



Children's[®]
Healthcare of Atlanta

Reducing Codes – A Three Fold Approach to Deterioration

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Our Mission:

To enhance the lives of children through excellence in patient care, research and education.



Who are we?

- Our Hospitals:
 - Scottish Rite - Private
 - Egleston - Teaching
 - Hughes Spaulding- Critical Access

- 529 Licensed beds
- 474 Staffed beds

- In 2007 we had...
 - Over 570,000 Patient Visits
 - Over 171,000 Emergency Department Visits

General Information

- 16 Satellite locations throughout metro Atlanta
- Over 6,700 Employees
- 5,900 Volunteers
- Access to 1,400 Pediatric Physicians
- Largest Medicaid provider in Georgia

Recognition

- Named one of top three pediatric hospitals nationwide by ***Child*** magazine
- Named top ten for cancer, emergency, neonatal, orthopedic, and pulmonary care services by ***Child*** magazine
- Among top pediatric hospitals by ***U.S. News and World Report*** for 5th consecutive year
- Ranked one of the top 100 companies to work for by ***Fortune*** magazine for 3rd consecutive year

Why Are We Here?

- To understand the importance of identifying with your safety culture
- To organize the approach to prevention of deterioration
- To develop and create tools related to IV access



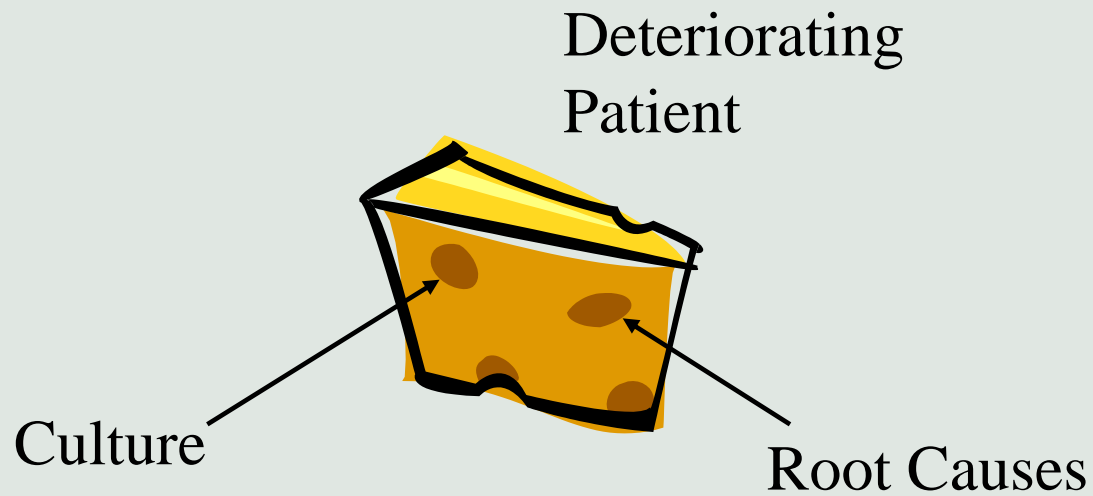
Who are you?



The Burning Platform

- The deteriorating patient has become the focus of healthcare in the United States.
- Hospitals have realized that most codes in the General Care Areas are preventable.
- At our hospital we have learned that many codes were preceded by warning signs up to 8 hours before the code!
- The handwriting on the wall?

Swiss Cheese Model



The Culture of Cheese

- How many times will you see the same thing come up?
- How many times will you 'fix' a process?
- What are the common causes in your root causes?

This is your culture that leads to the specific holes in your cheese.

Are All Hospital Cultures the Same?

- **Basic American "Mesophilic" Cheese Varieties**

- Cheddar
- Colby
- Monterey Jack
- Cottage Cheese

- **Types of cultures used:**

- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (ST) *Streptococcus thermophilus*

- **Basic Italian "Thermophilic" Cheese Varieties**

- Parmesan
- Romano
- Provolone
- Mozzarella

- **Types of cultures used:**

- (ST) *Streptococcus thermophilus*
- (LB) *Lactobacillus delbrueckii* subsp. *bulgaricus*
- (LH) *Lactobacillus helveticus*
- (LBL) *Lactobacillus lactis*

- **Specialty Cheeses**

- Brick
- Limburger
- Muenster

- **Types of cultures used:**

- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (LLD) *Lactococcus lactis* subsp. *biovar diacetylactis*
- (ST) *Streptococcus thermophilus*
- (LB) *Lactobacillus delbrueckii* subsp. *bulgaricus*
- (LBL) *Lactobacillus lactis*
- (LBC) *Lactobacillus casei* subsp. *casei*
- (BBI) *Bifidobacterium infantis*

- **Mold Ripened Cheese**

- Brie
- Camembert
- Blue
- Gorgonzola
- Stilton

- **Types of cultures used:**

- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (LLD) *Lactococcus lactis* subsp. *biovar diacetylactis*
- (LMC) *Leuconostoc mesenteidess* subsp. *cremoris*

- **Goat and Sheep Cheese**

- Feta
- Manchego
- Chevre

- **Types of cultures used:**

- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (LLD) *Lactococcus lactis* subsp. *biovar diacetylactis*
- (LMC) *Leuconostoc mesenteroides* subsp. *cremoris*

- **Fermented Milks & Cream**

- Bulgarian Buttermilk
- Acidophilus Milk
- Buttermilk
- Sour Cream

- **Types of cultures used:**

- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (LLD) *Lactococcus lactis* subsp. *biovar diacetylactis*
- (LMC) *Leuconostoc mesenteroides* subsp. *cremoris*
- (LA) *Lactobacillus acidophilus*

- **Yogurt**

- **Types of cultures used:**

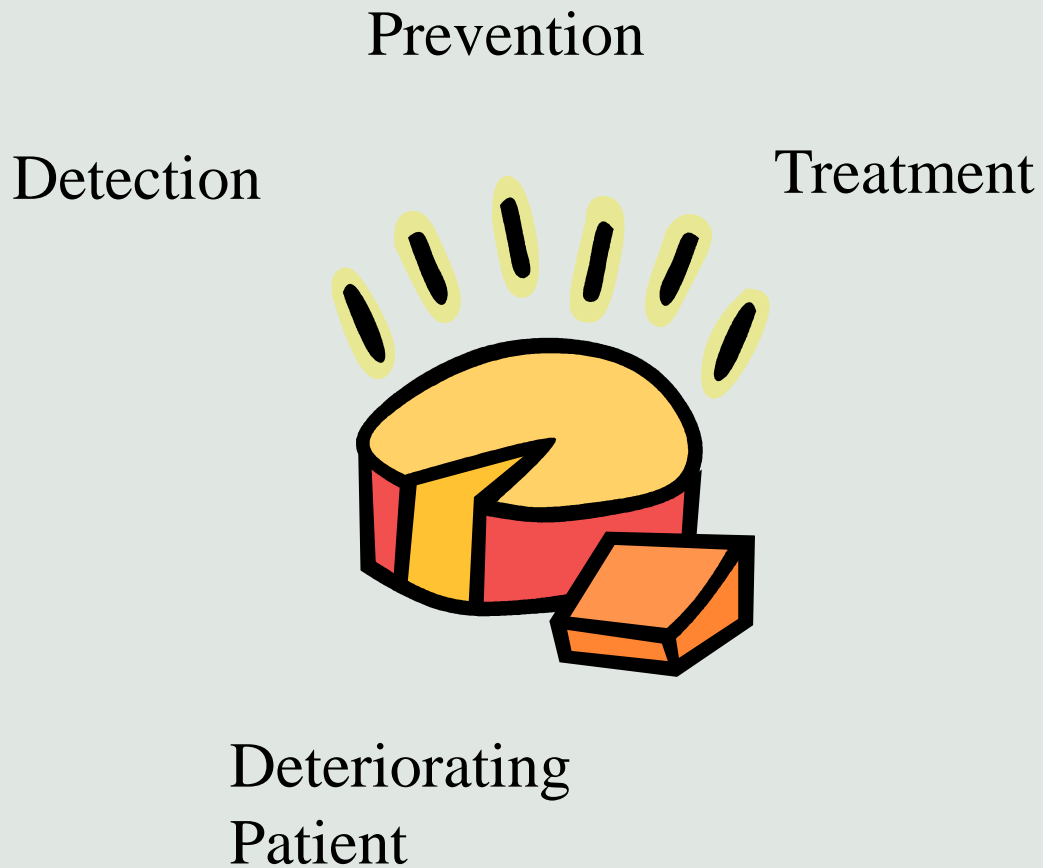
- (ST) *Streptococcus thermophilus*
- (LB) *Lactobacillus delbrueckii* subsp. *bulgaricus*
- (LA) *Lactobacillus acidophilus*
- (BBL) *Bifidobacterium longum*
- (BBI) *Bifidobacterium infantis*



Even Hole-y Cheese!

