Clinical Safety & Effectiveness
Cohort # 21 Team 4

Blood Culture Contamination Rate in the UHED

Educating for Quality Improvement & Patient Safety

Our Team

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- Pathology Services
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  - **Kathleen Lawless**, MT(ASCP), SV, SI
  - **Stephanie Overton**, MLS(ASCP),SV
  - **Carrie Bartosh**, MLS(ASCP),SV
- Facilitator
  - **Sherry Martin**

- Project Sponsors
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  - **Tammy McGarity**, DNP, MSN, RN, NEA-BC
    Director, Center For Clinical Excellence

- Special Thanks:
  - **Corazon Serrano**, BSN, RN
  - **Krystle Mendez**, Clinical & Simulation Trainer
  - **Carmen Paccione**, MSN, RN, CCRN-K, CCNS
  - **Ann Monica Baban**, RN, BSN
  - **Robert Pimentel**, Value Analysis Coordinator
  - **Bill Bedwell**, Executive Director of Reimbursement
  - **Bradley Brimhall**, MD, MPH
  - **Kristi Traugott**, PharmD

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Human Consequences of Blood Culture Contamination

- Leads to unnecessary treatment
- Lengthens hospital stay for patients
  - Antibiotics given until proven contaminants
  - Additional Tests (repeat blood cultures, ECHOs, CTs)
  - Procedures
- Exposes patients to unnecessary side effects of additional antibiotics
- Delays in inpatient admissions from ED due to "bottlenecking"

Financial Costs of One Blood Culture Contaminant Requiring Additional Day(s) of Hospitalization

- Estimated 80% of patients with contaminants will have an additional day of hospitalization
- $1,698/day Direct Costs to UHS:
  - Includes Direct Lab Costs – $85.82/contaminant
  - Includes Direct Pharmacy Costs – $10/day
    - Vancomycin for Staphylococcus contaminants
- **Total Annual Direct Costs: $753,619**

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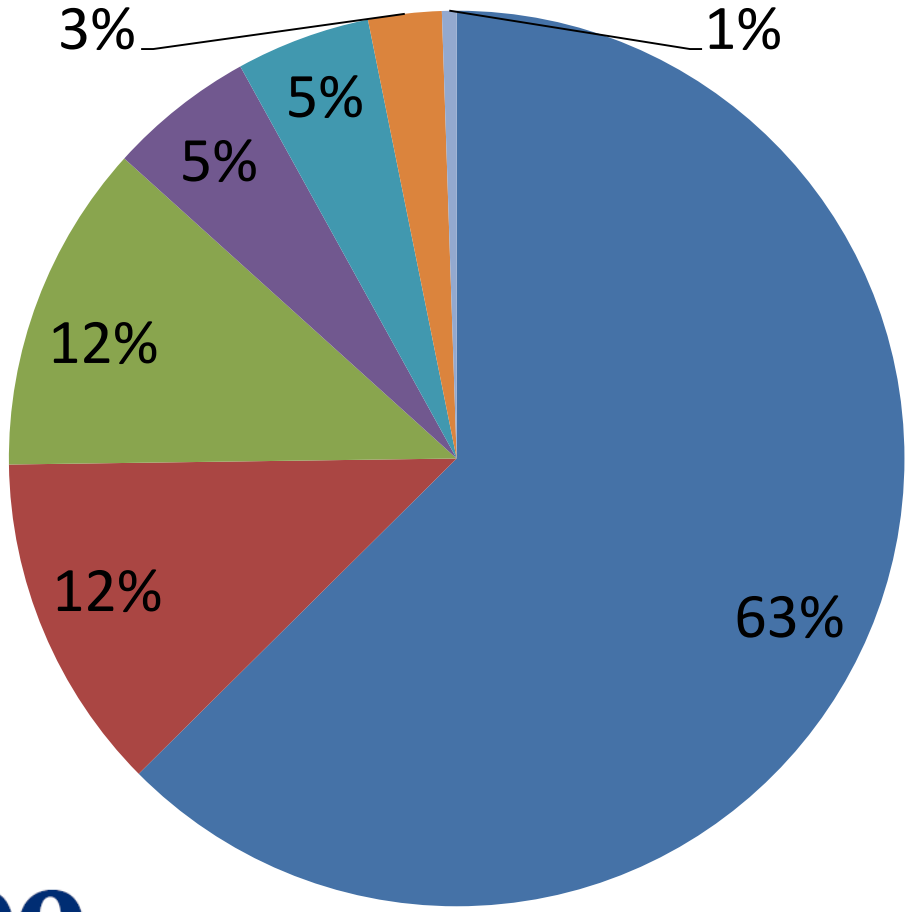
Blood Culture Contaminants



- CNS (coagulase-negative Staphylococcus)
- Diptheroids
- Strep viridans
- Propionibacterium
- Micrococcus
- Staph epidermidis
- Bacillus, not anthracis

