

Attacking Urine Contamination:

System-Wide Engagement and Standard Work Drives a 20% Average Rate to a Sustained 5% Goal

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Background

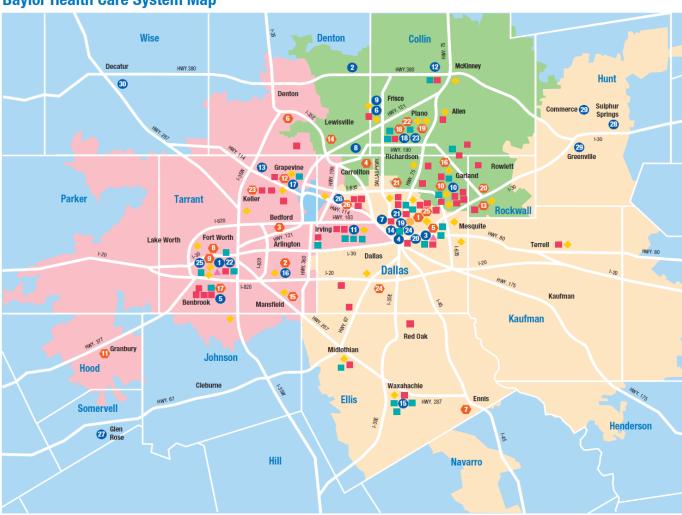
Baylor Health Care System

- 2.8 million patients come to Baylor's 370+ access points each year across the DFW Metroplex
- 31 owned/operated/ventured/affiliated hospitals
- 28 joint-ventured ambulatory surgical centers
- 409,375 ED visits FY'12
- 122,007 Admissions FY'12
- 53,787 total urine cultures performed FY'13 from 9 main BHCS hospitals



Baylor Locations

Baylor Health Care System Map



- Baylor All Saints Medical Center at Fort Worth¹
- Baylor Emergency Medical Center at Aubrey²
- Baylor Jack and Jane Hamilton
- Heart and Vascular Hospital² Baylor Institute for Rehabilitation²
- Baylor Institute for Rehabilitation at Fort Worth?
- Baylor Institute for Rehabilitation at Frisco²
- Baylor Institute for Rehabilitation at North West Dallas²
- Baylor Medical Center at Carrollton¹
- Baylor Medical Center at Frisco²
- Baylor Medical Center at Garland¹ Baylor Medical Center at Irving
- Baylor Medical Center at McKinney¹
- Baylor Medical Center at Trophy Club² Baylor Medical Center at Uptown²
- Baylor Medical Center at Waxahachie Baylor Orthopedic and Spine Hospital
- at Arlington²
- Baylor Regional Medical Center at Grapevine¹
- Baylor Regional Medical Center at Plano¹
- Baylor Specialty Hospital¹
- Baylor University Medical Center at Dallas¹
- North Central Surgical Center²
- Paul and Judy Andrews Women's Hospital
- at Baylor All Saints Medical Center at Fort Worth
- THE HEART HOSPITAL Baylor Plano²
- Our Children's House at Baylor¹ Baylor Surgical Hospital at Fort Worth²
- Irving-Coppell Surgical Hospital²

Affiliated Hospitals

- Glen Rose Medical Center
- Hopkins County Memorial Hospital⁴
- Hunt Regional Healthcare
- Wise Regional Health System⁴

Ambulatory Surgical Centers

- Baylor Ambulatory Endoscopy Center³ Baylor Surgicare at Arlington³
- Baylor Surgicare at Bedford³
- Baylor Surgicare at Carrollton³
- Baylor Surgicare at Dallas³
- Baylor Surgicare at Denton³
- Baylor Surgicare at Ennis³
- Baylor Surgicare at Fort Worth I³
- Baylor Surgicare at Fort Worth II³
- Baylor Surgicare at Garland³
- Baylor Surgicare at Granbury³
- Baylor Surgicare at Grapevine³
- Baylor Surgicare at Heath³
- Baylor Surgicare at Lewisville³
- Baylor Surgicare at Mansfield³
- Baylor Surgicare at North Garland³
- Baylor Surgicare at Oakmont³
- Baylor Surgicare at Plano³
- Baylor Surgicare at Plano Parkway
- Baylor Surgicare at Rockwall³
- Baylor Surgicare at Valley View³
- Day Surgery Center of North Texas³
- Lonestar Endoscopy³
- North Texas Surgery Center³
- Physicians DaySurgery Center³
- Tuscan Surgery Center³

Baylor Research Institute

Medical Offices and Centers

- A Fitness Centers
- Outpatient Rehabilitation Services
- Primary Care Centers Specialty Practice

Legend

- 1 Owned/operated hospitals
- ² Joint ventured hospitals
- 3 Joint ventured surgery centers
- 4 Affiliated hospitals

BHCS Market Regions

Central

East

West

RHCS 000 2012 Rev 07/01/12



Why Improve UCCR?

