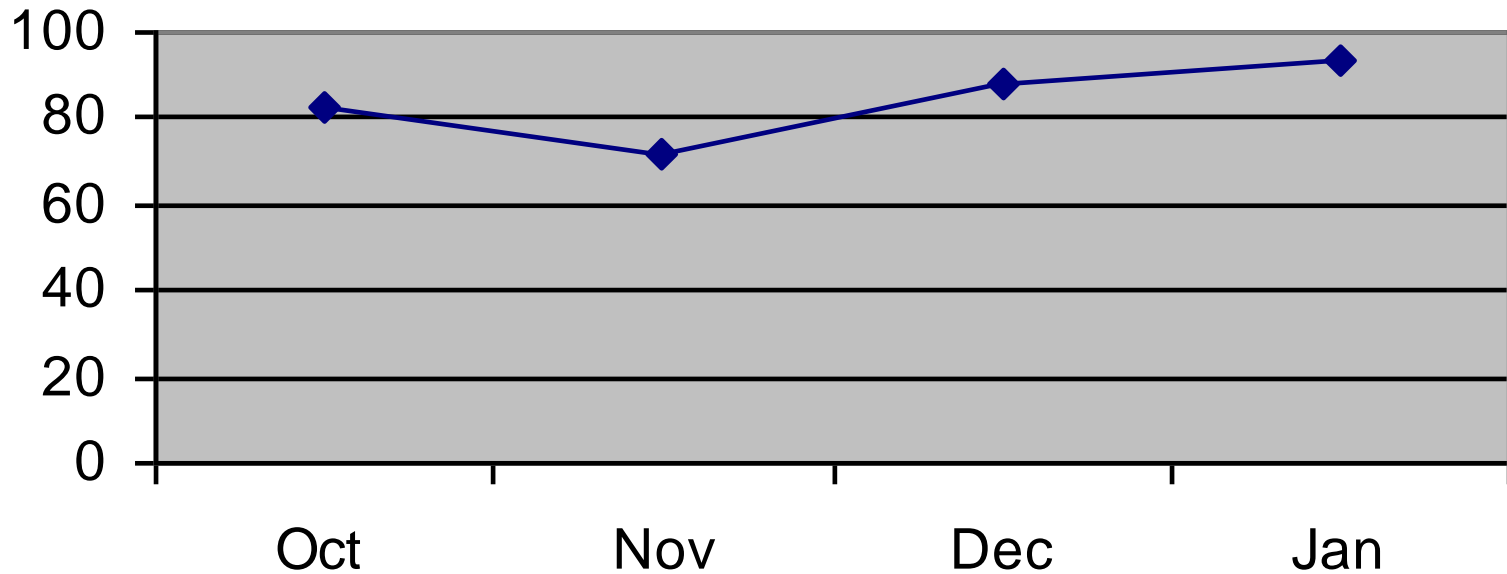
Do: Held meeting, Nurse Educators to in-service ED nurses

Check: Routine/Random rounding with ED staff

Act: Continue to work with staff - evaluate effectiveness



Percent of Forced Expiratory Volume (FEV1) Measurements performed





PDCA Cycle IV – Feb. 2009

- **Plan:** Mary Hart, Dr. d’Etienne, and Dr. Millard to review charts, meet with staff, discuss outcomes/improvement
- **Do:** Chart review, case by case review, identified areas for improvement- medication, time to decide, discussed with MD, RT, RN
- **Check:** Continue rounding with staff, chart review
- **Act:** Revised protocol to be more specific, medication dosage, delivery, discussed communication/handoff, scheduled RT to care for all Asthma patients on Dayshift, work with triage,



Decreasing the LOS in the ED for patients discharged with asthma

Baylor University Medical Center Dallas, Texas ED Asthma Treatment Protocol Patients 12 Years Old or Older

Initial Assessment:

History and Physical Examination:

- Level of consciousness, auscultation, use of accessory muscles, color, heart rate, respiratory rate, SpO2, last exacerbation
- FEV1 as soon as possible