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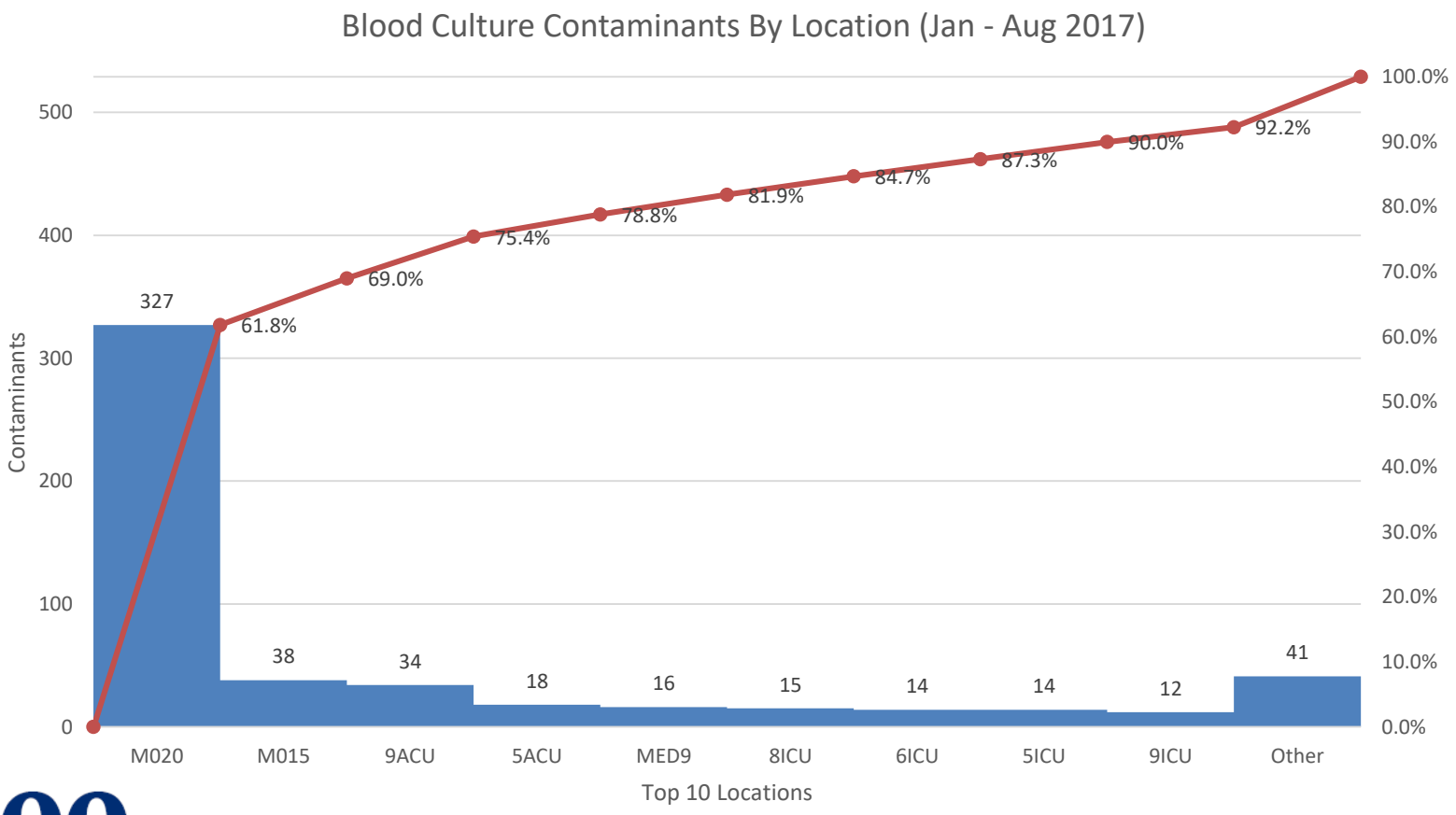
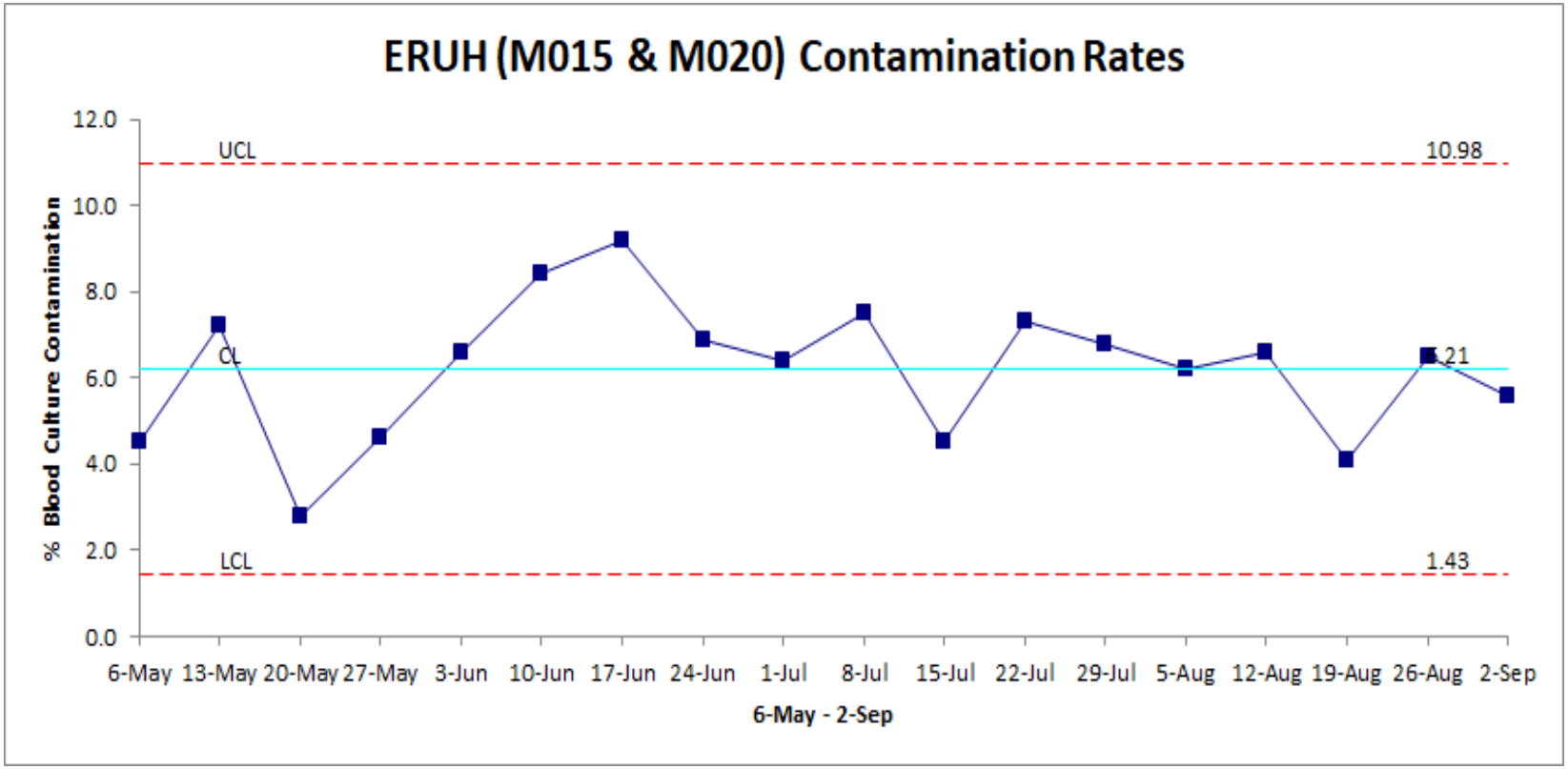
Who Has The Most Contaminants?