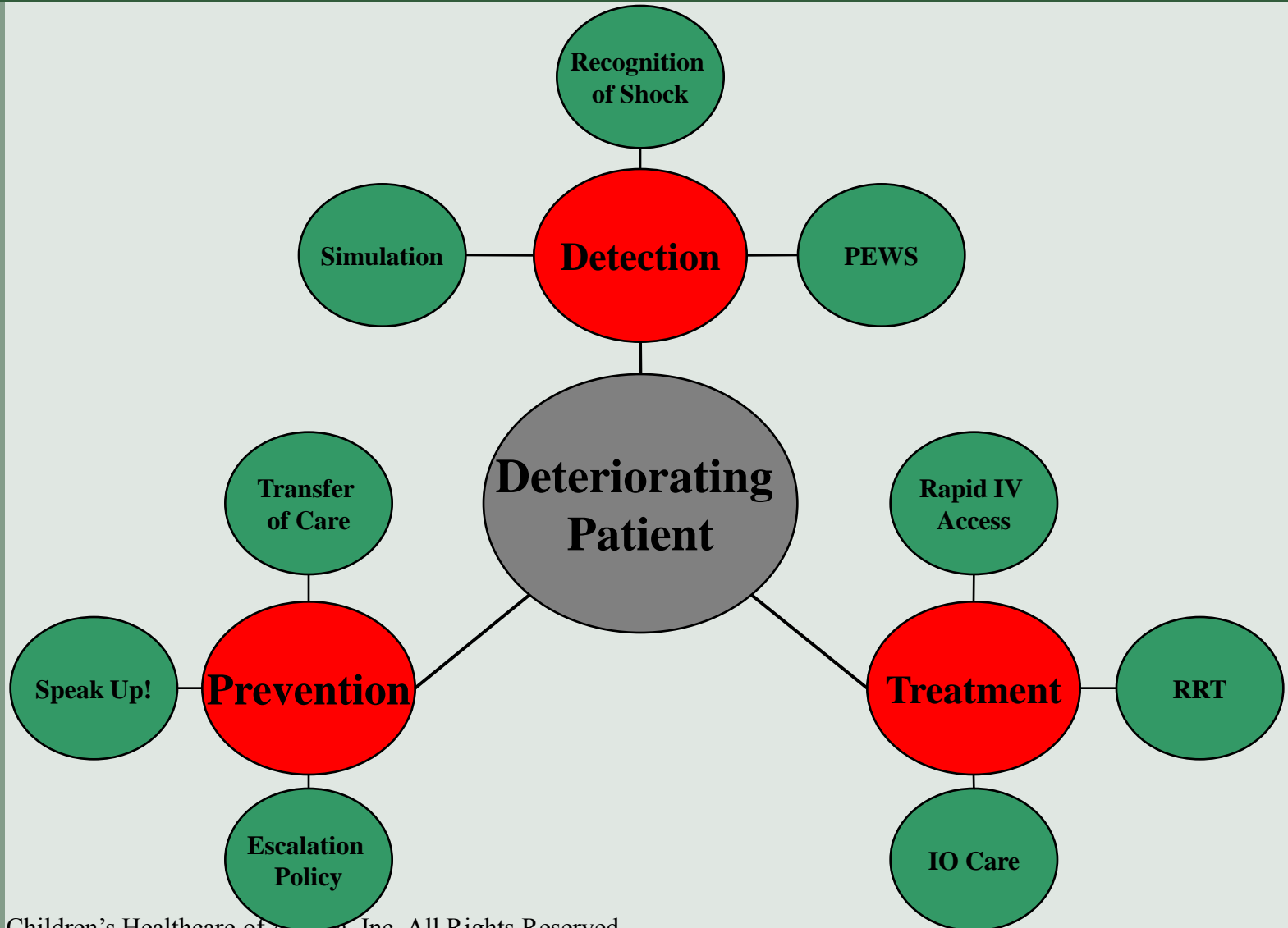
Cheeses With Eyes

- Emmental
- Gouda
- Edam
- Swiss
- **Types of cultures used:**
- (LL) *Lactococcus lactis* subsp. *lactis*
- (LLC) *Lactococcus lactis* subsp. *cremoris*
- (LLD) *Lactococcus lactis* subsp. *biovar diacetylactis*
- (LMC) *Leuconostoc mesenteroides* subsp. *cremoris*
- (ST) *Streptococcus thermophilus*
- (LB) *Lactobacillus delbrueckii* subsp. *bulgaricus*
- (LBL) *Lactobacillus lactis*
- (PS) *Propionibacterium shermanii*
-





Three Prong Approach





Our Education to Staff



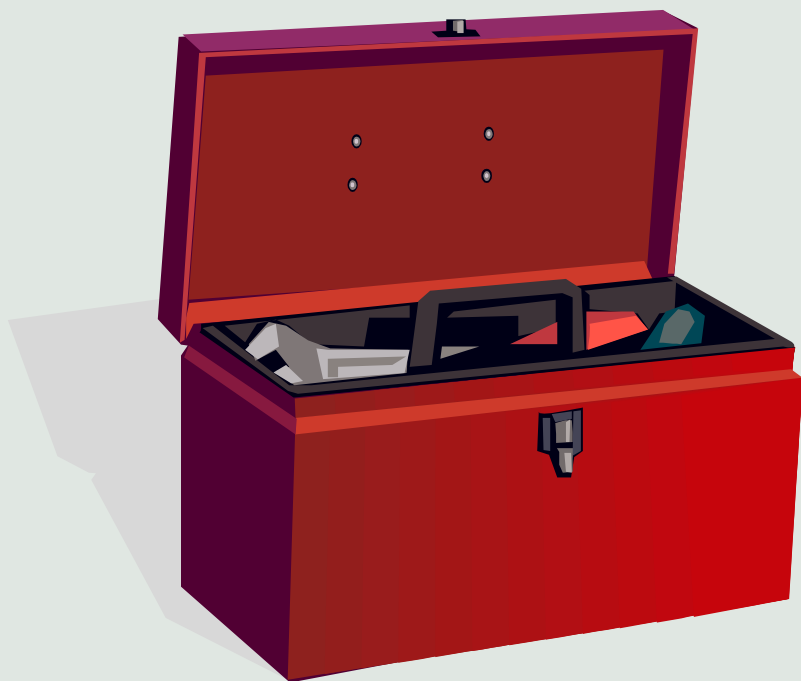
What Tools Do We Have?

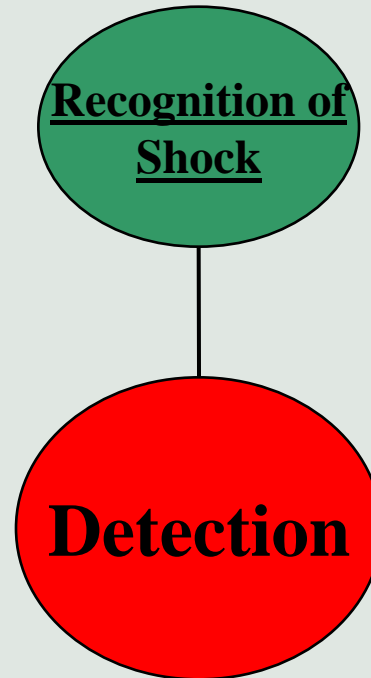
Preventing a patient from coding is like owning a house—there are a lot of tools that you need for different projects or patient conditions. You don't need every tool every time, but you need an assortment of tools for the entire project.

Let's review some that we have already put in our tool box:



The Deterioration Toolbox





Recognition of Shock

- The most important place to address in your approach.
- Root Cause Analysis Process and Common Cause Analysis
- Why?
- How do we measure if we are successful?

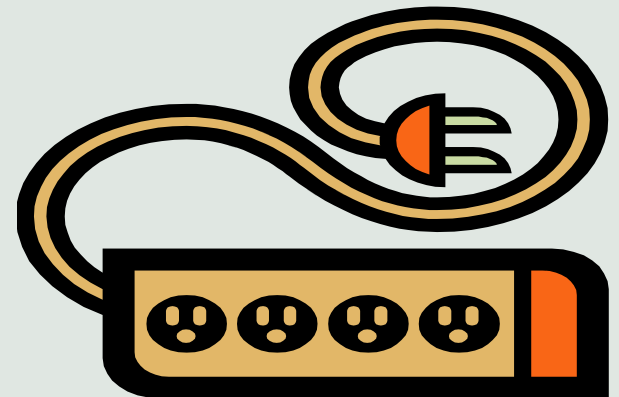


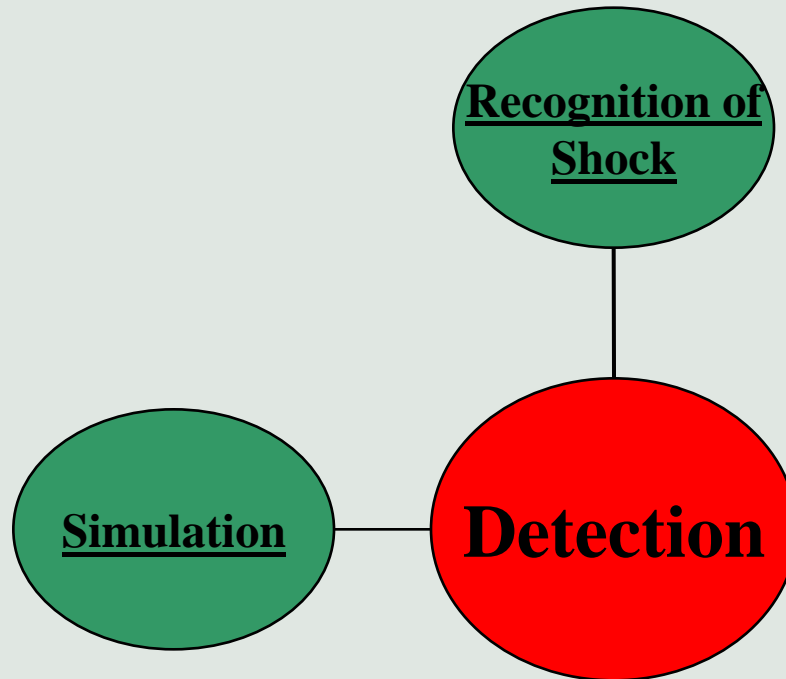
Our Education to Staff

Recognition of Shock

⚡ We have missed the subtle signs of shock, and patients have continued to deteriorate.