- Inappropriate reporting of UC results leads to:
 - Inadequate therapy and prolonged patient stays
 - Poor patient outcomes and unnecessary treatment
 - Increased cost
- It is cost prohibitive working up contaminated urines
 - BD estimates \$ 900 increase per contamination
 - Treatment of false positives may not get reimbursed
 - Inefficient use of time for testing personnel
- Recollections lead to decreased patient satisfaction and delay of treatment

^{1.} Bekeris LG, Jones BA, Walsh MK, Wagar, EA. Urine culture contamination: A College of American Pathologists Q-probes study of 127 laboratories. *Arch Pathol Lab Med.* 2008;132(6):913-917.

^{2. &}lt;a href="http://www.bd.com/vacutainer/pdfs/urine_value_story_VS8999.pd">http://www.bd.com/vacutainer/pdfs/urine_value_story_VS8999.pd



Process Towards Improvement

Identification of Issue

Analysis of Problem

Solutions Implemented

Outcome



Identification of Issue

- We didn't know we had an issue
- Most locations were not measuring UCCR . . . most of focus was on BCCR
- Notified by reference laboratory in early 2012 that BHCS as a whole had a urine contamination problem
- UCCR July 2011
 - 3 Facilities: > 30%
 - 5 Facilities: > 21%
 - BHCS Ave: 27.6%



Microbiology Centralization

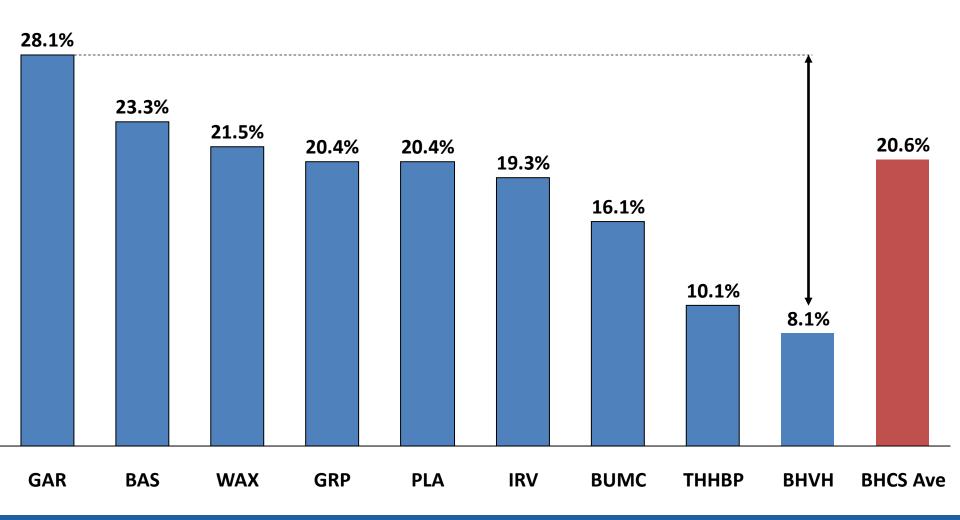
- In May 2010, 8 BHCS facilities transitioned microbiology testing to centralized reference lab (med fusion)
- Remaining facility transitioned micro testing June 2011
- Highly collaborative relationship between med fusion and BHCS on best practices



BHCS UCCR Variation

Data: Jul'11 –

Feb'12





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Group Effort

- Multi-Hospital PI team focused on reducing UCCR
- Team led by Baylor WAX Director
- Each facility had representative on team
- Project:
 - Identify best process for collection,
 preservation, transportation to hospital lab and reference lab



Literature Review of UCCR

- Surprisingly not much out there
- Most referenced articles are two CAP Q-Probe studies
 - Bekeris LG, Jones BA, Walsh MK, Wagar, EA. Urine culture contamination: A College of American Pathologists Q-probes study of 127 laboratories. Arch Pathol Lab Med. 2008;132(6):913-917
 - Valenstein P and Meier F. Urine culture contamination: A College of American Pathologists Q-Probes study of contaminated urine cultures in 906 institutions. Arch Pathol Lab Med. 1998;122(2):123-129.