Project Aim

Decrease the percentage of blood culture contamination in the University Hospital Emergency Department (M015 & M020) from 5.9% to 3.0% by December 31, 2017.

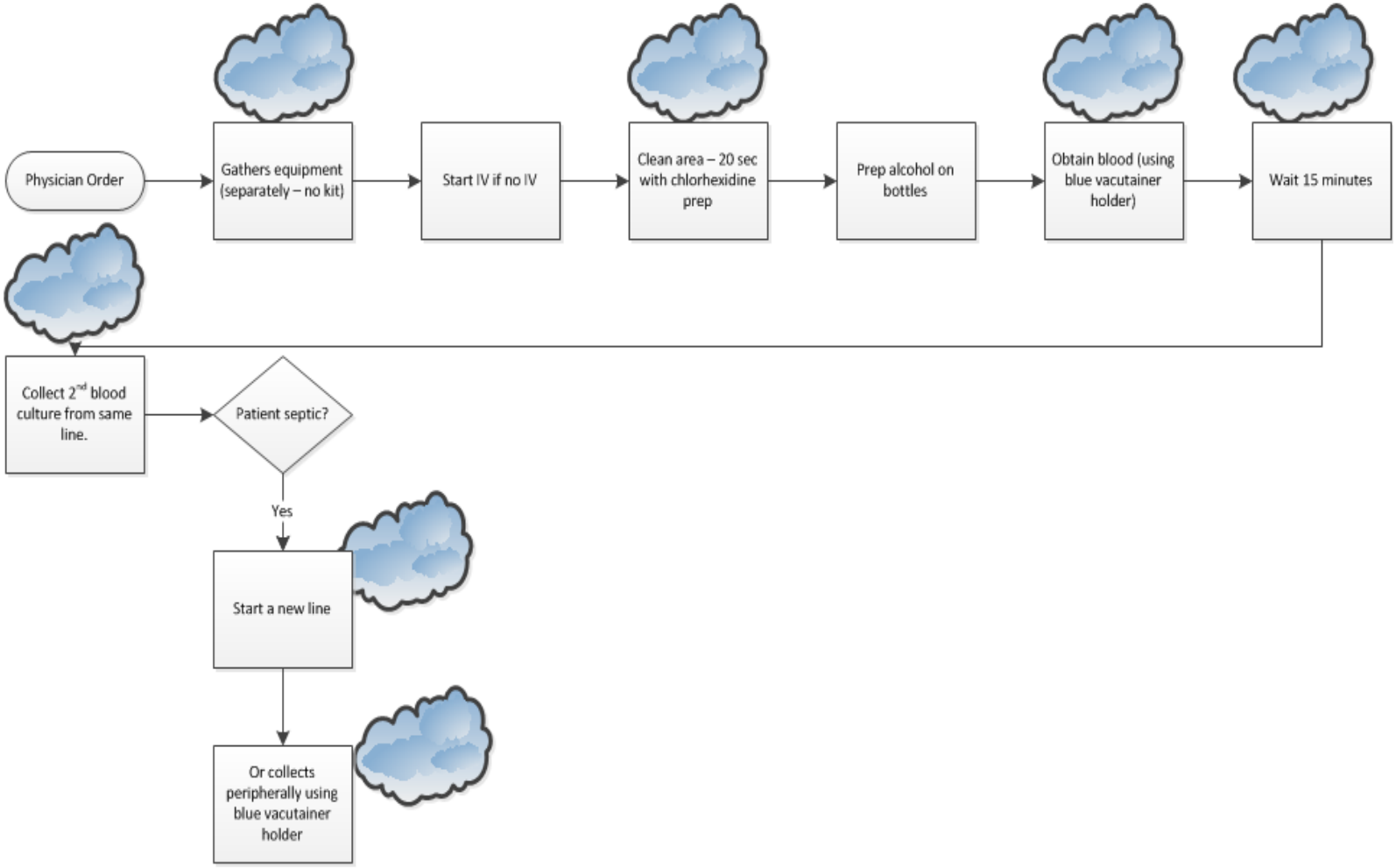
UH ED Baseline Contamination Rates



How Will We Know That a Change is an Improvement?