⚡ We developed the Shock CBT and did extensive education on recognition of shock. Use this knowledge and refresh it frequently!

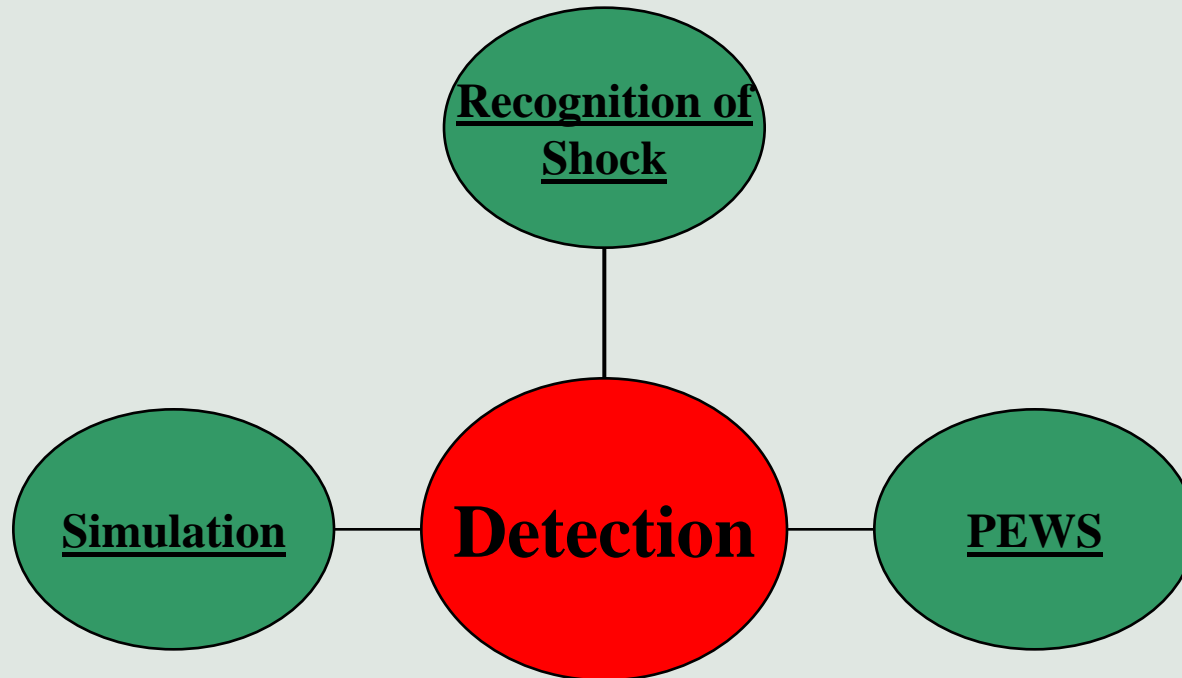






- Integrated into **Annual Nurse Competencies** for all general care nurses
- Scenario included recognizing and responding to a deteriorating patient in early shock
- Integrated into **Nurse Resident Program** for new graduate RN's
- Focused on early recognition of deteriorating patient and early intervention





Pediatric Early Warning Score (PEWS)

- Standardized approach to recognition.
- Royal Alexandra Hospital for Sick Children, Birmingham, UK (2006)
- We learned about it from Cincinnati Children's Hospital
- We modified it and implemented after pilots on two units.



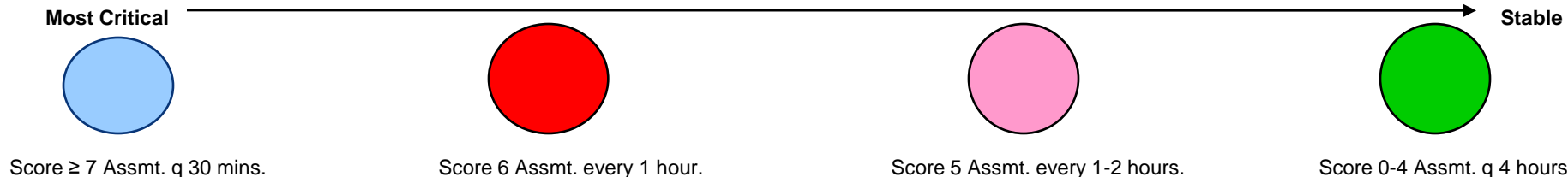
Uses of the PEWS

- Routine assessment for deterioration.
- Baseline assessment at points of transfer from a critical care area to a general care.
- Assessment as a response to interventions.
- When transporting patients from one facility to another.
- Appropriate placement on specific units.
- Staffing patterns

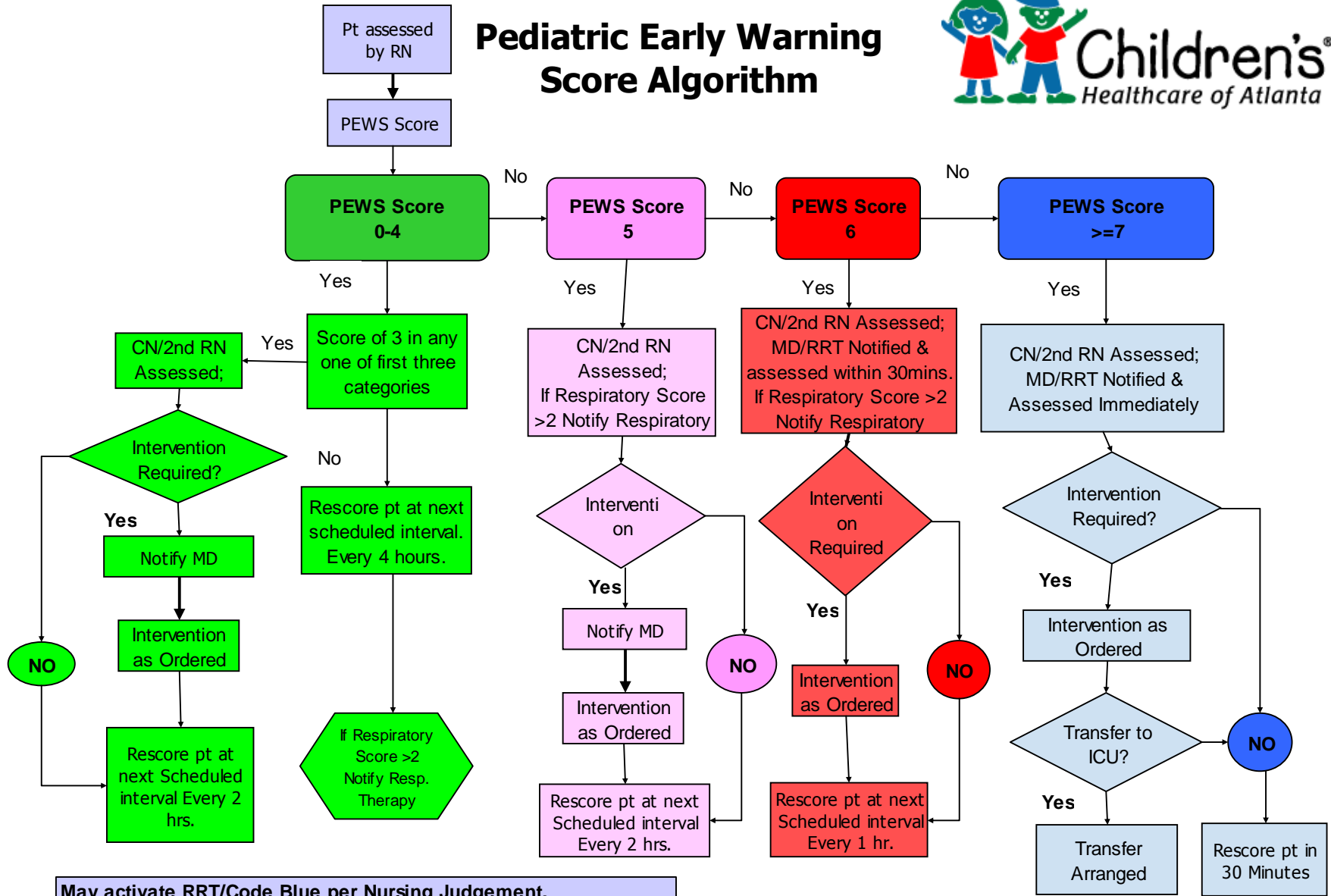
Pediatric Early Warning Score – PEWS

	3	2	1	0	Score*
Behavior	<ul style="list-style-type: none"> Lethargic, Confused, or Reduced Pain Response 	<ul style="list-style-type: none"> Irritable or Agitated and Not Consolable 	<ul style="list-style-type: none"> Sleeping, Irritable and Consolable 	<ul style="list-style-type: none"> Playing Appropriate for pt. 	
Cardiovascular	<ul style="list-style-type: none"> Grey or CRT ≥ 5 or Tachycardia 30 above OR Bradycardia for age 	<ul style="list-style-type: none"> CRT 4 seconds or Tachycardia of 20 above normal parameters 	<ul style="list-style-type: none"> Pale or CRT 3 Seconds 	<ul style="list-style-type: none"> Pink, CRT 1-2 Seconds 	
Respiratory	<ul style="list-style-type: none"> 5 Below normal with retractions and/or $\geq 50\%$ FiO2 	<ul style="list-style-type: none"> >20 above normal, using accessory muscles or 40-49% FiO2 or ≥ 3 LPM 	<ul style="list-style-type: none"> >10 above normal Using accessory muscles or 24-40% FiO2 or ≤ 2 LPM Any initiation of O2 	<ul style="list-style-type: none"> WNL for Age No Retractions 	
* Add 2 points for frequent interventions (suction, positioning, O2 changes) or multiple IV attempts.					
TOTAL					