- FEV1 \geq 50% (Mild to Moderate)
- -Oxygen to maintain SpO2 > 90%
- (5 mg) undiluted Albuterol in BAN neb for 3 doses in first hour.
- -Assess pt response 10 – 15 mins after each tx. (FEV1, VS, BS)

- FEV1 < 50% (Severe)
- Oxygen to maintain SpO2 > 90%
 - High Dose (15mg) undiluted Albuterol in BAN to sputter
 - Assess pt. response 10 -15 after treatment (FEV1, VS, BS, etc)
 - If no immediate response, oral prednisone 60 mg (RN to order)
 - Notify physician if condition worsens

- Impending or true Respiratory Arrest
- Notify Physician & Nurse Immediately
 - Resuscitate with ACLS Guidelines
 - High Dose albuterol (15mg) in BAN

Repeat Assessment

- About 15 minutes post last tx or 1 hour post arrival
- Symptoms, physical examination, **REPEAT** FEV1, SpO2
- Communicate findings to team - **"Time To Decide" Admit or Discharge**

Likely ICU Admission, Treat per Physician Order

Good Response

- FEV1 \geq 70%
- Response sustained 1 hour after last therapy
- No distress & normal physical exam

Report Condition

Discuss with Physician & Nurse, Discuss and develop plan of care
"Time to Decide" - Discharge

Incomplete Response

- FEV1 \geq 50% but < 70%
- Mild to moderate symptoms remain

Repeat Treatment

5mg undiluted albuterol in BAN neb to sputter for 3 doses
Assess pt response 10 -15 min. after each tx. (FEV1, VS, BS, Etc.)

Reassess after treatment

Symptoms, REPEAT FEV1, SpO2
-Report Condition to Physician and Nurse and discuss and develop plan of care **"Time to Decide" if no change Admit**

Poor Response

- FEV1 < 50%
- PcO2 \geq 44 mmhg
- Severe persistent symptoms, confused or drowsy

Report Condition to Physician & Nurse

-Discuss and develop Plan of care
"Time to Decide" - ADMIT



PDCA Cycle V – Mar - April - May 2009

- **Plan:** Mary Hart, Dr. d’Etienne, and Dr. Millard to continue chart review charts, meet with staff, discuss outcomes/improvement
- **Do:** Charts reviewed, case by case review, identified areas for improvement- medication, time to decide, discussed with MD, RT, RN, identify areas to improve hand-off communication.
- **Check:** Continue rounding with staff, chart review, held meeting with MDs to review protocol once again/identify ways to
- **Act:** Discussed communication/handoff, **developed script for RTs**



Script for RTs/MDs

- **Poor patient response to therapy: FEV1 <50% of predicted**

Doctor (or PA), patient ___ in bed ___ presented with asthma and a pre-bronchodilator FEV1 of ___ which is ___ of predicted. After 15 mg of albuterol delivered via BAN the FEV1 is ___ which is ___ % of predicted, one hour after the last dose of albuterol. This percentage is <50% of predicted which is the threshold cutoff for admission, based on lung function, taken from published criteria.

I am going to continue delivering albuterol, as per protocol, but I wanted to inform you of the one hour FEV1%, and that the patient should be considered for admission.

- **Good patient response to therapy: FEV1 >50% of predicted**

Doctor (or PA), patient ___ in bed ___ presented with asthma and a pre-bronchodilator FEV1 of ___ which is ___ % of predicted. After ___ mg of albuterol delivered via BAN, the FEV1 improved to ___ which is ___% of predicted, one hour after the last dose of albuterol. This percentage is >70% predicted which is the threshold cutoff for discharge. Therefore, the patient should be considered for discharge based on the FEV 1 being greater than 70% of predicted.

I am not going to deliver any further nebulized albuterol, based on protocol, but wanted to inform you of the one hour FEV1%, which fulfills discharge criteria.

(At this point you can also say whether the patient is still wheezing, or appears in any distress.)