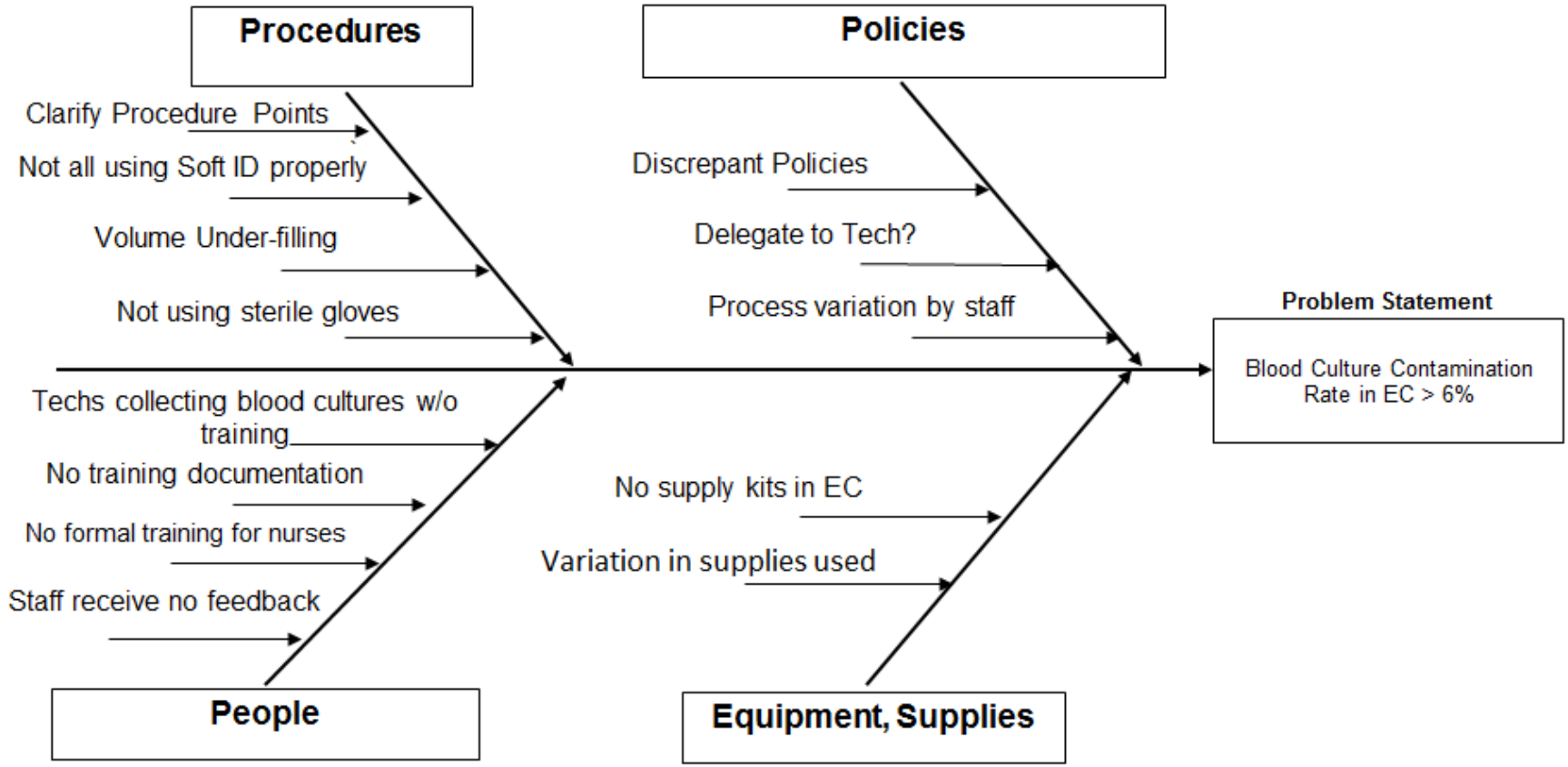
- Blood culture contamination rates generated weekly
- A sustained decrease from a baseline average of 5.9%
- Decreased rates among individuals post intervention

Procedural Variations Identified



EC Nurse description of her process for blood culture collection

Process Analysis Fishbone



Variability In Layout of Stock Rooms

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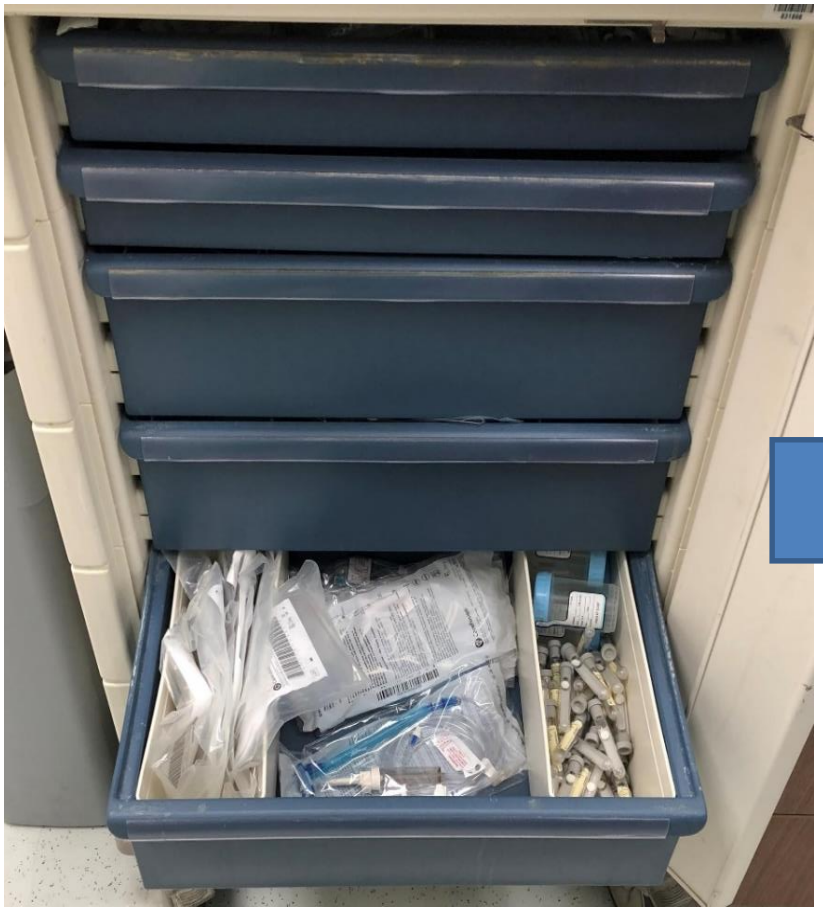
Intervention: Standardization Of Nursing Carts



