Tackling HAC's in Nebraska

NE Regional Meetings

North Platte, Norfolk & Lincoln

April, 2018

Welcome & Introductions

- Nebraska Team
  - Kristin Bailey, RN, BSN, CPN
  - Linda Bontrager, RN, BSN
  - Monica Seeland, BS, RHIA
- Cynosure Team
  - Maryanne Whitney, RN, CNS, MSN
  - Steve Tremain, MD, FACPE

Nebraska Update

Harm Measure	Most Recent Month Reported	HIIN Goal Status [1]	Cost Savings	Harms Prevented	Lives Saved
ADE Anticoag (ADE-1a)	2018 Q2 (Feb)	Making Progress	$144,649	29	3
ADE Hypo (ADE-1b)	2018 Q2 (Feb)	Achieved	$3,004,400	601	66
ADE Opioid (ADE-1c)	2018 Q2 (Feb)	Achieved	$10,481,980	2,096	231
CAUTI Rate - All Units excl NICU (CAUTI-2a)	2018 Q2 (Feb)	Worsening			
Catheter Utilization - All Units excl NICU (CAUTI-3a)	2018 Q2 (Feb)	Making Progress	$24,774,901	24,775	2,477
CLABSI Rate - All Units (CLABSI-2a)	2018 Q2 (Feb)	Making Progress	$231,216	14	2
Central Line Utilization - All Units (CLABSI-3a)	2018 Q2 (Feb)	Making Progress	$23,201,797	23,202	2,320
Falls with Injury (FALLS-1)	2018 Q2 (Feb)	Achieved	$2,828,233	218	
MRSA Rate (MRSA-2)	2018 Q2 (Feb)	Worsening			
PrU Prevalence, Stage 2+ (PrU-2)	2018 Q2 (Feb)	Worsening			
SSI Rate, Colon (SSI-2a)	2018 Q2 (Feb)	Achieved	$800,670	38	1
SSI Rate, Abd Hyst (SSI-2b)	2018 Q2 (Feb)	Worsening			
SSI Rate, Hip (SSI-2d)	2018 Q2 (Feb)	Making Progress	$118,815	6	0.17
SSI Rate, Knee (SSI-2c)	2018 Q2 (Feb)	Achieved	$574,140	27	1
C. diff rate (CDI-1b)	2018 Q2 (Feb)	Worsening			
Post-Op Sepsis Rate (Sepsis-1a)	2018 Q2 (Feb)	Achieved	$38,070	2	1
VAC (VAE-1)	2018 Q2 (Feb)	Worsening			
Post-Op VTE (VTE-1)	2018 Q2 (Feb)	Making Progress	$80,448	10	2
All Cause 30-Day Readmissions (READ-1)	2018 Q2 (Feb)	Making Progress	$18,500,977	1,195	
			$84,780,296	52,213	5,104

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Nebraska Update

Meeting goals:

Adverse Drug Events-hypoglycemia

Adverse Drug Events-Opioids

Falls with injury

Surgical site infections-colon resections

Surgical site infections-knee replacements

Making Progress:

Adverse Drug Events-anticoagulation

Central line associated blood stream infections

Post op Venous thromboembolism

Readmissions 30 day all cause

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Nebraska Update

Getting Worse:

Catheter associated urinary tract infections

Hospital acquired Methicillin-resistant Staphylococcus aureus

Hospital acquired pressure ulcers/injuries

Surgical site infections-abdominal hysterectomies

Hospital acquired C-difficile

Ventilator Associated Conditions

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Nebraska Update

What you can do:

- submit all your data through February 2018 by May
- Attend today's conference and take back ideas to implement; reach out to Kristin or Linda for resources
- Continue to do a RCA on events that occur looking for trends, areas of focus

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Faculty Disclosure

- The faculty reported the following financial relationships or relationships they or their spouse/life partner have with commercial interests related to the content of this continuing education activity:
- Steve Tremain, MD; Stock Options: Allergan
- Maryanne Whitney RN MSN CNS; Nothing to disclose

SCRIPT UP

Optimizing Patient Medications, Minimizing Adverse Events

Steve Tremain, MD, FACPE
Maryanne Whitney, RN, CNS, MSN
Improvement Advisors
Cynosure Health
April 3-5, 2018

UP CAMPAIGN OVERVIEW

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Can we streamline and simplify making it easier for front-line staff and still improve safety?