** Parental concern should be an automatic call to the Rapid Response Team



Pediatric Early Warning Score Algorithm



May activate RRT/Code Blue per Nursing Judgement.
 Notify MD for Score that is double the previous assessment or for a score of 3 in any one of the first three categories

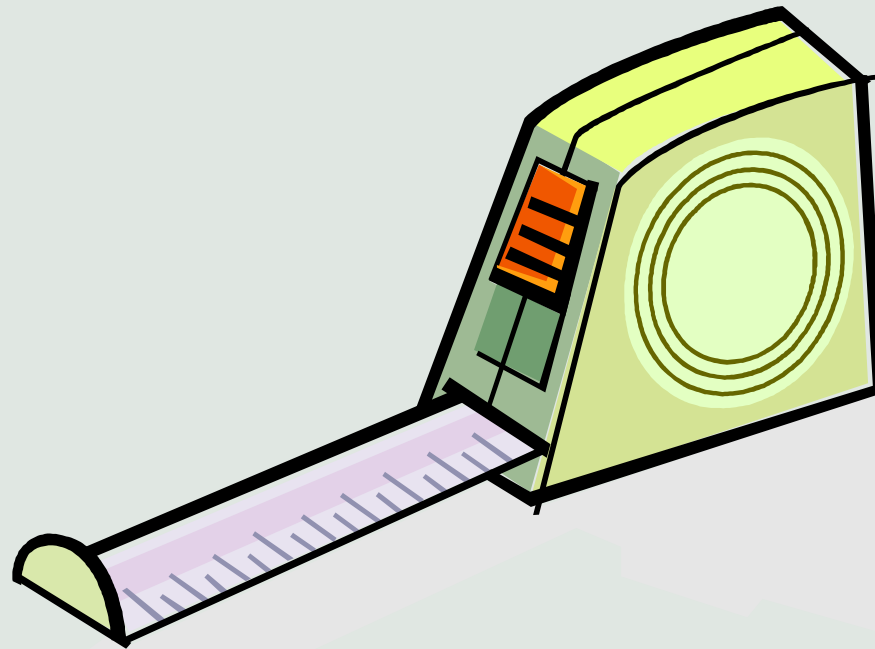
What Do MDs Need to Know?

- High is bad, low is good, trending is key
- It should be done at least every four hours
- If a Nurse calls with a concerning patient, ask for the 2 or 3 most recent PEWS.
- Where to find it in documentation-especially if electronic.
- They can write orders for the assessment frequency to change based on patient condition.



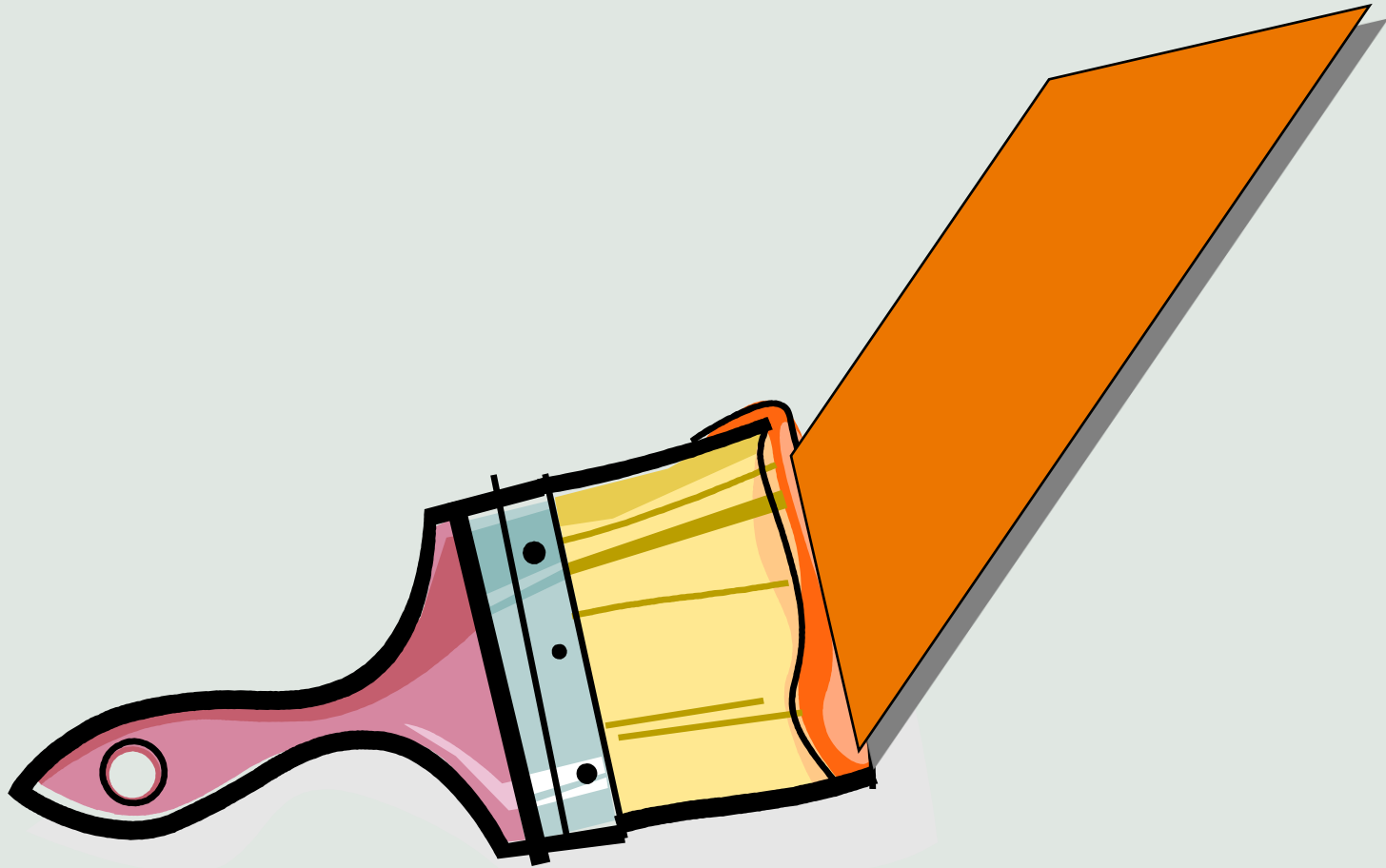
Our Education to Staff

How Do We Measure Deterioration?





We Paint a Clinical Picture!



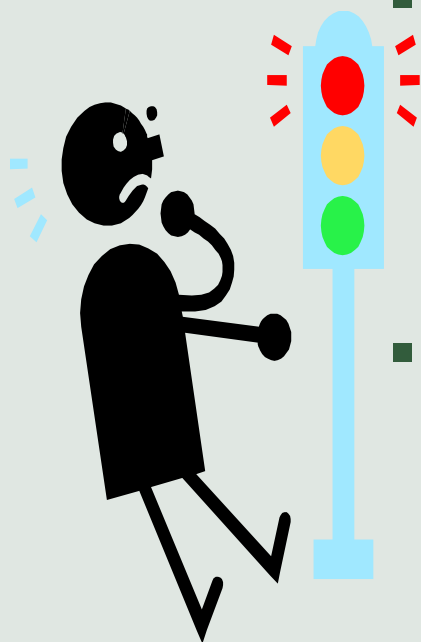
Introducing the PEWS!

The **P**ediatric **E**arly **W**arning **S**core is a tool that many hospitals have adopted to detect deterioration before it escalates to a code or near code situation.

- The deteriorating patient has become the focus of many hospitals in the United States.
- Did you know that it is possible to have ZERO codes on the General Care Floor?
- THAT's our goal!**



How Can We Do That?



- By Using The Pediatric Early Warning Score (PEWS)
- A quick score assigned to your patient every 4 hours that will help determine if they are improving, stable, or deteriorating.

Who Tried It Here First?

Cincinnati Children's Med-Surg Unit:

- ❗ 24 beds
- ❗ Central “storybook” of all patients
- ❗ Q 4h assessment score (color coded)
- ❗ Associated clinical response algorithm
- ❗ No codes for >420 days (c. March 2007)!!!



Anybody else?

- Denver Children's
- Boston
- Dallas Children's
- Birmingham Children's
- Driscoll Children's
- Minnesota Children's
- New York
- Phoenix Children's
- Detroit
- Houston
- Memphis LeBonheur
- St. Louis



Assessment

- When the PEWS has been applied to codes:



- And the CSU tried it and said the same



-and then there's the whole Cincinnati thing....

How Does It Work?

- The patient is scored with every assessment (q4h or as ordered).
- After the patient is scored, an accompanying algorithm leads them with what to do next.
- The algorithm is not intervention specific.