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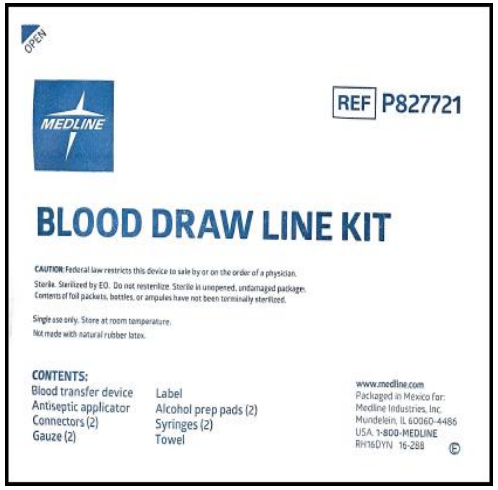
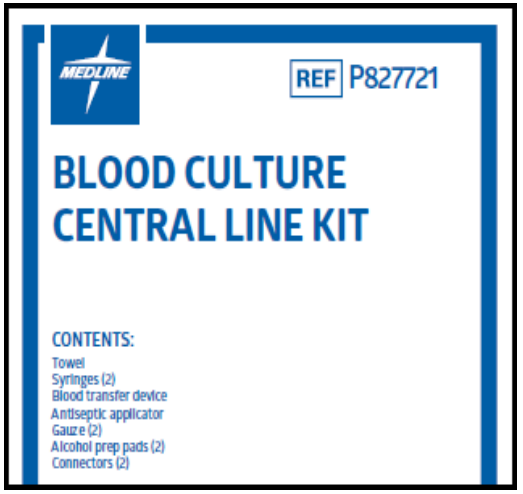
Intervention: Packaging Update

Before – Peripheral Draw Kit

After – Peripheral Draw Kit



Before – Central Line Kit



After – Central Line Kit

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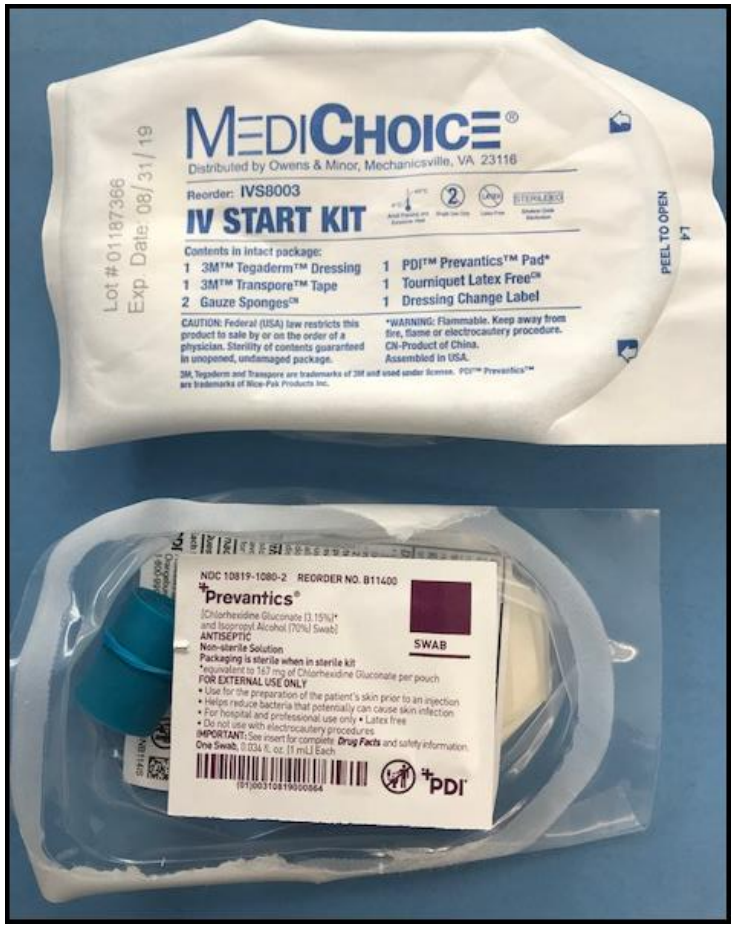
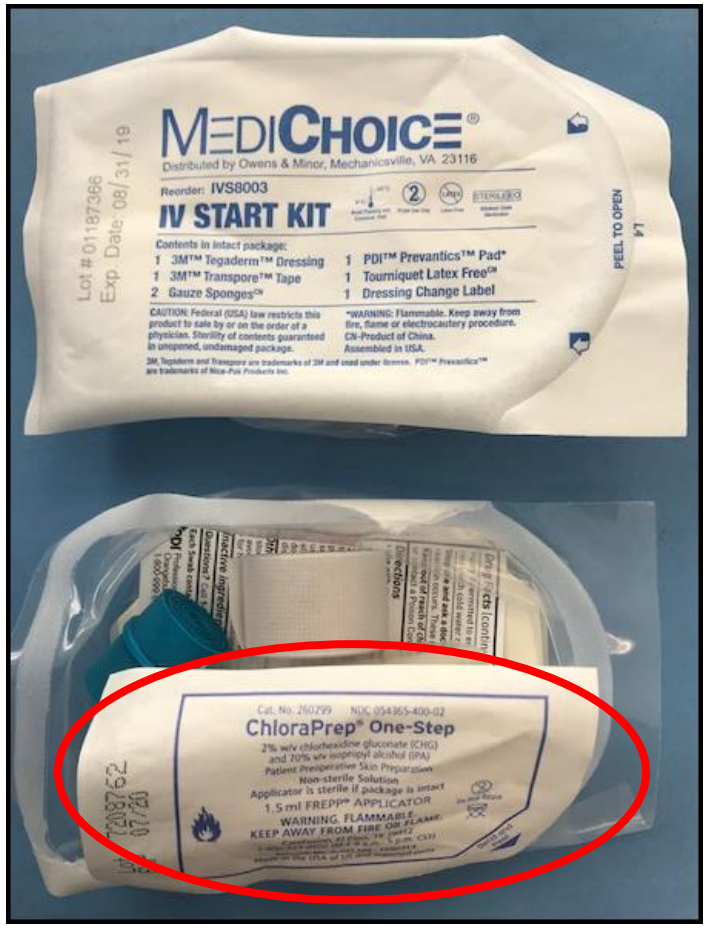
Intervention: IV Start Kit Update