CAP Q-Probe (2008)

Key Findings

- Collection site had no influence
- Refrigeration had significant effect
- Verbal instructions lowered male only
- Written instructions lowered both

UCCR

• 75th %ile: 4.2 %

• 50th %ile: 15.0 %

• 25th %ile: 26.7 %

• 10th %ile: 41.7 %

BHCS Ave

27.6 %



Contamination Definition

<u>CAP Q-Probe (2008)</u>

"A urine specimen was determined to be contaminated if the culture yielded more than 2 isolates in quantities greater than or equal to 10,000 CFU/mL."



Contamination Definition Variation

4 BHCS Hospitals

Used Q-probe & med fusion definition

4 BHCS Hospitals

 Did not have a definition or collect UCCR data

1 BHCS Hospital

 Used own policy definition different from Q-probe/med fusion



Refrigeration of Urine at Point of Collection

CAP Q-Probe: "refrigeration most statistically significant factor affecting UCCR"

- Placing refrigerators at POC is problematic
 - Monitoring temperatures
 - Units not using refrigerators
 - Forgetting specimens in refrigerator
 - Lack of space for placement
 - Cost



Other Issues Causing UCCR Problems

- No standardized processes for collection, preservation, and transport on units
- Some units would hold urine specimens on floor for long time
- Some BHCS facilities not using collection kit
- Some BHCS facilities would transfer to preservative tube in lab, others would send original container to reference lab
- Delay in sending specimens to reference lab



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Urine Culture Collection Kit

Each facility
 standardized to same
 BD Urine Culture
 Collection kit

Kits deployed to units





Urine Culture Collection Kit

- Simplified urine collection for nursing partners
- Allowed for aliquotting into preservative tube at point of collection
- Eliminated need for:
 - Pour-offs
 - Relabeling
 - Refrigeration



Urine Culture Collection Kit

Safety Concerns

- Eliminated potential for spills
- Reduced chances of specimen exposure to staff

Potential for needle stick on cap of container



Posting Collection Instructions

- Posted collection instruction in each bathroom in ED
- Had more detailed poster, but removed due to family concerns

Instructions for Collecting a Urine Sample

CAUTION: There is a sharp needle located under the lid sticker that can harm you. Do not remove the sticker from the lid area.

- Unscrew the lid from the urine cup. Place the lid on the counter with the "straw" facing upward. Do not touch the inside of the cup, lid or straw.
- 2. Clean yourself with the moist wipe as follows:

Males-Wipe the head (end) of your penis in a single motion with the moist wipe. Hold any foreskin back before cleaning and continue to hold back while you are collecting the urine with equip.

Females- Separate the lips of the vagina. Hold the lips open while wiping with the moist wipe from front to back. Continue to hold lip area open when collecting the urine in the cup.

- 3. Urinate a small amount in the toilet.
- 4. Place the cup under the stream of urine and continue to urinate in the cup.

 Once the cup is half (1/2) full, finish urinating in the toilet.
- Place the lid back on the cup. Be sure lid is tight so cup won't leak. If cup is wet on the outside, wipe it dry with a paper towel.
- 6. Take urine cup to your room or give to your nurse.

Written Collection
Instructions - Females

Instructions for Females



- 1. Wash hands with soap and warm water.
- 2. Spread the labia (folds of skin) apart with one hand and wipe with the towelette provided. Wipe from front to back.
- 3. Continue holding the labia apart. As you start to urinate, allow a small amount of urine to fall into the toilet bowl. This clears the urethra of contaminants.
- 4. Do not touch the inside of the cup.
- 5. After the urine stream is well established, urinate into the cup. Once an adequate amount of urine fills the cup remove the cup from the urine stream. The cup only needs to be half-full.
- **6.** Pass the remaining urine into the toilet.
- 7. Screw the lid on the cup tightly and do not touch the inside of the cup or lid. Give the cup to the Nurse, Technician, or Healthcare provider.