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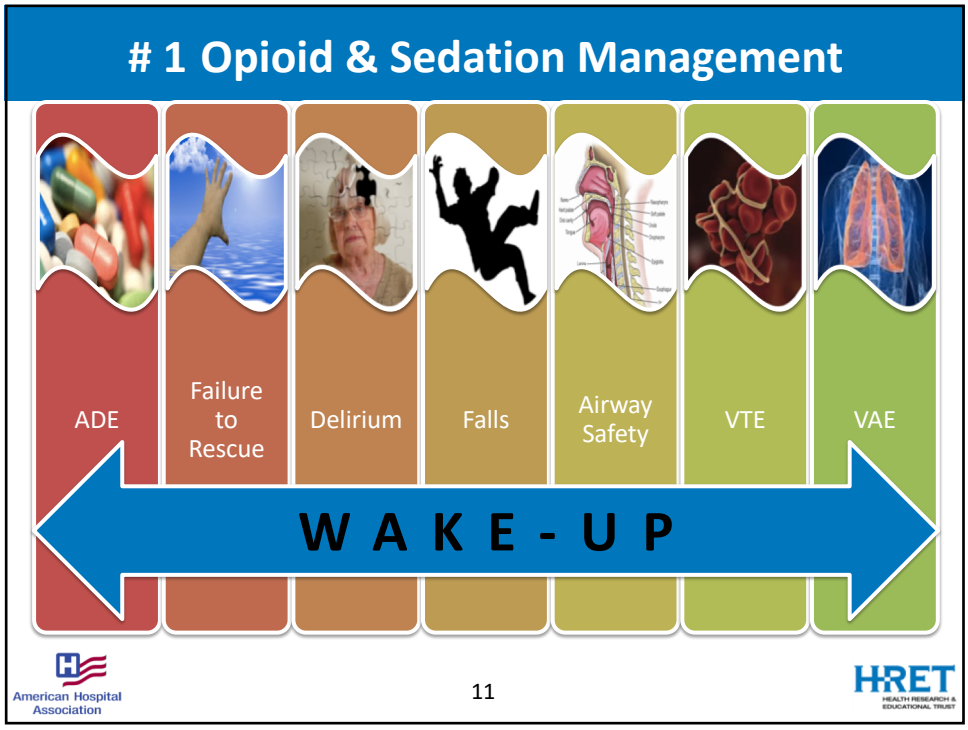
1 Opioid & Sedation Management
ADE
Failure to Rescue
Delirium
Falls
Airway Safety
VTE
VAE
W A K E - U P
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11
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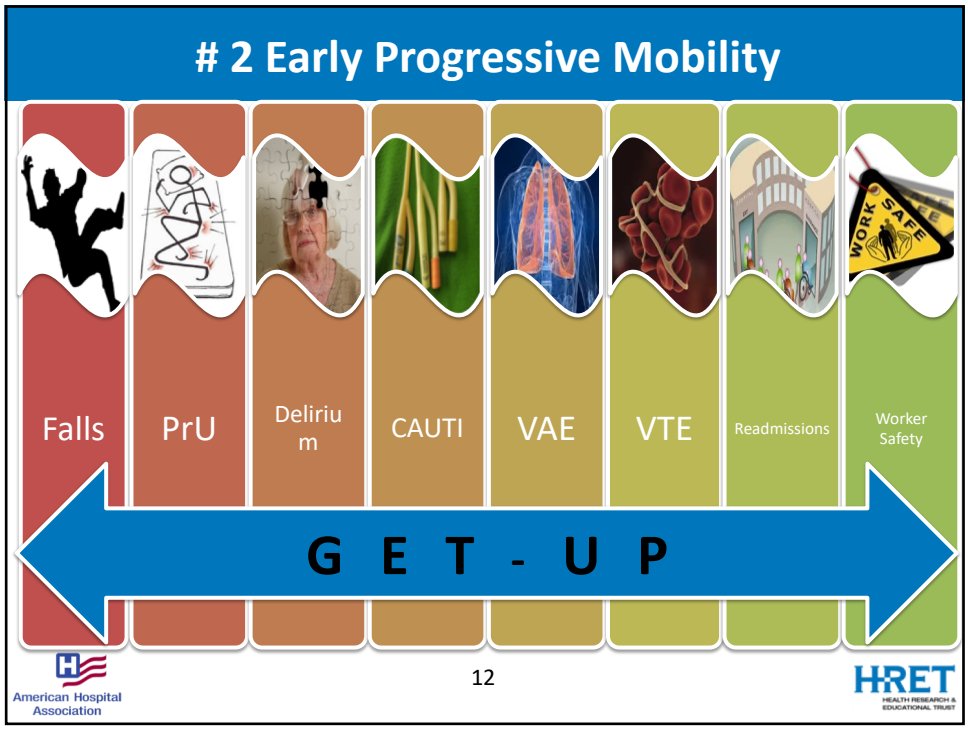
2 Early Progressive Mobility
Falls
PrU
Deliriu m
CAUTI
VAE
VTE
Readmissions
Worker Safety
G E T - U P