Before – IV Start Kit

After – IV Start Kit

Intervention: Informing Staff

ERUH Blood Culture Collectors For The Week 12/24/17 to 12/30/17

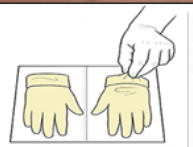
COLLECTOR	#	Cnt
Allaway, Lacey	3	1
Alyassin, Nizar	3	
Andiarena, Miosotis	8	
Aparicio, Jorge	2	
Arthur, Richard	1	
Barrera, Juliette	2	
Basco, Raymond C	1	
Bel Hadj Ali, Mo	4	
Bermudez, April	2	
Birdow, Shanequa	2	
Blakemore, Randee	1	
Branam, Jennifer	6	
Bray, Ashley	2	
Calderon, Stephanie	2	
Castro, Maria	2	
Cochran, Luisa M	2	
Fairchild, Samuel	2	
Falcon, Joshua	1	
Fowler, Diane	4	
Fuller, Larry	10	
Garcia, Daniela	6	
Green, Geoffrey	6	
Gustilo, Donna	1	
Hames, Amanda R	2	
Huerta, Martha	6	
Hursh, Taylor	3	
Jank, Peter	3	
Jones, Russell	3	
Kallies, Vanessa	8	
Kaminski, Kaycee	3	1
Lee, Aviee-Ann	4	
Lintag, Angelique	2	
Mangum, Kelsey	5	
Martinez2, Silvia	6	1
Mauricio, Maximiliano	2	
Medina, Daniel E	6	1
Unk	20	1

COLLECTOR	#	Cnt
Medrano, Thelma	6	
Molina, Angelique	1	
Monk, Carol	2	
Morin, Catherine	4	
Morin, Melissa	3	
Morrow, Trey	1	
Munoz, Esther	1	
Mwiti, Caroline	2	
Nedbalek, Gracie	2	
Nedbalek, Graciela	2	
Nguyen, Quocanh	1	
Parker, Robert J	3	
Patlan, Selenne	7	1
Perez, Francisco	2	
Perez, Ma	2	
Reyes, Jessica	2	
Reyna, Robyn	1	
Rodriguez, Sylvia	8	
Rosselot, Laura	2	
Salvador, Kathry	2	
Sanchez, Victori	4	
Scott, Danielle	3	
Simpson, Dennis	4	
Son, Sam	2	1
Spencer, Morgan	2	
Spriggs, Margare	2	
Stateczny, Carolyn	9	
Totterdale, Keith	2	1
Trevino, Nora	1	
Tristan, Tabitha	4	
Valle, Francisco	4	
Villarreal, Erica	2	1
Witcher, Kayleig	10	1
Yancey, Rebecca	1	
Zreet, Rachael	4	