Written Collection Instructions - Male

Instructions for Males



- 1. Wash hands with soap and warm water.
- 2. If uncircumcised, retract foreskin.
- 3. Wipe the end of the penis with the towelette provided. As you start to urinate, allow a small amount of the urine to fall into the toilet bowl. This clears the urethra of contaminants.
- 4. Do not touch the inside of the cup.
- 5. After the urine stream is well established, urinate into the cup. Once an adequate amount of urine fills the cup remove the cup from the urine stream. The cup only needs to be halffull.
- 6. Pass the remaining urine into the toilet.
- 7. Screw the lid on the cup tightly and do not touch the inside of the cup or lid. Give the cup to the Nurse, Technician, or Healthcare provider.



Education / Training

Provided training and education material to each unit on proper use of Urine Collection Kit

Urine Culture Collection Kits								
soap towelette	BD Vacutainer Castile Sousp Towelettes 2 - 6 x a black of the second s	Used to clean patient prior to urine collection (for information on proper patient cleansing refer to the instructions for collecting a mid-stream clean catch urine sample.)						
Main Urine collection Container		patient Specimen is collected directly into this primary container which can be used for urinalysis testing, Drug of abuse testing, urine chemistry testing.						
Grey top tube		Immediately after collection, urine from the main cup is transferred into this tube which is used for the urine culture.						



Standardized Contamination Definition

 We standardized to the CAP Q-Probe (2008) definition of

"A urine specimen was determined to be contaminated if the culture yielded more than 2 isolates in quantities greater than or equal to 10,000 CFU/mL."



Unit Specific Dashboard

Location	May 2013			June 2013			YTD		
BASMC	Total URNC COL	# URNC Contar	% URNC Contar	Total URNC COL	# URNC Contar	% URNC Conta	Total URNC COL	# URNC Contar	% URNC Contar
AMA4	63	1	1.6%	70	1	1.4%	834	23	2.8%
AMA7	48	3	6.3%	51	4	7.8%	670	26	3.9%
AMA8	76	1	1.3%	88	3	3.4%	998	38	3.8%
AMB2N	14	0	0.0%	9	0	0.0%	130	5	3.8%
AMB2S	54	2	3.7%	42	1	2.4%	506	20	4.0%
AMB3N	11	0	0.0%	13	0	0.0%	142	6	4.2%
AMB3S	26	1	3.8%	26	0	0.0%	259	4	1.5%
AMB4N	32	0	0.0%	27	7	25.9%	420	17	4.0%
AMB4S	5	0	0.0%	37	1	2.7%	306	13	4.2%
AMC5	67	4	6.0%	78	6	7.7%	785	37	4.7%
AMCVI	13	0	0.0%	17	3	17.6%	206	11	5.3%
AMICU	11	0	0.0%	18	0	0.0%	214	5	2.3%
AMED/AMER	208	12	5.8%	169	13	7.7%	1789	100	5.6%
AMOPN	17	0	0.0%	13	0	0.0%	283	7	2.5%
AMPAC	6	0	0.0%	3	0	0.0%	37	1	2.7%
AMW2N	6	0	0.0%	8	0	0.0%	80	1	1.3%
AMW3N	2	1	50.0%	2	0	0.0%	30	2	6.7%
AMW3S	0	0	#DIV/0!	1	0	0.0%	22	2	9.1%
AMW4N	1	0	0.0%	1	0	0.0%	17	2	11.8%
AMTS	33	1	3.0%	32	0	0.0%	401	25	6.2%
AMWTR	14	0	0.0%	15	0	0.0%	181	10	5.5%
AVITA	6	0	0.0%	12	1	8.3%	103	5	4.9%
Total	734	26	3.5%	747	40	5.4%	8413	360	4.3%



Performance Goals

 Set UCCR aspiration goals for each facility and BHCS

• CAP Q-Probe (50th): 15.0 %

• BHCS Baseline: 20.6 %

Meets Expectations: ≤ 10 %

Exceeds Expectations: ≤ 5 %



BHCS / med fusion Effort

- med fusion Collaboration on UC reporting improvements
 - Eliminated a potential delay point in the process, allows reporting of urine cultures as close to first-in, first-out as possible.
 - Negative cultures on non-invasively collected urine samples (i.e., clean catch, foley catheter, and pediatric bags) reported final after 24 hours of incubation. Previously, cultures were evaluated on each shift, with cultures being finalized anywhere between 32-50 hours.
 - Urine samples collected via invasive procedures (i.e., Supre-pubic, straight catheter, Cystoscopy, and Nephrostomy) are held for 48 hours.