- **Incomplete Patient response to therapy: FEV1 50 -70% of predicted**

Doctor (or PA), patient ___ in bed ___ presented with asthma and a pre-bronchodilator FEV1 of ___ which is ___% predicted. After 15 mg of albuterol delivered via BAN, the FEV1 improved to ___ which is ___% predicted, one hour after the last does of albuterol. This % is between 50 and 70% of predicted which would justify a repeat treatment with albuterol via BAN, and I will return with further lung function results one hour after the next dose of albuterol, unless you have any different orders.



PDCA Cycle V – July - Aug - Sept 2009

- **Plan:** Dr. Eric Daniel volunteered to spearhead this project as an ED physician with Mary Hart, Dr. d’Etienne, and Dr. Millard. Will continue to review charts, meet with staff, discuss outcomes/improvement
- **Do:** Charts reviewed, case by case review, identified areas for improvement- medication, time to decide, discussed with MD, RT, RN, identify areas to improve hand-off communication.
Added NHANES III Predicted Values to bedside computers for RT
- **Check:** Continue rounding with staff, chart review, held meeting with MDs to review protocol once again/identify ways to
- **Act:** Discussed streamlining documentation, returning patients



PDCA CYCLE VI Nov – Feb 2010

- **Plan: MD and RT quality review, present case reviews at ED MD meetings results, Develop Discharge Plan and Learning Module**
- **Do: Began having physicians perform a “self review” when patient chart did not meet criteria (not using/following asthma protocol and having increased LOS) Documentation kept for quality review and medical director staff review**
ED Physician meeting agenda – Dr. Daniel presenting cases
- **Check: Individual RT conversations based upon chart review or questions; documentation process began much like MD review form**
Continue to meet with Dr. Daniel to review charts and determine next steps
- **Act: Develop RT ED Asthma Protocol Education Module**
Formal Discharge Plan – next step (April 14, 2010)



- **Learning Module I**

Emergency Dept. Asthma Protocol

- **Learning Module II**

AeroEclipse II BAN

Piko 1 Meter

NHANES III Spirometry Predicted Values

Calculator

- **Learning Module III**

Initial Assessment

FEV1 Actual, FEV1 Pred. and FEV1 %

Pred

Mild, Moderate, Severe Forced Expiratory

Volume in 1 sec. (FEV1)

SPO2 Goal

Medications (Bronchodilator and Steriod)

Impending or True Respiratory Arrest

- **Learning Module V**

Time to Decide

Good Response

Incomplete Response

Poor Response

- **Learning Module V**

Scripting Good, Incomplete and Poor Responses

- **Learning Module V**

Discharge Planning

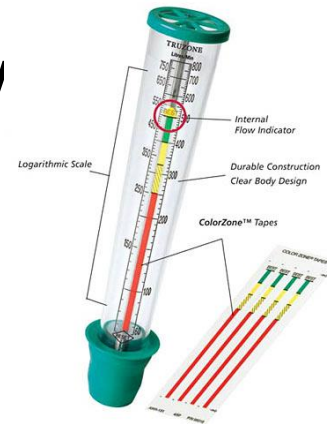
Aerochamber Plus

TruZone PFM)

Asthma Action Plan

Example of Completed Action Plan

- **Learning Module IV**





Use of AeroEclipse II, Piko 1 Meter and location of NHANESIII Spirometry Predicted Calculator

- Directions for Use: AeroEclipse II –breath actuated nebulizer (BAN)
- Ensure mouthpiece is inserted into side opening of the nebulizer with the exhalation valve facing downward.
- Prior to use, inhale and exhale through the nebulizer mouthpiece to verify the movement of the green feedback button located on top of the device.
- Set the flow meter to 7 to 8 liter per minute(LPM)...etc.....
- **Note:** The Aeroeclipse II BAN can be operated in a Continuous Mode by rotating the mode selector 90 degrees clockwise to the continuous position. The nebulizer can be returned to the Breath Actuated Mode by rotating the mode selector 90 degrees counterclockwise to the breath actuated position. **The continuous mode is only used if the patient is unable to trigger the nebulizer. However, most patients can trigger the BAN with coaching or after a couple of breaths in the continuous mode.**