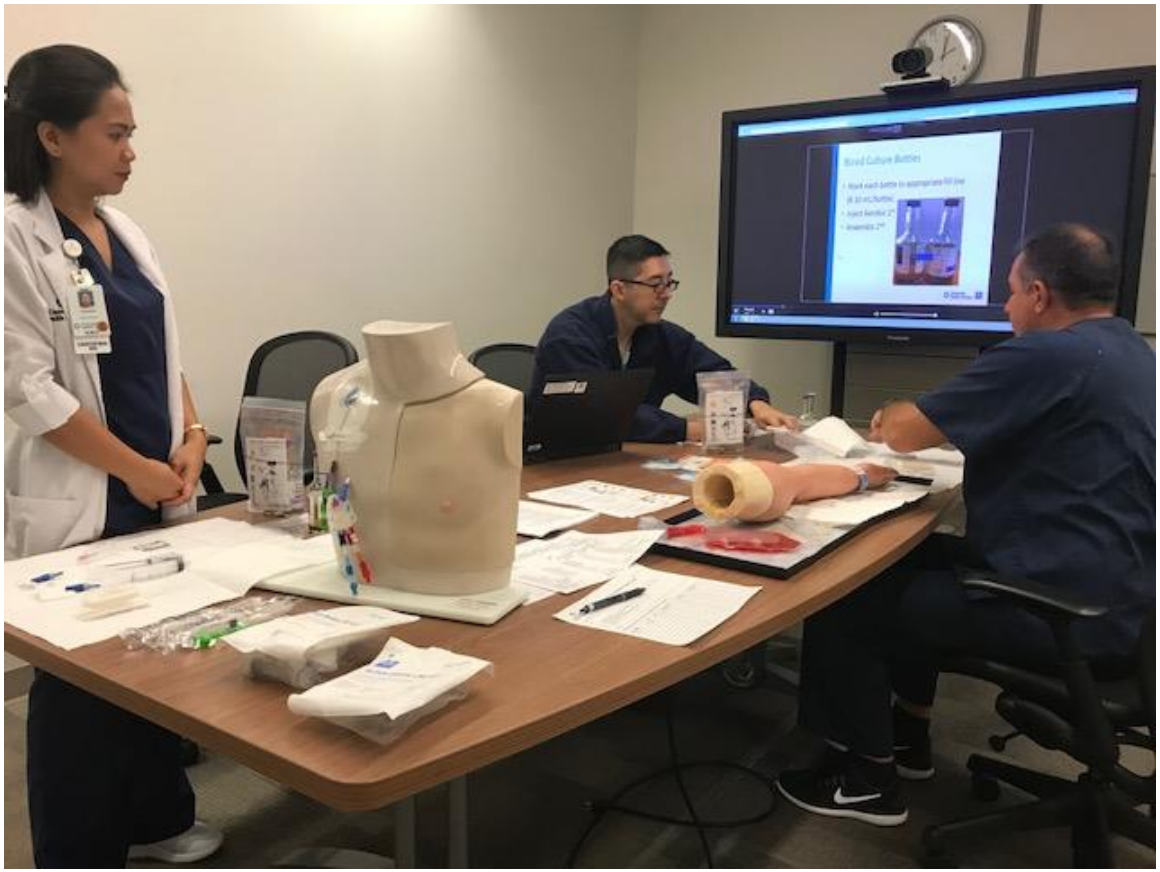
Intervention: Quick Guide

TOP 5 THINGS TO *AVOID A CONTAMINATED VENIPUNCTURE BLOOD CULTURE* COLLECTION

● Prevents a longer patient length of stay ● Prevents unnecessary antibiotics and other treatments.

1 	Use the ***BLOOD CULTURE VENIPUNCTURE KIT*** for a peripheral draw.
2  	Clean the top of each blood culture ***bottle*** with a separate ***alcohol prep pad*** and allow to dry completely.
3  	Scrub using ***Chlorhexidine*** for skin cleansing for 30 seconds and allow to ***dry completely***.
4  	If you need to re-palpate, use ***sterile gloves***.
5 	***Draw 20 ml*** of blood in the syringe and place 8-10 ml in each bottle.
University Health System	** Don't forget ** – Complete the draw using ***SoftID***!

Intervention: Staff Training



Central Line Draw Video: http://mediasite.universityhealthsystem.com/Mediasite/Play/e0996bd5a986498dbba1570ce55898f91d

Peripheral Draw Video: http://mediasite.universityhealthsystem.com/Mediasite/Play/5c9024dd567f4d548d941d17c524c3b81d

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Blood Culture Contamination Drivers

Aim	Primary Drivers	Interventions
The aim of this project is to decrease the percentage of blood culture contamination in the University Hospital Emergency Department (M015 & M020) from 5.9% to 3.0% by December 31, 2017.	Delay and confusion in obtaining supplies for blood culture	Standardize bottom draw of IV carts **RS = 3**
		Add blood culture bins in ED Obs **RS =3**
		Replace current IV start kit to include Chloroprep **RS = 3**
		Rebranding blood culture kits with correct names and colors **RS = 2**
		Peels to be sent as part of collection process **RS = 3**
	Staff unaware of delayed effect of blood culture contamination and how they personally contribute	Update GEMBA board weekly with blood culture contamination rate, correct blood volume and personal rates **RS = 2**
		Assign nurses unique blood culture identifier **RS = 3**
		Provide public positive feedback by name to collectors **RS = 3**
	Lack of proper knowledge on obtaining blood cultures	Quick Guide card to be placed in blood culture bags **RS = 3**
		Nursing education video **RS = 2**
		1:1 education using simulation **RS = 1**
	Policies on blood culture draw	Update policy and procedures on blood culture draw **RS = 3**