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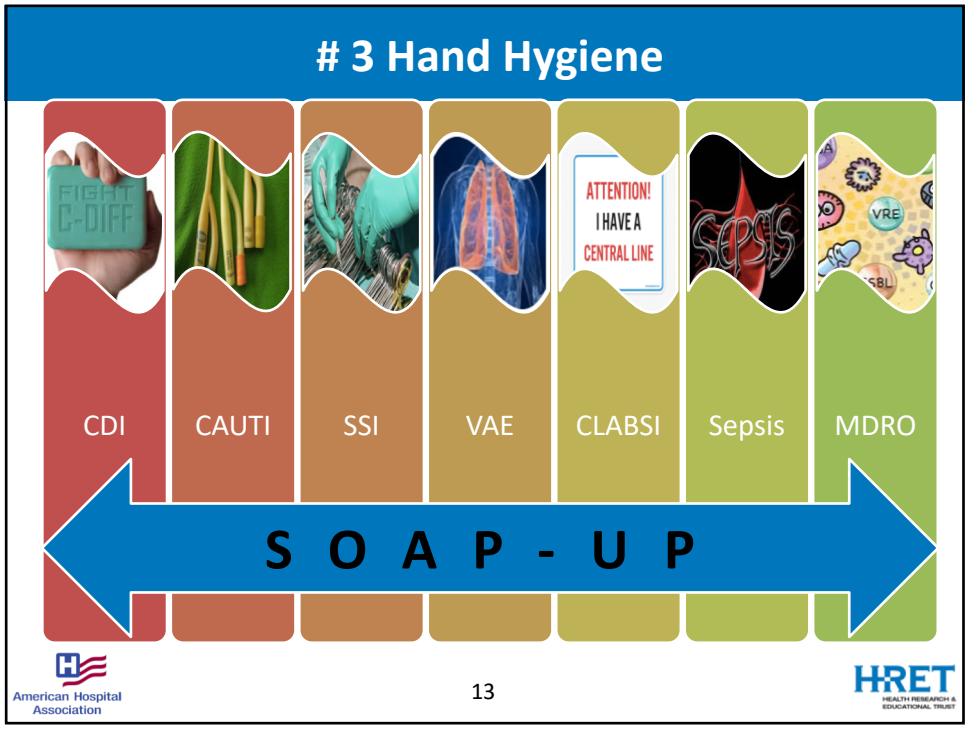
3 Hand Hygiene
FIGHT C-DIFF
ATTENTION! I HAVE A CENTRAL LINE
SEPSIS
VRE
CDI
CAUTI
SSI
VAE
CLABSI
Sepsis
MDRO
S O A P - U P
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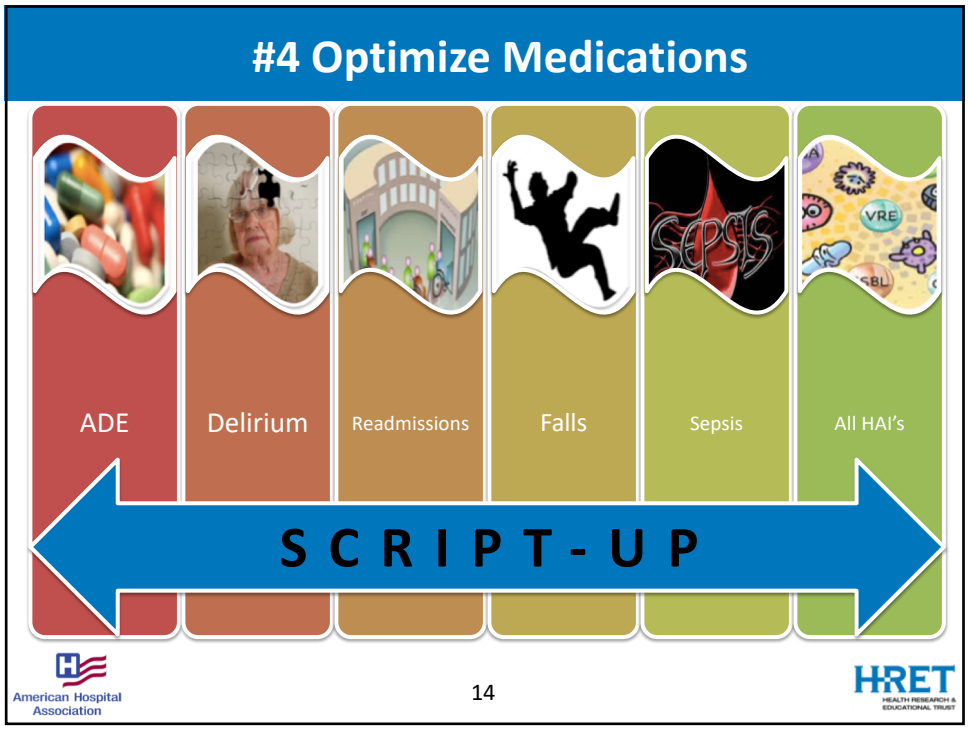
#4 Optimize Medications
SEPSIS
VRE
ADE
Delirium
Readmissions
Falls
Sepsis
All HAI's
S C R I P T - U P
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FOUNDATIONAL QUESTIONS:

1. Is my patient awake enough to get up?
2. Have I protected my patient from infections?
3. Does my patient need any medication changes?

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SCRIPT UP

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Why It Matters

- Adverse drug events are the most common cause of harm (AHRQ)
- Overuse and inappropriate use of antibiotics is the key cause of antibiotic resistance (CDC)
- Beers Criteria Medications are linked to poor health outcomes, including confusion, falls, and mortality (Am. Geriatric Society)
- Risk of ADEs almost doubles with $\geq$ 5 meds (Bourgeois, Shannon et al, 2010)

MUST DO's

SCRIPT UP- MUST DO's

- Match the drug to the bug
- Follow Beers if they're up in years
- Use appropriate meds -- Less may be more
- Ask if patient needs any medication changes

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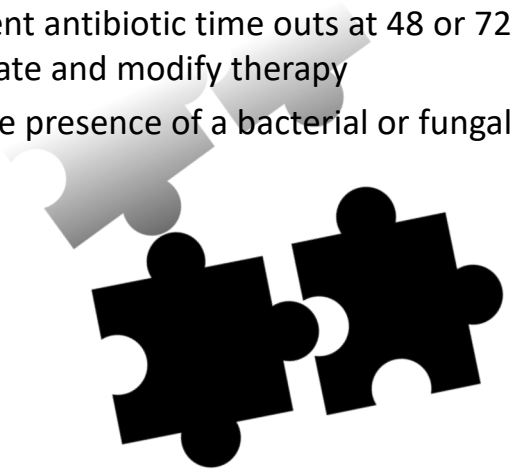
Must Do #1
Match the Bug to the Drug

- Implement antibiotic time outs at 48 or 72 hours to de-escalate and modify therapy
- Verify the presence of a bacterial or fungal infection



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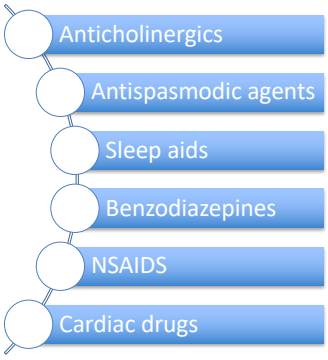
Must Do #2:
Follow Beers, if they're up in years