Direction for use: Piko1 Meter

- Load battery according to package instructions (**Avoid touching the flat surface of the battery, insert batteries by edges**)
- Proper insertion of batteries “several beeps” will audio
- Turn Piko1 Meter on by pressing button of front of the meter. An image will appear on the Piko1 meter screen indicating unit is on and ready to use
- Attach adaptor and disposable mouthpiece with one way valve to the meter’s mouthpiece
- Instruct patient to breathe deeply and place mouthpiece in mouth on top of tongue
- Close lips tightly around mouthpiece
- Perform forced vital capacity maneuver by blasting air out of the lungs for at least 6 seconds
- Results will illuminate in Piko1 meter window
- Have patient repeat maneuver to obtain two reproducible efforts. Document the best of the two results in the patient’s diary. Do not perform more than 8 expiratory efforts in one cycle.



How to Obtain FEV1 actual and FEV1% Predicted

- Using the Piko1 meter (refer to learning module II on piko1 meter use), assist patient to perform an FVC maneuver in order to obtain the patient's actual FEV1. **A minimum of 3 efforts is required to obtain optimal score.**
- ***The key to an accurate and successful patient's effort is by coaching the patient to perform the Forced Vital Capacity maneuver accurately.***
- If the patient is unable to perform the test, the RT will document the reason and attempt to obtain the FEV1 as soon as the patient is able to provide a better effort.
- The Respiratory Therapist will need the patient's age, DOB, height, ethnicity in order to calculate the predicted FEV1 values and to determine FEV1% of predicted.
- FEV1 is to be recorded in "actual liters, predicted liters and percent of predicted." NHANES III spirometry predicted calculator is used as the predicted value set for all patients.
- The NHANES III spirometry predicted calculator is located on ED computers at the bedside for easy access. Respiratory **Therapists will input the patient's age, DOB, height, sex, ethnicity, to access the correct values for the patient**



Learning Module VI: Adult Asthma Discharge Planning

- The Respiratory Therapist role in discharge planning includes:
- Instructing and assessing patient's knowledge in the use of Asthma medication and medication delivery devices.
- Instruct the patient to properly perform and assess patient's ability to properly perform Peak Flow measurement monitoring device.
- Instruct and encourage patient to record results in a diary on a daily basis
- (Daily diary sheet included in TruZone Peak Flow Meter (PFM) package)
- Develop an Asthma Action Plan (see Asthma Action Plan below) and instruct the patient how to use the plan. The RT will work with the physician in developing the plan.
- Planning also includes physicians writing prescription for inhaled corticosteroids (ICS) and short acting bronchodilator (SABD) and referral for follow-up care
- Therapist will educate patient on proper use and handling of metered dose inhaler and diskus medication delivery devices