Process Towards Improvement

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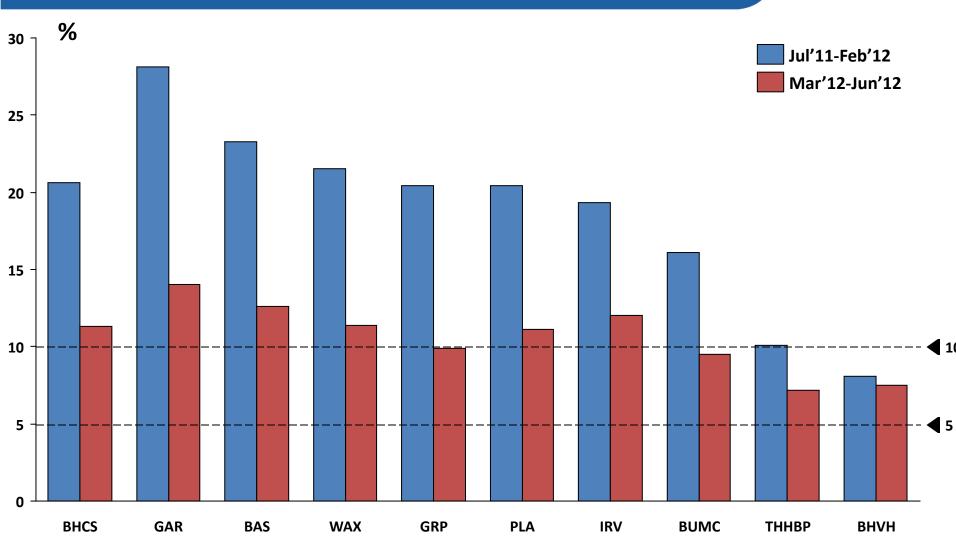
Analysis of Problem

Solutions Implemented

Outcome



BHCS UCCR Initial Improvements





Other Issues Identified

Reassessed Issues/Solutions in June 2012

Findings:

- About 20-25% units not using UC Collection kit
- Grey tubes not being filled to the minimum volume (3mL)
- Urine Culture Add-on testing impact

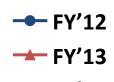


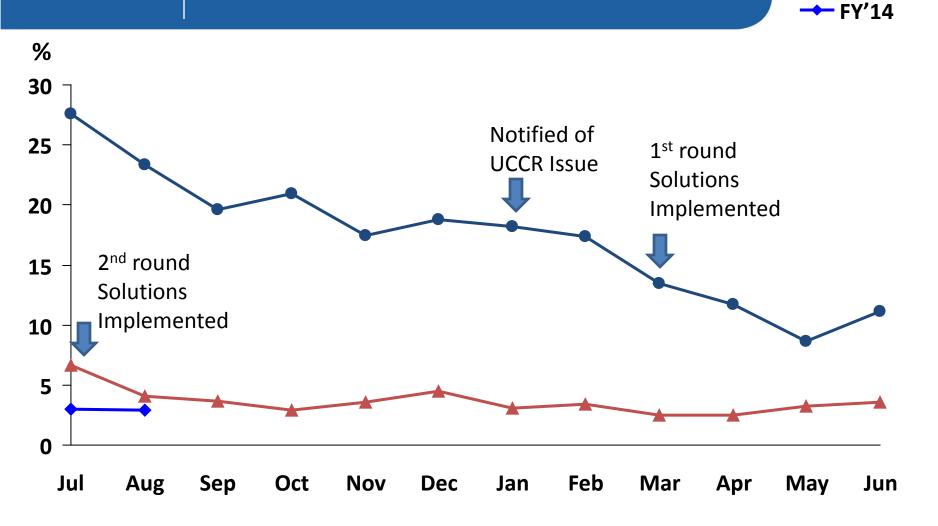
New Solutions

- Implemented specimen rejection criteria when:
 - units don't use UC Collection kit
 - grey tubes not being filled to the minimum volume (3mL)
- Some facilities report to Safety/Quality committee unit outliers
- Implemented in ED only that all urine testing be collected using UC Collection kit