- Flag, stop and replace medications on the Beer's List
- If needed, switch to a safer agent
- If not needed, discontinue medication



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Provide Alternatives

Drug Class	Preferred Alternative	Special dosing considerations for the elderly

Benzodiazepines	- For insomnia:
	  - emphasize sleep hygiene
	  - treat for underlying disrupters
	  - evaluate timing of other medications and alcohol
	- For chronic anxiety:
	  - consider buspirone or SSRIs or SNIRs
	  - consider psych referral
		- Risk of fall doubled if used more than 14 days

Pain Medications		Avoid meperidine

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Provide Alternatives

Drug Class	Preferred Alternative	Special dosing considerations for the elderly
Cardiovascular agents	- For HTN alone - ACE inhibitors, betablockers, or calcium channel blockers preferred	Most significant risk is orthostatic hypotension Monitor closely and educate patient Slowly increase to full dose
Skeletal muscle relaxants		Monitor length of use and discontinue as soon as no longer indicated; recommended for short use only

Help your physicians by providing guidelines about alternatives and any special dosing or monitoring considerations.

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- Consider shortening med lists, especially PRN medications
  - When adding a med, ask "What can I discontinue?"

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Why Less May Be Better

- There is no set number of medications defining polypharmacy – The CDC uses 6
- Concerns
  - Increased ADE
  - Increased drug interactions
  - Increased costs
  - Prescribing cascade
- Associated with
  - Decreased quality of life, mobility and cognition

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Take Action

- Set a threshold number for review
  - Consider the volume of patients who are at or above the threshold and the amount of pharmacist time that can be dedicated
- Have pharmacist review and consult with physician
- Monitor the impact of your intervention

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SURVEY SAYS…

What You Told Us

- See Survey Results

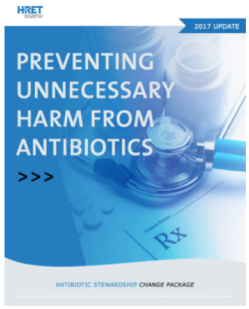
What's Your Next Step?

SCRIPT UP Check Point

To reduce Adverse Drug Events, Readmissions, Falls, CDI, CAUTI, CLABSI, SSI, Sepsis, MDRO and VAE:

- ✓ Have you implemented a "time out" after 24-48 hours of antibiotic therapy to re-assess and optimize therapy?
- ✓ Do the staff, providers, and pharmacists have ready access to reminders and alerts to avoid medications on the Beers list for patients over 65 years old?
- ✓ Is there a specific number of medications on a patient's medication list (e.g., 10) that will trigger a review by a pharmacist?

Resources



Find It Here

SCRIPT UP National HRET Web Event with T. Perlick, PharmD, CGP
Find the recording and slides Here

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Thank You!

Questions or Comments: stremain@cynosurehealth.org

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ANTIBIOTIC STEWARDSHIP:
Getting Started

Steve Tremain, MD, FACPE
Maryanne Whitney, RN, CNS, MSN
Improvement Advisors
Cynosure Health
April 3-5, 2018

What is Antibiotic Stewardship?

- **Antimicrobial stewardship** is a coordinated program that promotes the appropriate use of antimicrobials (including **antibiotics**), improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug-resistant organisms. (APIC)

What is Antibiotic Stewardship?

- The right care for the patient
- Reduced resistance in the community
- Oh, and it does save $, but that is not the primary goal of an ASP
- But does it work?
  - Multiple prospective studies link stewardship with decreased resistance
    https://www.cdc.gov/getsmart/healthcare/evidence/asp-int-am-resistance.html

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Keys to an Effective Antibiotic Stewardship Program

- Organizational will
- Engagement of leaders, physicians, and pharmacists
- Necessary training provided
- Clear governance, roles, and responsibilities

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Keys to an Effective Antibiotic Stewardship Program

- Evidence based:
  - National guidelines
  - Local usage patterns
  - Local antibiogram
- Measurement ➡ reporting ➡ learning
- Staff and Patient education
- Appropriate application of stewardship techniques