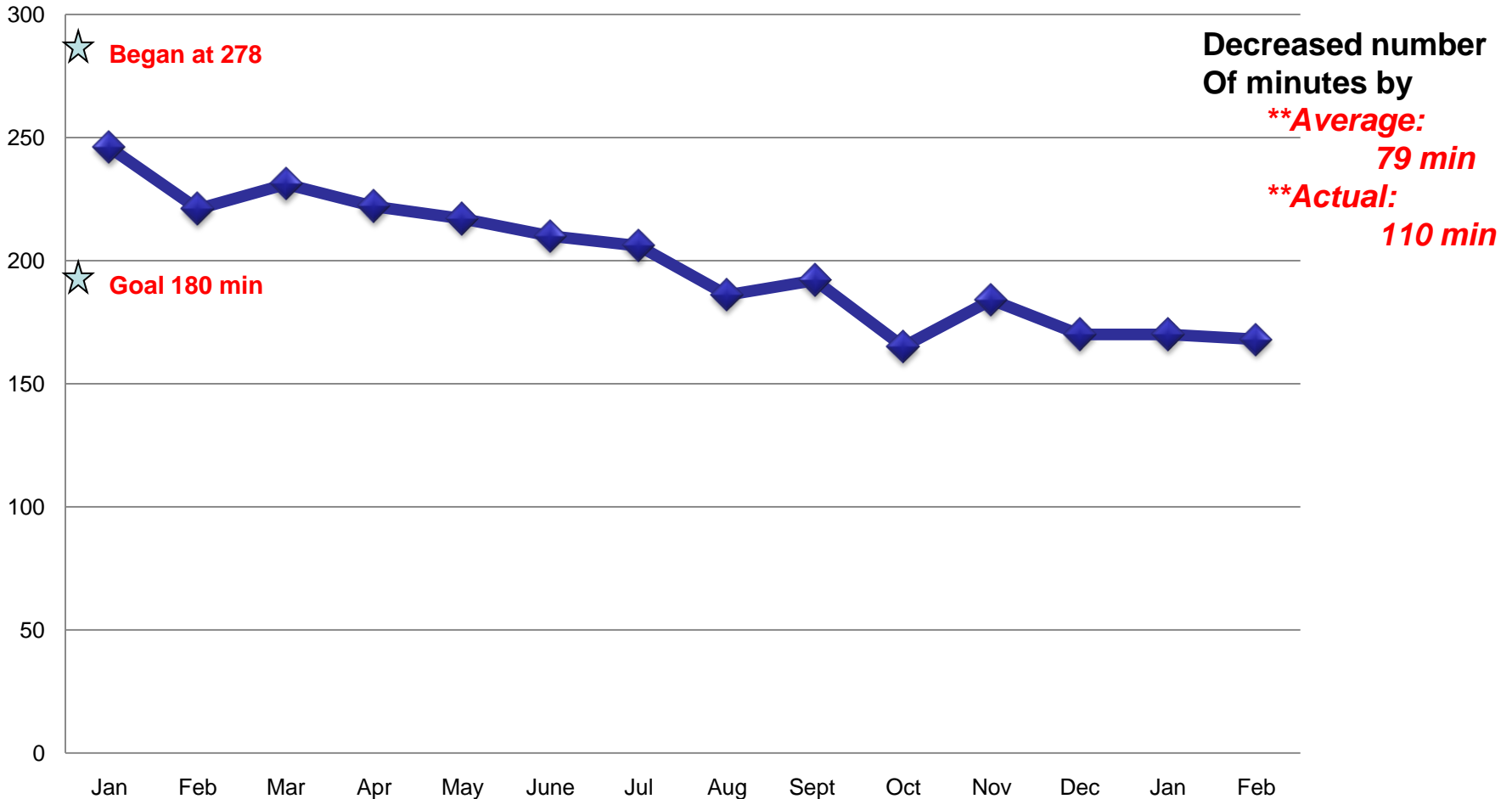
Direction for Use: Aerochamber Plus Valved Holding Chamber (VHC) with Metered Dose Inhaler

- Carefully examine the product for damage, missing parts or foreign objects. Any foreign objects should be removed. The product should be replaced **IMMEDIATELY** if there are any damaged or missing parts. If necessary use the inhaler (MDI) alone until a replacement is obtained.
- Before use, make sure that instructions supplied with inhaler (MDI) have been read. Remove caps.
- Shake the inhaler (MDI) well immediately before each use.
- If the MDI is new or has not been used for 2 weeks or longer prime the inhaler
 - 2-4 times before inserting inhaler (MDI) into the MDI chamber
- Place mouthpiece in mouth, depress inhaler (MDI) at beginning of slow deep inhalation. Encourage patient to hold breath as long as possible, up to 10 seconds before breathing out.
- Repeat steps when the physician orders more than 1 puff.



Asthma Patients Discharged from the ED

LOS/Minutes





Current Status

- Improved the effectiveness of bronchodilator delivery by using AeroEclipse Breath Actuated Nebulizer with recommended medication/dose/timing
- Improved care to all patients with asthma, using protocol/BAN we have a few cases where patients would have been intubated or placed on bipap, patients who would have been admitted – discharged!!
- Improving hand-off/SBAR: RT, RN, MD – conversations, documentation, standardization
- Quality Review: MD, RT, RN