Recommendation: Three Uses



To assess the patient for deterioration every four hours.



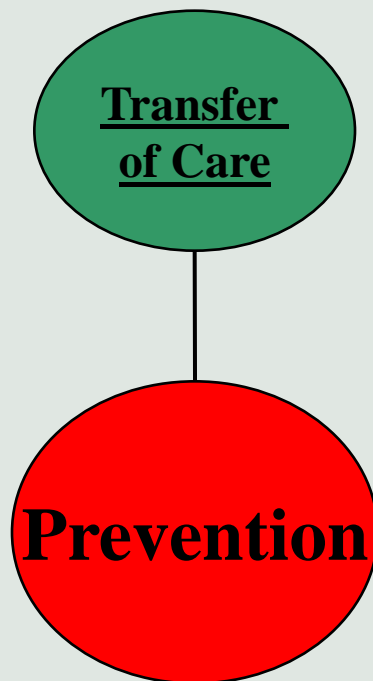
To establish a baseline assessment before transferring a patient from a higher acuity area to a General Care Area.



To be used at transfer of care from the PACU, ICU, ED (coming early 2009), and Transport.

What Can I do To Help?

- The PEWS is not 'another thing to do.' We have data that shows that it will give us warning signs that our patient's condition is deteriorating.
- Our goal is that we will have zero preventable codes in the General Care areas.
- Support and promote its use.
- More education will be coming soon to a CBT near you!
- Make sure people did the CBT—it is necessary!!



Transfer of Care

- Standardized the method of report (SBAR)
- Determined and agreed upon info to be communicated during patient TOC
- Embraced and implemented ***Med Minute*** process
- Clarified ***Order's Review*** process and policy

Transfer of Care

Situation	Name
	Age
	Weight
	Current MD
	Chief Complaint/Problems
Background	Brief and significant Medical History
	Allergies
	ID and Allergy Band Location
	Labs performed and Significant Results
	Radiology performed and Significant Results
	Isolation Requirements
Assessment	Assessment of Systems
	Neurological
	Respiratory including O2 and vent settings
	Cardiovascular – Include Last set of VS
	GI/GU
	Skin
	Muscle/Activity
	Pain/Fever
	Social
	Was there information that you did not receive?
	List Missing Information:
Recommend	Recommendation of plan of care for next shift
	Pie Note Reviewed
	Consults
	Upcoming Procedures
	Status of transfer or discharge Orders
	Discharge needs
	Comments:





Med Minute Process

- 1) On-coming and Off-going nurse sit together and review the patients medications, **specifically:**
 - a. Off-going nurse sits at computer with MAR open or MAR Report open (nurse can use either MAR or MAR Report)
 - b. On-coming nurse sits with off-going nurse with the chart
 - c. **The process is driven from the chart starting with the most recent order**
 - d. On-coming nurse reads off each medication order from the chart
 - e. Off-going nurse verifies order in MAR
 - f. *To capture erroneously d/c'd meds:* On the EMAR, review the d/c'd med section and verify an order associated with it in the chart.
 - g. If there are no new orders the off-going and on-coming nurses should still review the medications on the MAR for:
 - i. the last administration time
 - ii. the next administration time
 - iii. special administration instructions
 - iv. clarifications about staggered times
 - v. prn medications that were given
- 2) Unit will decide how far they will go back to check orders
- 3) Unit will decide at what point in the Transfer of Care process to do Med Minute

Suggestions:

- Do med minute and face-to-face report together
- Off-going nurse should be set up and ready to go, this way on-coming nurse just finds the off-going nurse and goes through report and med minute
- Use “Start Date” on MAR to go to that page in the chart to check orders
- Make sure that as you are checking medications or orders that you are verifying orders that are in the chart match what is showing up on the MAR and not that what you have in the MAR matches the chart. ***When you complete this in reverse order you chance missing orders that never made it to the MAR or made it to the MAR incorrectly.***

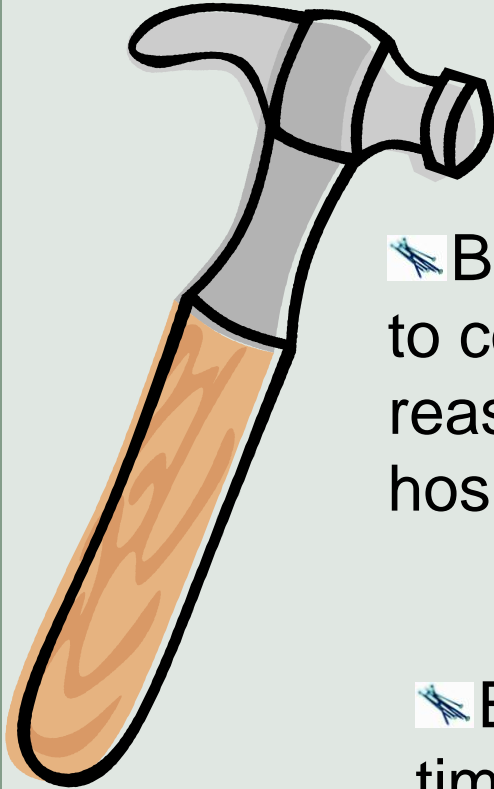




Our Education to Staff

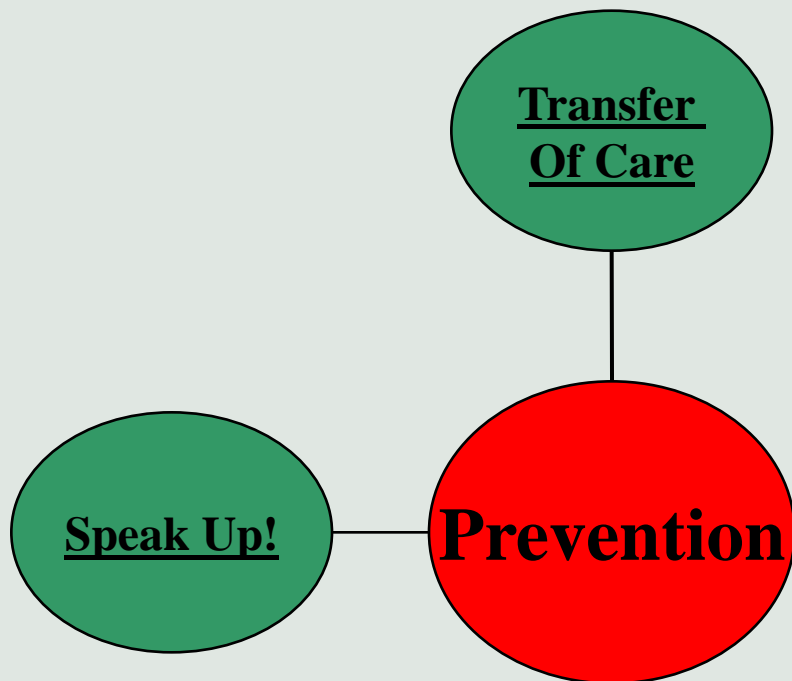


SBAR Transfer of Care & Med Minute:



✂ Break down in communication and failure to communicate effectively are the top reasons that adverse events occur in every hospital in the country!

✂ By giving report the same way every time on every patient, we prevent missed and incomplete information that can lead to patient deterioration.





Speak Up!


- Program created to address cultural concerns with staff not speaking up for any number of reasons.
- Administrative support
- Using SBAR
- Using Escalation tools
- What if you don't?




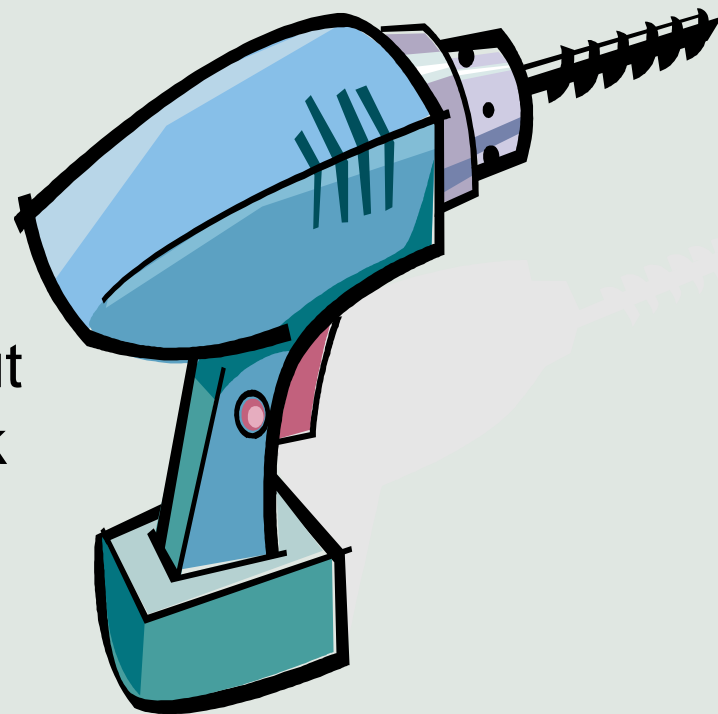
Our Education to Staff



Speak Up! Campaign

 You may have concerns about it being awkward after you speak up, but weigh the consequences to the patient if you choose not to.

 We as administration will stand behind you when you speak up to any staff member with the patient's well being at the center of the conversation.