Remember

- We are *protecting* and *preserving*…not restricting antibiotics
- It's about most appropriate care for each patient
  - It's not always about de-escalation

Measurement

- **Days of Therapy (DOT)**
- Defined Daily Dose (DDD)
- Standardized Antibiotic Administration Ratio (SAAR)
- Antibiogram

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Stewardship Techniques

Strategy	Pros	Cons
Preprescription Authorization (PPA)	Limits access to selected antibiotics	Can increase the use of other antibiotics and may not decrease total use. Requires authorization pathway, including consideration of the need for after-hours authorization.
Postprescriptive Review and Feedback (PPRF)	Encourages communication and discussion, and creates learning loops. Can reduce targeted antibiotics as well as all antibiotic use. More likely to be accepted by prescribers	Initial inappropriate use of targeted antibiotics is not prevented.
48-hour Time Out	Prompts multidisciplinary discussion of appropriateness of current antibiotic orders, and often leads to de-escalation (narrower spectrum, shorter duration, or discontinuation).	Potential physician resistance, but generally easily overcome as physician experiences value of pharmacist's assistance.
Formulary Restriction	Reduces antibiotic choice to manageable number, reduces duplicate therapy, decreases costs.	May be a challenge for hospitals with providers or specialists who work in many hospitals and find it difficult to use different formularies at each.

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Stewardship Techniques

Order Sets and Treatment Algorithms	Prompts the prescriber to make choices based on likely bacteria or source of infection, consider allergies, adjust for renal function, consider cost, order appropriate tests and consultations. Allows for default algorithmic orders for common conditions for drug, dose, and duration. Can be paper or electronic.	Must allow for opt out with explanation
Clinical Guidelines	Provides the opportunity to include many leaders to develop hospital specific guidelines and algorithms. Allows for communication to front line care givers who are not infectious disease specialists.	Important and effective when coupled with PPA or PPRF. Lesser effectiveness as stand-alone strategy. Note: Infectious disease specialists are not required for guideline development. Any physician and/or pharmacist champion may lead this effort.
Education	Necessary for buy-in, discussion and use of order sets, algorithms, guidelines.	Required but not sufficient as a stand-alone strategy.
Pharmacodynamic Dose Optimization (PK Monitoring)	Using a pharmacodynamics parameter correlated with efficacy, PK Monitoring optimizes bacterial killing and decreases the	Cost.

Stewardship Techniques

	emergence of resistance. This strategy has been applied to beta-lactams, ciprofloxacin, vancomycin, and cefepime.	
Computer Assisted Decision Support Programs	Provides real time guidance and feedback to prescribers, and the option to monitor prescribing practices and create prior authorization mechanisms.	None.
Pharmacist-Driven Intravenous to Oral Switch Programs	Pharmacists have heightened awareness of the oral bioavailability of antibiotics, and can initiate timely IV to oral administration for patients who meet criteria. Drugs often suitable for early IV to oral conversion include fluoroquinolones, metronidazole, macrolides, doxycycline, clindamycin, and linezolid.	Potential medical staff resistance to pharmacist orders.
Pharmacy Dosing Programs	Pharmacist-managed dosing for vancomycin and aminoglycosides has been shown to reduce mortality, Length of Stay, adverse events, and costs.	Clinicians, particularly residents, will lose or fail to learn dosing skills because of exclusion from the dosing and learning loop.

How to Get Started

1. Perform a Gap Analysis

   https://www.cdc.gov/getsmart/healthcare/improve-efforts/resources/pdf/AMP-GapAnalysisChecklist.pdf
2. Obtain leadership buy-in
3. Find champions
4. Look at your usage data
5. Obtain necessary training

   http://mad-id.org/

How to Get Started

6. Start small
   - Consider 48 hour time out as a starting point
   - Narrow focus (one unit, one service?)

6. Gain competence and confidence
7. Spread and add techniques

The 48 Hour Time Out

- Often pharmacist led
- Culture & Sensitivities checked
- Physician called
- Discussion to answer these 6 questions:
  - Does the patient have an infection?
  - If the patient has an infection, is it a bacterial infection?
  - If a bacterial infection, what is the likely source?
  - If a bacterial infection, are culture and sensitivity (C&S) information available?
  - If C&S information is not available, based on the patient's history or the local antibiogram, is the bacteria likely to be resistant to usual treatment?
  - Is the duration of therapy appropriate for the infection?