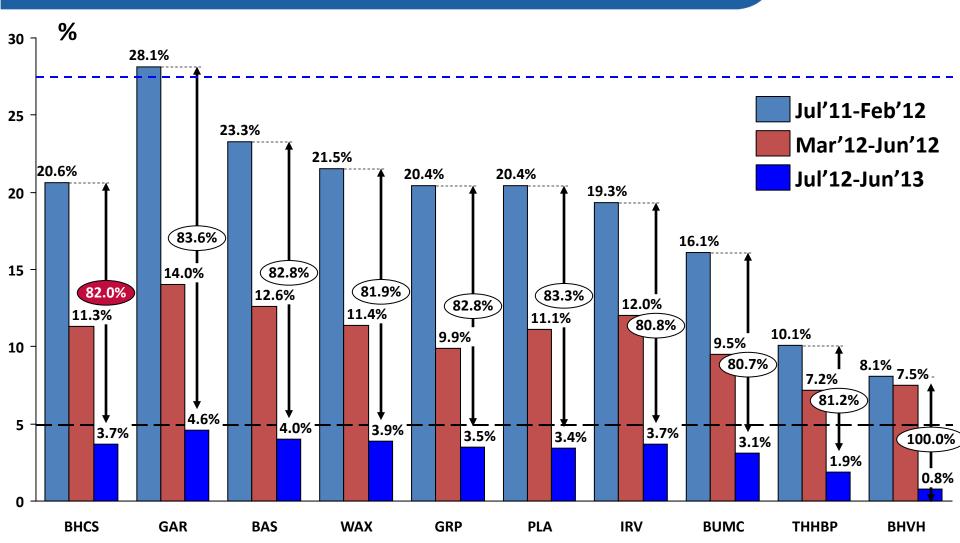
BHCS UCCR Results





BAYLOR Health Care System

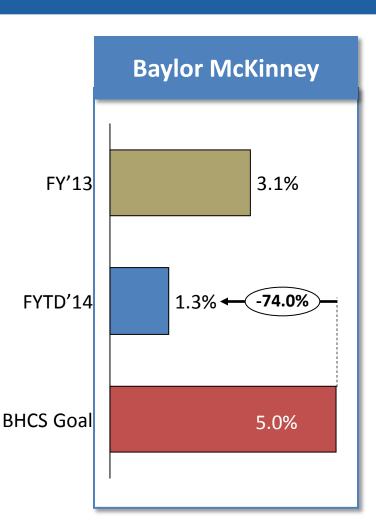
BHCS UCCR Improvements

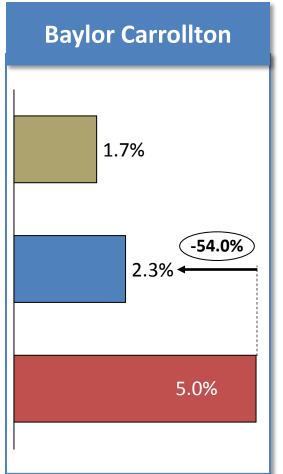




Two New BHCS Facilities

- Baylor McKinney opened July 2012
- Baylor Carrollton started June 2013
- Implemented established processes during their roll-out







Changing Mindsets and Behaviors

Remove pessimism with a fact base

- Display performance metrics
- Huddle around the metrics with staff
- Drive to solutions from the team and implement
- Test if staff implemented the teams ideas

Efficient and effective movement of people and information through a system

- Define who does what, when
- What are the triggers for activities to occur
- Incorporate the lean levers into the process flow

Optimize the management infrastructure

Improve the operating system

Develop the mindsets & behaviors

Making sustainable change requires simultaneously executing against three key elements with equal vigor

Change the mindset that drive workplace behaviors

- Change mindsets with daily huddles
- Emphasize importance of the process with weekly or twice weekly meetings to drive changes
- Reward team for successes



Summary

Issues

Solutions

We didn't know we had a problem

- Started receiving monthly reports of each facilities UCCR
- Set aggressive system goal targets and monitor progress

Significant variation in processes at each BHCS facility

- Deployed multi-facility performance improvement team
- Standardized process for urine collection, preservation and transportation

Changing mindsets and behaviors

- Rolled out education training to units
- Shared hospital and unit specific data
- Implemented rejection criteria



Questions