- **Speak Up!** – it's your responsibility
- **Speak Up!** – you have the support
- **Speak Up!** – you know what to do

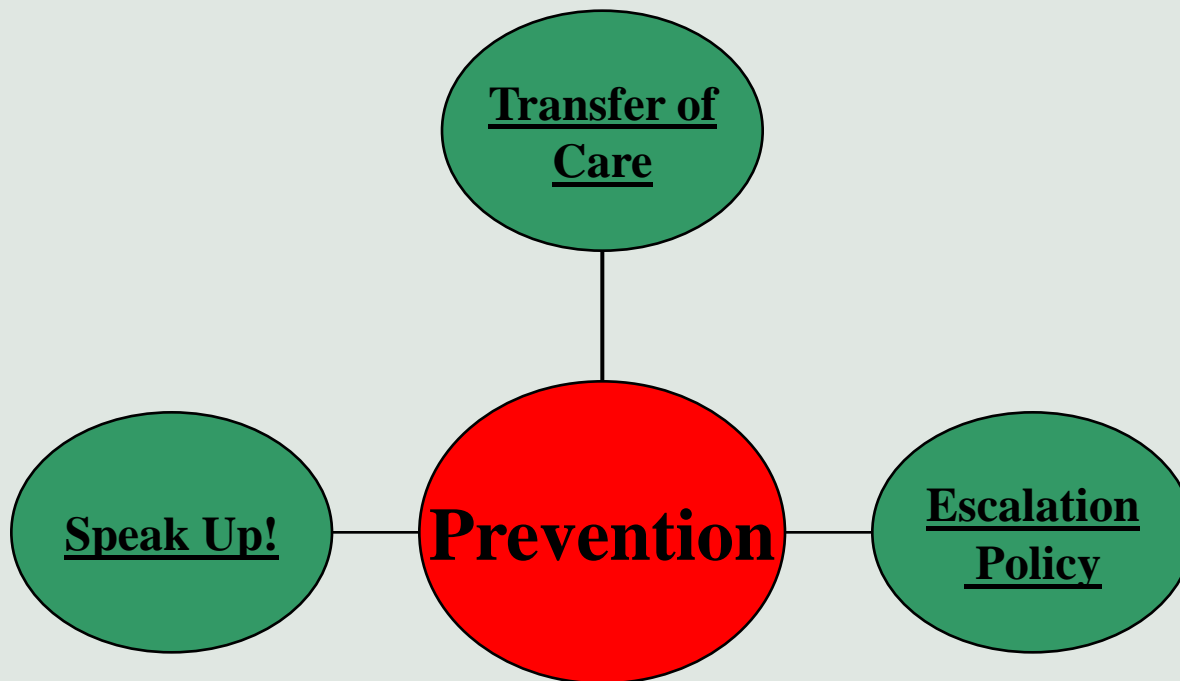
Recognize the deteriorating patient

Call the **Rapid Response Team**

Use **SBAR** every time

Use the **Escalation Process** whenever necessary

Speak Up!

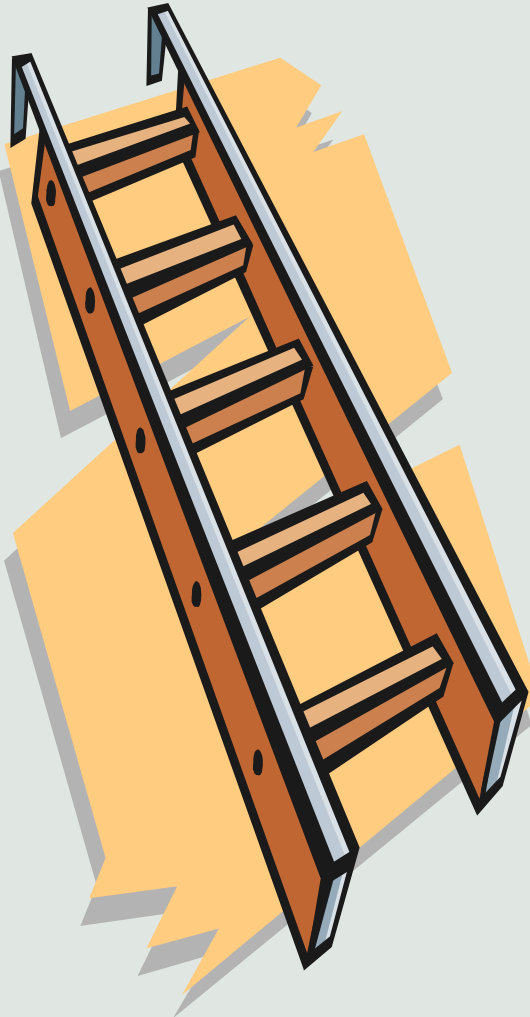




Our Education to Staff

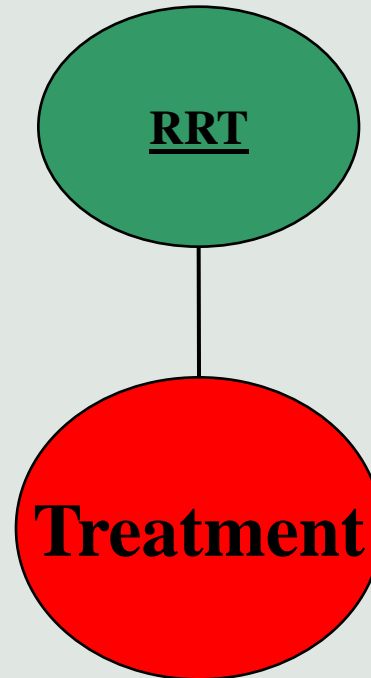


Escalation Policy



If you are not getting the response that you need to address your patient's condition or needs, this policy tells you whom to call next.

It does not take the place of calling the Rapid Response Team and you may need to do both. If you cannot leave the patient, please ask someone to escalate care according to the escalation tree for you.



About Treatment

- This is the most important place to start.
- Why?

- Our RRT is a nurse-led team
- Created in December 2006
- Over 400 calls
- High Staff and MD satisfaction
- Team designed around our areas that were in need of improvement.

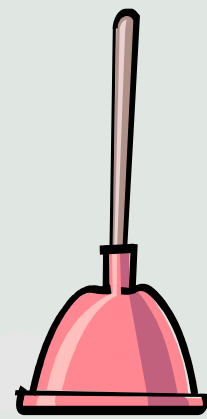


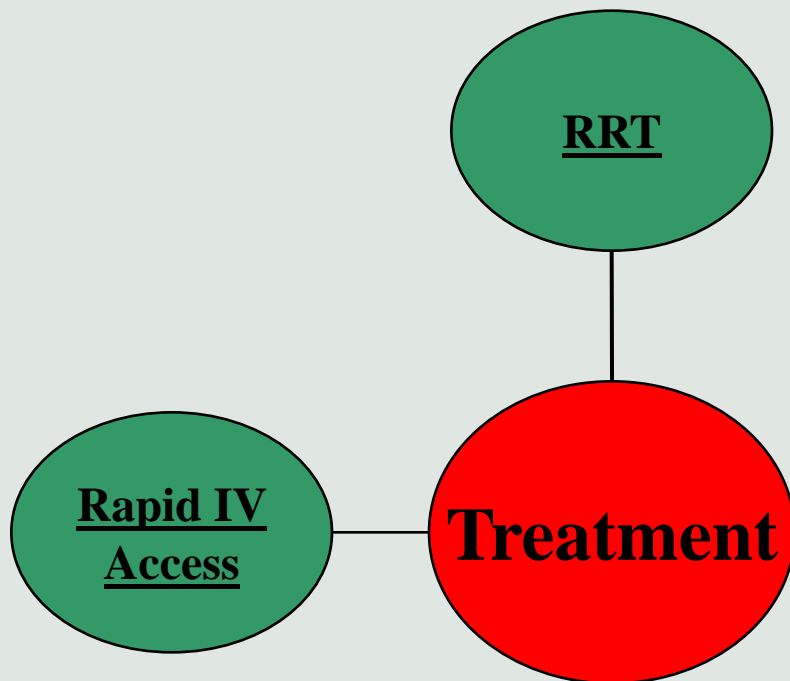
Our Education to Staff



Rapid Response Team

- 🏃 The RRT has been in place since December 2006.
- 🏃 It is here to assist you whenever you feel uncomfortable, need a second opinion, or feel like a patient's condition is getting out of control.
- 🏃 We have seen a decrease in the number of patients experiencing shock since the RRTs implementation because you are recognizing it and calling—great job!!





Rapid IV Access Task Force

- Formed in March 2007 in response to an identified opportunity for improvement
- There were several instances where lack of IV access resulted in/or contributed to significant patient harm
- The team's objective was to identify and develop actions related to IV access in critical situations

- Identify high risk patients
- Establish protocol
- Define resources

- Create patient classification system and protocol.
- For each patient classification determine:
 - Definition
 - Response
 - Monitoring
 - Escalation
 - Resources

Patient Classification

- Tool to be used during Patient Assessment, part of ABCs
- Decision making guide
- Provides structure for escalation

Team Recommendations

- 24/7 IV Team Coverage at SR and ECH
- Development and Implementation of IO (clarification around clinicians able to put in IO required)
- Education and Competencies
- EZ IO for Code Carts and Line Carts
- PALS/APLS for all Hospitalists

What did the team do?