Next Steps

- Continue with current process, we are making a difference!
- Roll-out protocol to smaller EDs in the system
- Continue to collect data / improve care
- Evaluate additional pieces of process:
 - Formal Discharge Plan – April 14, 2010
- Where does this fit into “New Chronic Disease Management Program” currently being developed?
 - Patient compliance
 - Patient Returns to ED
 - Community access – asthma programs/care
 - Extend to in-patient asthma treatment plans/protocol



Current Status

- Decreased LOS from 278 minutes (avg.) to 199 minutes
Average: 77 minutes!! Actual: 110 Minutes!!!
- Financial status: Only 20% of patients managed care – every minute saved decreases the financial loss and increases the opportunity to treat additional patients in the ED.
- Improved subjective patient evaluation information/assessment –almost all patients are now evaluated with FEV1 Piko meter
- More patients are being evaluated and treated according to national asthma guidelines, research, evidence-based medicine – awareness, education, teamwork
- RTs Proud of Their Work – Leaders!!



Recently – Do Follow-Up Phone Calls Make a Difference?

- Did you receive a prescription for asthma medications when discharged from the ED?
- Name of the medication.
- If so, did you get the prescription filled?
- What medications are you currently taking for your asthma?
- How often?
- Did the ED physician refer you to another doctor for asthma follow-up?
- If yes, have you made an appointment or gone for the visit yet?
- Physician?

DECREASING THE LENGTH OF STAY IN THE EMERGENCY DEPARTMENT FOR PATIENTS DISCHARGED WITH ASTHMA

Hart, Mary K.; Alexander, Vannie; Daniel, Eric; D'Etienne, James; Millard, Mark
Baylor University Medical Center, Dallas, TX, USA.

ABSTRACT

BACKGROUND: On an average, 80 adult asthma patients are treated in the Emergency Department (ED) at Baylor University Medical Center each month. The average length of stay (LOS) is 278 minutes for those discharged and 516 minutes for those admitted. Asthma can be controlled with proper treatment and ED management should take no longer than 180 minutes based on Expert Panel Report 3. The opportunity for improvement was evident.

METHODS: A quality improvement multidisciplinary Asthma ED Team was formed to determine what was causing the significant LOS. The team leader coordinated and facilitated meetings with MDs, RTs, and RNs. Quality improvement tools, such as a fishbone cause and effect diagram, run charts, and affinity charts, were used to help identify and prioritize problems identified by the team. During the first brainstorming session the team discovered that no standardized asthma protocol existed for ED staff to follow. An asthma protocol was developed and FEV1 meters were given to all RTs to use to determine severity and treatment effectiveness. A breath actuated nebulizer (BAN) was introduced to deliver all bronchodilator therapy more effectively and safely. Staff was educated on the asthma guidelines, choice of medications, how to use the protocol, document, and communicate effective patient handoff. The team leader spent time working with staff in the ED to help improve their performance as they gained more confidence. Physician champions met one on one with physicians to discuss specific cases. Ongoing chart reviews helped identify areas that needed further improvement.

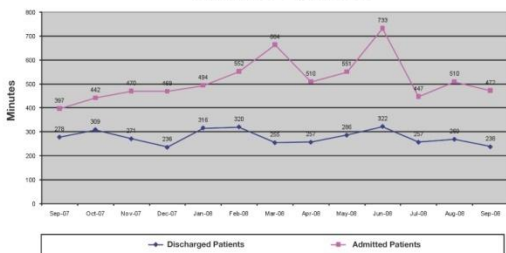
RESULTS: Having an asthma protocol streamlined the management of asthma in the ED. It has taken time to see the improvements purely because of "changing the culture". Having the RTs "Drive the Protocol" has made a big difference. This has given them the opportunity to prove themselves as invaluable members to the team. After implementing the asthma protocol 4 months ago, the average LOS has decreased by 51 minutes and FEV1 measurements are performed 99% of the time. Medication delivery using the BAN is effective allowing some patients to be discharged who would normally be admitted.

CONCLUSION: The ED Asthma Protocol Team has made a positive impact in how asthma care is delivered in the ED. They will continue to work towards their goal as they improve their team dynamics. The next steps for this team are to tackle discharge planning, physician referrals and follow-up care.