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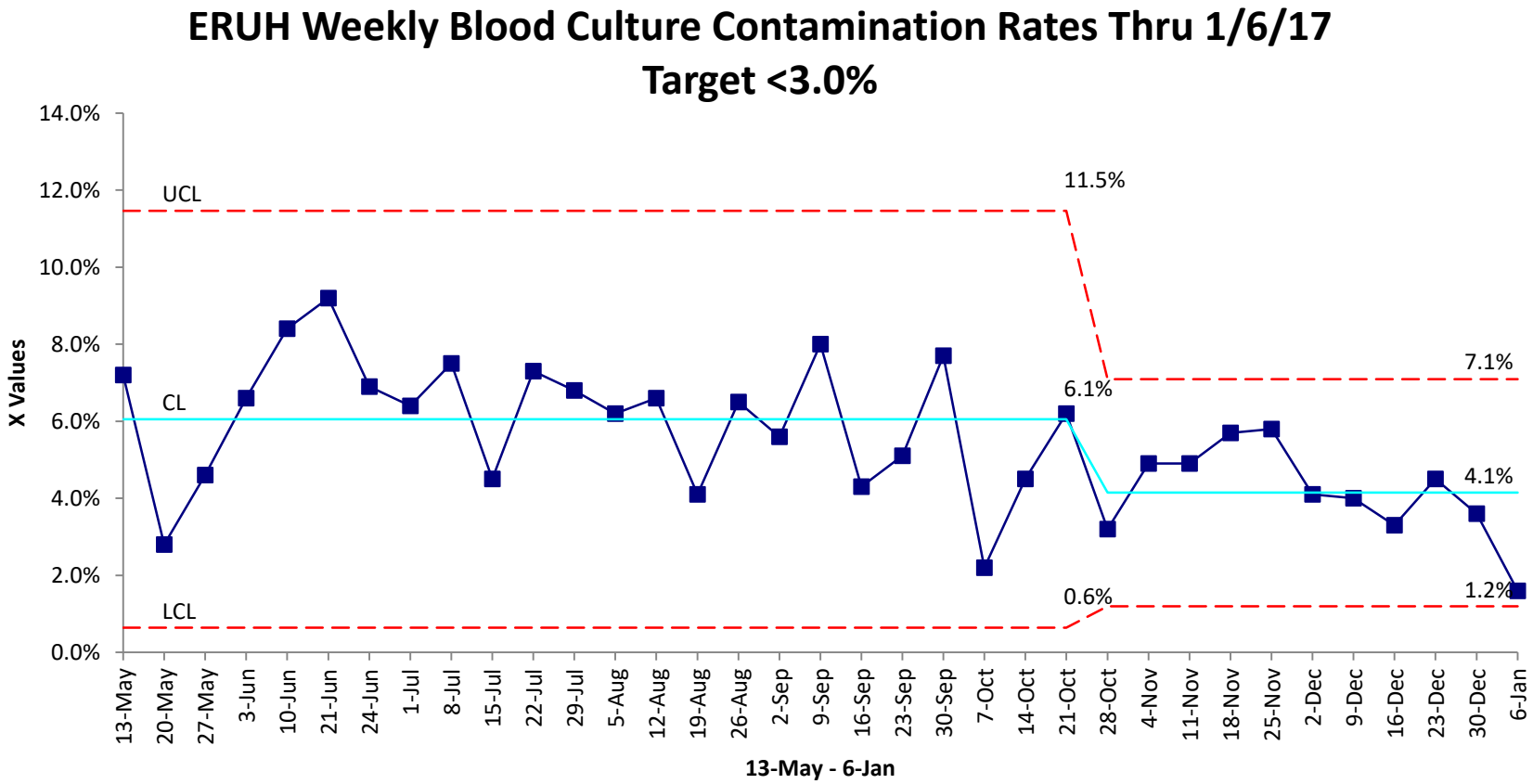
ERUH Weekly Blood Culture Contamination Rates



Video distributed 10/23/17
Hands on training began 10/25/17

Results/Impact

Before the blood culture project I was unaware of the amount of contaminations I had nor was I really taught the correct way to collect a blood culture specimen. Since the training, I have had little to no contaminations on the specimens I've collected.

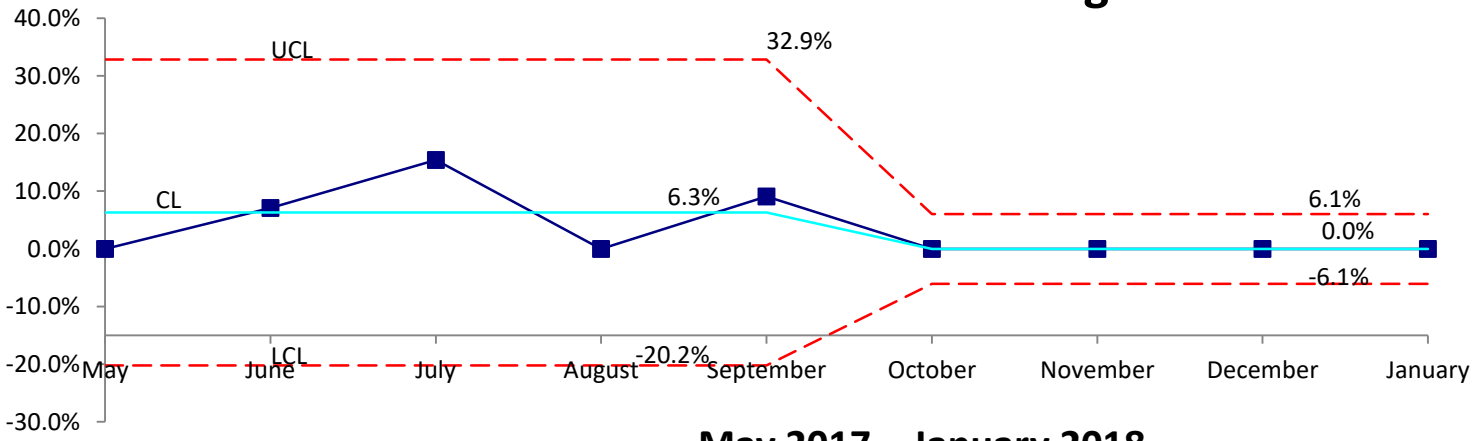
- Julyssa Rodriguez BSN, RN

ERUH Top Performers

5 or more blood cultures (10 or more bottles) collected with NO contamination:

Miosotis Andiarena ***Jennifer Branam***
Larry Fuller ***Daniela Garcia***
Geoffrey Green ***Martha Huerta***
Vanessa Kallies ***Kelsey Mangum***
Thelma Medrano ***Sylvia Rodriguez***
Carolyn Stateczny

Blood Culture Contamination For A High Contaminator



May 2017 – January 2018

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Return on Investment

	Contamination rate	Avoidable costs annual	ROI annual
Initial rate	5.9%	$ 753,619	
Current rate	4.1%	$ 523,701	$ 229,918
Target rate	3.0%	$ 383,196	$ 370,423

Actual direct costs to UHS: $1,698/patient

Additionally, supply cost estimated to decrease by $22,527 annually by moving the IV Start Kit to Chloraprep.

Creating Sustainability

- Training
  - Orientation
  - Learning Central
  - Skills Fair
- Quick Guide
- Updated labeling of collection kits 2018
- Replacing IV start kit with Chloraprep 2018
- Observation and feedback

Questions?

Thank you!

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