- Formulated a Decision Tree for IV Access
- Developed Patient Classification Tool
- Identified resources for Central Line and Intraosseous placement

No more than 3 peripheral IV attempts by all resources

Assessments and interventions are recommendations only - they do not constitute policy

	0 = No IV Needed	1 = IV Needed (Routine IV)	2 = IV Essential to Stability (Urgent IV)	3 = IV Essential to Life (Critical IV)
Define	<ul style="list-style-type: none"> • Closer to going home • No access needed based on diagnosis or med administration route • Oral rehydration • No vomiting or dehydration • Stable hydration status • Assess for increased fluid loss, tachypnea, diarrhea, hemorrhage, fever • Gut check-be sure child does not need IV 	<ul style="list-style-type: none"> • Known need for IV for re-hydration or medication • No underlying complex medical history • Previously healthy 	<ul style="list-style-type: none"> • Any patient with a complex medical history • Fragile status dependent on IV access • Direct threat to become class III w/o IV access 	<ul style="list-style-type: none"> • Compensated or uncompensated shock • Decompensating • Sustained ↑ HR or ↓ BP from baseline
Response *MD order required for all IV/IO/CVL placement	<ul style="list-style-type: none"> • Oral rehydration and/or tolerating enteral feeds 	<ul style="list-style-type: none"> • Peripheral IV access • Maximum of 2 hours to obtain access before escalating • If no IV access within 2 hours or patient condition deteriorates in that time then escalate care and inform physician 	<ul style="list-style-type: none"> • Immediate peripheral IV access • Notify the IV team or next available experienced provider • <u>No more than 3 attempts by all resources</u> (preserve AC) • If IV not established in 60 minutes or patient's status changes escalate to physician & notify IV team if not already called or have not yet arrived • Notify attending physician and Rapid Response Team if condition deteriorating 	<ul style="list-style-type: none"> • Immediate emergent IV access necessary • Notify physician & Rapid Response Team • If no immediate IV access place IO • After IO place more permanent IV access within 24 hrs
Monitor	<ul style="list-style-type: none"> • Monitor response to rehydration, vital signs, urine output, and assessment Q4 • Responsibility of whole team 	<ul style="list-style-type: none"> • IV access and symptoms of dehydration • Monitor vital signs, urine output, and assessment within 2 hours then routine (Q4) if stable 	<ul style="list-style-type: none"> • Monitor vitals, urine output, and assess patient Q1hour until IV obtained 	<ul style="list-style-type: none"> • Continuous monitoring
Escalation	<ul style="list-style-type: none"> • Change in status 	<ul style="list-style-type: none"> • Change in status • No IV access within 2 hours and/or patient condition deteriorating 	<ul style="list-style-type: none"> • Change in status • No IV access within 60 min and/or patient condition deteriorating 	<ul style="list-style-type: none"> • Follow PALS guidelines, if unsuccessful then IO
IV/IO Start Resource	<p>Internal Resource:</p> <ul style="list-style-type: none"> • Bedside Nurse (inexperienced ok) 	<p>Internal Resource:</p> <ul style="list-style-type: none"> • Bedside Nurse (inexperienced ok) <p>External Resource:</p> <ul style="list-style-type: none"> • IV/PICC team 	<p>External Resource: IV/PICC Team, Rapid Response Team, Transport Team, ICU Charge Nurse</p> <p>Central Line Physician Resource (Contact in order): General Surgeon (EG & SR), Critical Care Physician (EG), Anesthesiologist, ED Physician (EG), Interventional Cardiologist (EG)</p>	<p>External Resource: IV/PICC Team, Rapid Response Team, Transport Team, ICU Charge Nurse</p> <p>Central Line Physician Resource (Contact in order): General Surgeon (EG & SR), Critical Care Physician (EG), Anesthesiologist, ED Physician (EG), Interventional Cardiologist (EG)</p> <p>IO Resource (contact in order): IV/PICC Team (EG & SR), ED Resource RN(EG & SR) , ED Paramedic (EG), RRT (SR) , Transport Team (EG & SR), PICU Fellow (EG)</p>

IV ACCESS DECISION TREE

Use this decision tree to determine the appropriate resources and actions to establish or maintain your patient's IV
Assessments and interventions are recommendations only – they do not constitute policy

Anytime your gut, or some data tells you your patient is in trouble and you need **another** experienced clinician to evaluate the patient call the Rapid Response Team **5-TEAM** then press 1 for Egleston RRT team press 2 for Scottish Rite RRT team

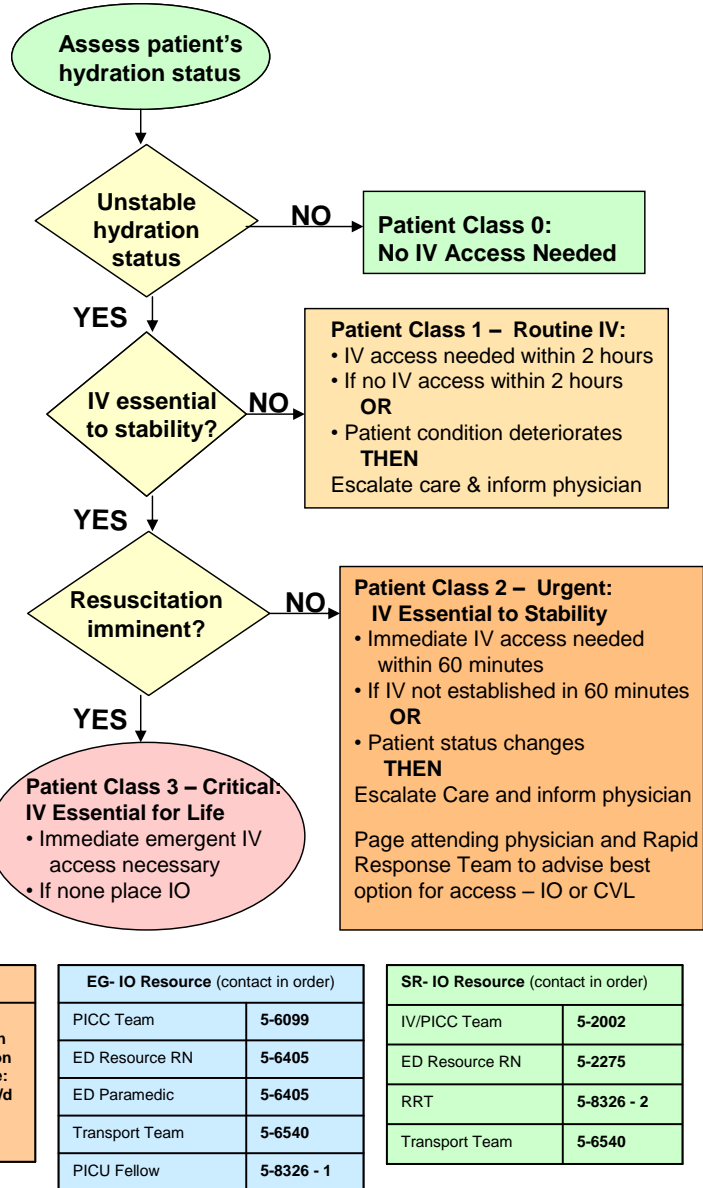
No more than 3 peripheral IV attempts by all resources
Policy 4.10

MD order required for all IV/IO/CVL placement

EG-Peripheral IV Resource	
PICC Team	5-6099
RRT	5-8326 - 1
Transport Team	5-6540
PICU Charge Nurse	5-6006

SR-Peripheral IV Resource	
IV/PICC Team	5-2002
RRT	5-8326 - 2
Transport Team	5-6540
PICU Charge Nurse	5-5050

EG & SR CVL Resource (Contact in order)	
<ul style="list-style-type: none"> General Surgeon (EG & SR) Critical Care Physician (EG) Anesthesiologist ED Physician (EG) Interventional Cardiologist (EG) 	Refer to Doctor on Call list on careforce: choa.org/dccall/



EG- IO Resource (contact in order)	
PICC Team	5-6099
ED Resource RN	5-6405
ED Paramedic	5-6405
Transport Team	5-6540
PICU Fellow	5-8326 - 1

SR- IO Resource (contact in order)	
IV/PICC Team	5-2002
ED Resource RN	5-2275
RRT	5-8326 - 2
Transport Team	5-6540



Level 2 patients

- IV is essential to stability:
- Patient has a complex medical history or fragile status dependent on IV access
- Patient may deteriorate if IV access isn't obtained

Nurse role:

- If IV is not established in 60 minutes **or**
- Patient's status deteriorates

- Escalate:
- Call physician
- Call Rapid Response Team to advise best option for access – CVL or IO

- IV is essential to life:
- Patient is in compensated or decompensated shock or
- Patient is deteriorating or has sustained \uparrow HR or \downarrow BP from baseline

Nurse role:

- Call physician and Rapid Response Team
- If no immediate IV access, IO should be placed (order required)
- IO Resources – Egleston
- PICC/IV Team
- ED Resource Nurse
- Transport Team
- PICU Fellow