INTRODUCTION

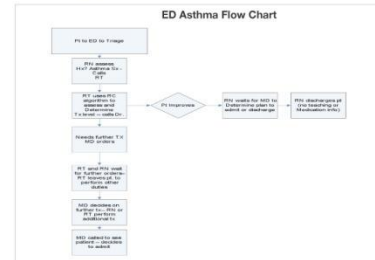
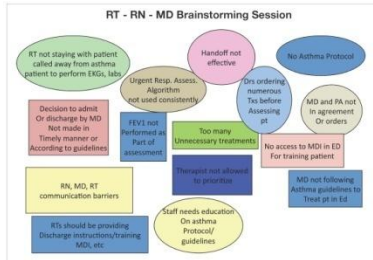
Process Improvement (PI) Team members identified the LOS for asthma patients discharged from the ED to be on an average 278 minutes. Patients discharged with the diagnosis of asthma can usually be treated in the ED within 120 minutes. Process Improvement initiatives began by identifying a team of key people to come up with a PI plan to implement and improve patient care and LOS. An Aim Statement was written and the team began to work through each process using PI improvement tools.

Baylor University Medical Center Emergency Department
Average Length of Stay
Diagnosis - Asthma
September 2007 - September 2008



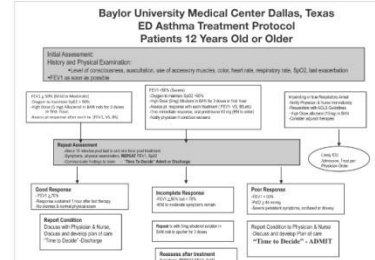
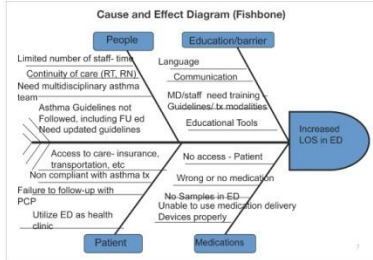
METHOD

- Chart Review – shared results
- Brainstorming Meetings with all staff
- Used Cause and Effect Diagram to determine what was causing increased LOS
- Affinity Chart used to prioritize each issue/category
- Process Flow Chart prior to initiating asthma protocol
- Reviewed literature: developed and implemented age specific asthma protocol
- Education: RT assessment, asthma guidelines, BAN, medication, communication
- Rapid Cycle Change – ongoing
- Follow-up: Case Reviews, group and one-on-one



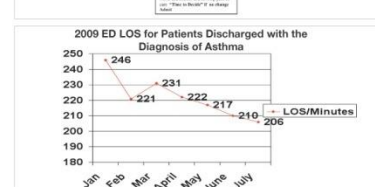
RESULTS

- Decreased LOS from 278 minutes (avg.) to 227 minutes (avg.): 51 minutes
- Financial status: Only 20% of patients managed care – every minute saved decreases the financial loss and increases the opportunity to treat additional patients in the ED.
- Improved subjective patient evaluation information/assessment – almost all patients are now evaluated with FEV1 Piko meter
- More patients are being evaluated and treated according to national asthma guidelines, research, evidence-based medicine – awareness, education, teamwork
- Improved the effectiveness of bronchodilator delivery using AeroEclipse Breath Actuated Nebulizer with recommended medication/dose/timing
- Improved care to all patients with asthma, using protocol/BAN we saw a few cases where patients would have been intubated or placed on bi-pap, patients who would have been admitted – discharged!
- Improving hand-off/SBAR: RT, RN, MD – teamwork, conversations, documentation, standardization



CONCLUSIONS

- Lessons learned:
- Changing a culture is very difficult – must be diligent
 - Staying engaged with all team players is key
 - Must have administrative support
 - Champion physician and RTs will continue the PI Initiative in the ED plan to develop an in-hospital Asthma Protocol utilizing evidence-based criteria, proper medication delivery devices and RT patient discharge education





Lessons Learned

- Changing a culture is very difficult – must be diligent
- Don't Assume!! Anything.....
- Staying engaged with all team players is key
- Must have administrative support
- Champion physicians and RTs



Thank You!!!



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