Occurrence Events

Serious Sentinel Events



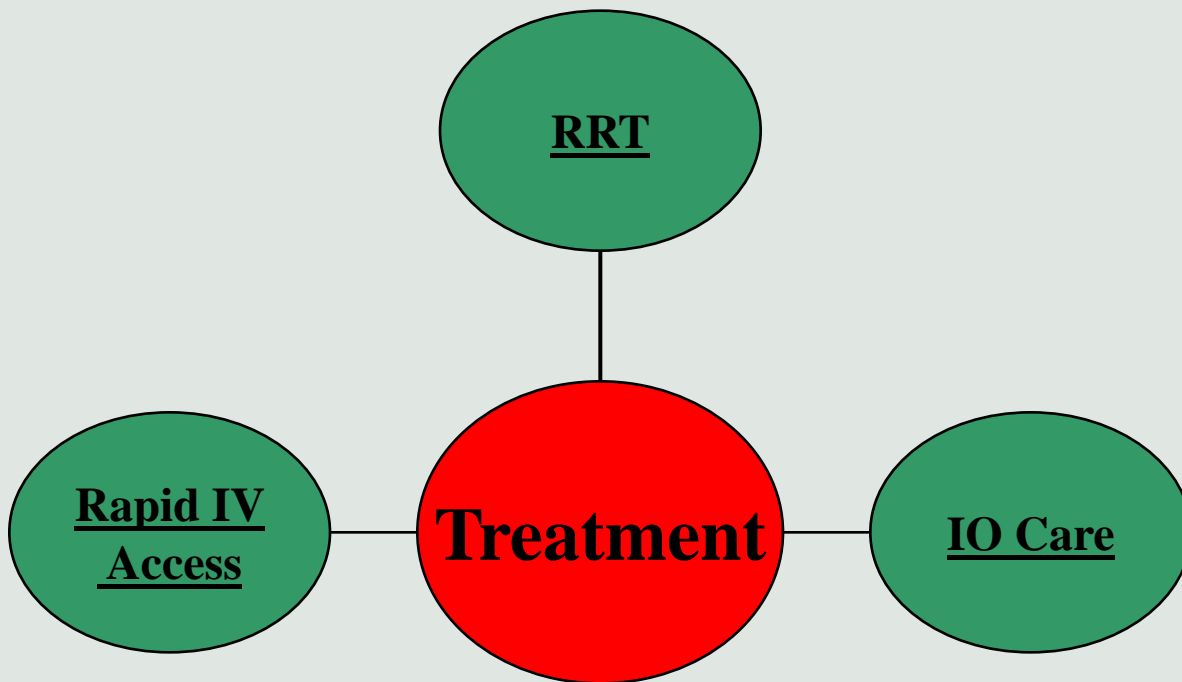
Our Education to Staff



Rapid IV Access

- ❄ There were several instances where lack of IV access resulted in/or contributed to significant patient harm.
- ❄ Utilize the IV Access Decision Tree and Patient Classification for patient hydration assessment and a list of identified resources that you can call on when needed.





Nursing Care of an Intraosseous (IO)

- IO needles are placed:
- when the patient is deteriorating **and**
- placement of a peripheral IV or Central Line is not possible

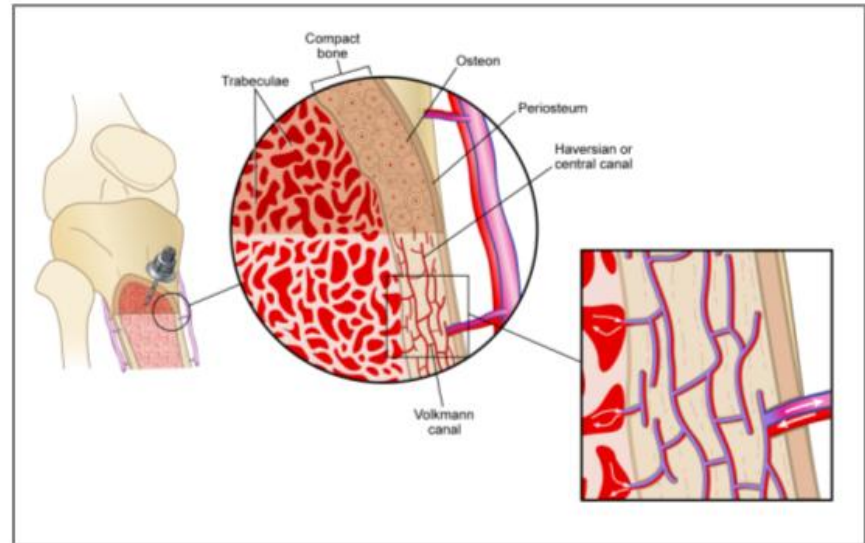
The most common site
is in the tibia





- The IO is placed in the bone marrow
- Fluids and medications reach the central circulation very quickly

Anatomy of intraosseous access



Thousands of small veins lead from the medullary space to the central circulation

Nursing Care of an Intraosseous (IO)

- IO needles are dressed with sterile gauze and tape
- They need to be secured to guard against accidental bumping or dislodgement
- Check site frequently for signs of swelling and needle displacement (leakage at insertion site, needle movement)

Nursing Care of an Intraosseous (IO)

- IO needles can be used to infuse IV fluids and IV medications
- After the IO is placed, you can connect the IV fluids
- Treat IO's like central lines

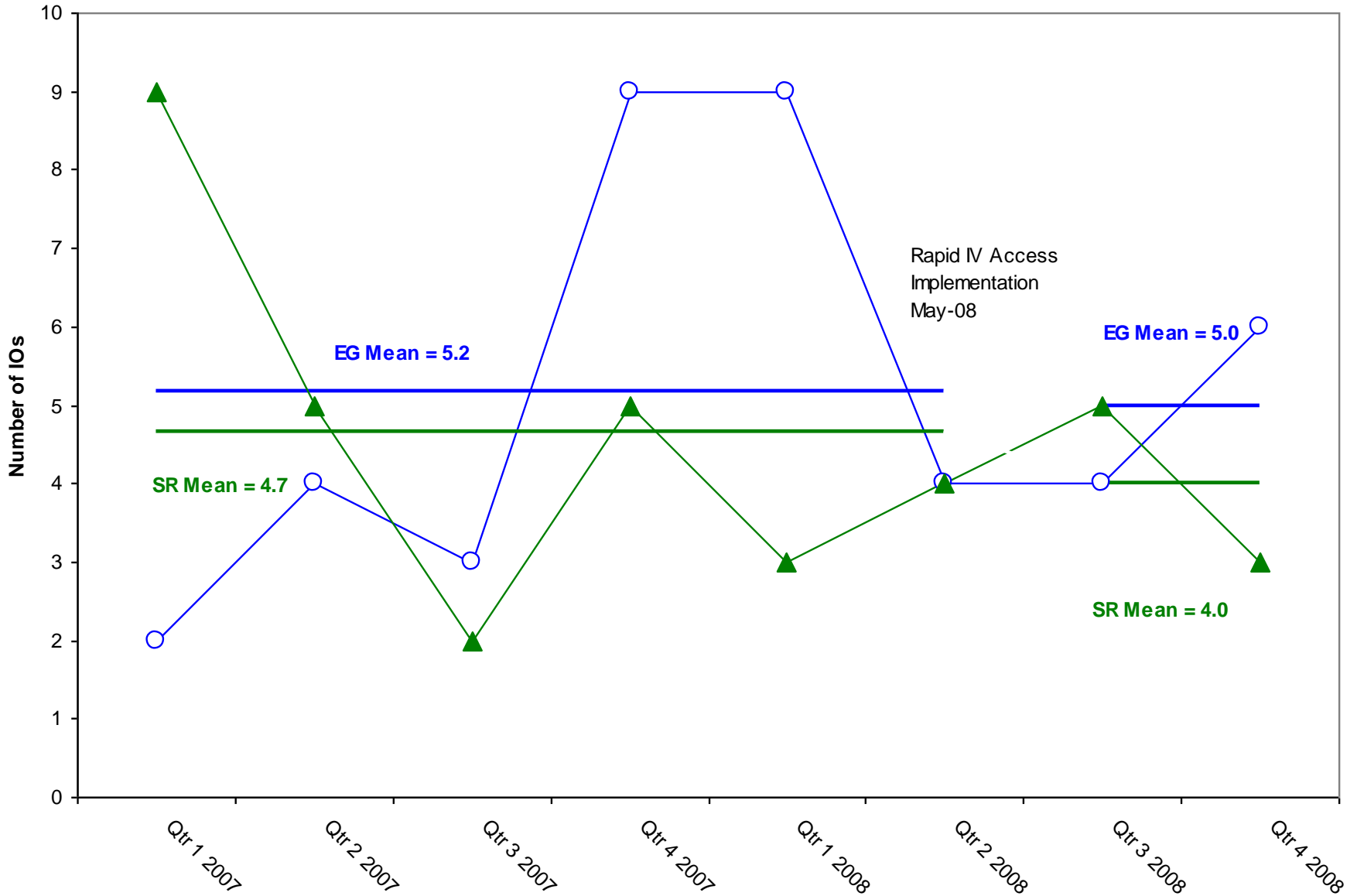


Nursing Care of an Intraosseous (IO)

- The IO needle should be removed within 24 hours of insertion
- Peripheral IV or Central Line placement should be attempted as soon as the child is stabilized
- Refer to the Decision Tree for resources to remove the IO



Intraosseous (IOs) Placed



Data pulled from SMS by charge code
36680 Intraosseous needle placement

—○— EG — EG Average —▲— SR — SR Average

- Recognition of the need
- Physician buy-in



Lessons Learned

- Ensure that you have all of the appropriate stakeholders as team members
- Involve those who will help develop education materials from the beginning of the project
- Facilitation of resources can be difficult, do not get discouraged

- Scenarios for RRT and Rapid IV Access included in annual competencies
- Reduction in preventable codes
- Reduction in patients found in shock
- Reduction in unstable ICU transfers

More Successes