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A Word to the Wise for the "Stewards"

- Be the firefighter

- not the police

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Table Top: Data Discovery

- Where do you begin?

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Antibiotic Stewardship Change Package

- HRET HIIN Antibiotic Stewardship Change Package
- Fully referenced
- Focuses on the "How To"
- http://www.hret-hiin.org/resources/display/antibiotic-stewardship-change-package

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Questions?

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mwhitney@cynosurehealth.org

The Culture of Culturing
CDI, CAUTI & CLABSI

Maryanne Whitney, RN, CNS, MSN
Steve Tremain, MD, FACPE
Improvement Advisors
Cynosure Health
April 3-5, 2018

Antibiotic Resistance Impact

- More than 2 million people in the US every year
- At least 23,000 deaths

The Culture of Culturing

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Pressure to capture ‘present on admission’

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C- DIFFICILE

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Scenario

- The facility administrator is insisting that all patients admitted with a 'history of diarrhea' be tested for C. difficile
- S/he wants to be sure we capture 'present on admission'
- S/he wants to improve the facility's publicly reported CDI rates
- The Infection Preventionist pushes back but the pressure remains.

Is this happening in your facility?

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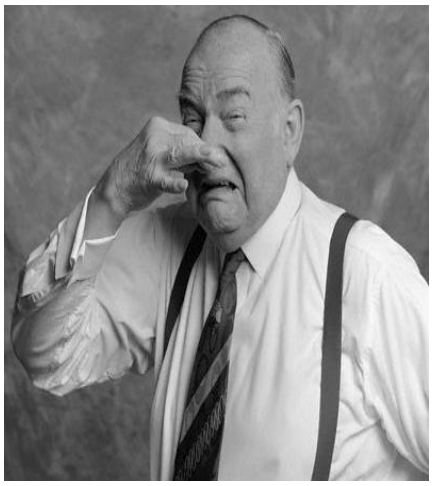
Screening for *C. difficile*



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C. difficile: why the culture of culturing matters

- 3% -7% of healthy adults are colonized with *C. difficile*
- Asymptomatic colonization is more common in people with inpatient healthcare exposures
- 4.4% - 15% of people are colonized with *C. difficile* on admission to hospital
- 50% of people who live in a LTC are colonized
- 7% - 21% of hospitalized adults are colonized at some point
- 4% - 15% are asymptomatically colonized at the time of admission

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To make matters even more

- Diarrhea is frequent among those with healthcare exposures
- *C. difficile* infection (CDI) affects < 1% of hospitalized patients
- It is cause of diarrhea in only 5%-10% of hospitalized patients who have diarrhea and are tested for *C. difficile*

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Lab Tests for CDI

Table 1. **Tests Available for Laboratory Confirmation of *Clostridium difficile* Infection***

Test	Description	Sensitivity, %	Specificity, %	Speed of Reports	Cost, $†
EIA	Detects toxin A or toxins A plus B	70–80	>97	Hours	5–17
GDH	Detects a common antigen, not a toxin, of *Clostridium difficile*; immunoassay is preferred over latex agglutination	70–80	<90	Hours	17
qPCR	Detects toxin B or toxin regulator genes; commercial and locally developed tests are available	>90	>97	Hours	7–50
Anaerobic culture for toxigenic *C. difficile*	Detects toxin B	>90	95–97	2 to >3 d	10–22
Direct stool cytotoxin with tissue culture	Detects toxin B	70–80	>97	2 to >3 d	7–13

EIA = enzyme immunoassay; GDH = glutamate dehydrogenase; qPCR = quantitative real-time polymerase chain reaction.
* Adapted from references 6 and 10–13.
† Range of manufacturer's suggested retail prices for 2007–2008 (6, 12).

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Studies that compare *C. difficile* diagnostic assays

- Primary problem is lack of data on the patients
- Without clinical data it is not possible to differentiate between asymptomatic *C. difficile* colonization and CDI

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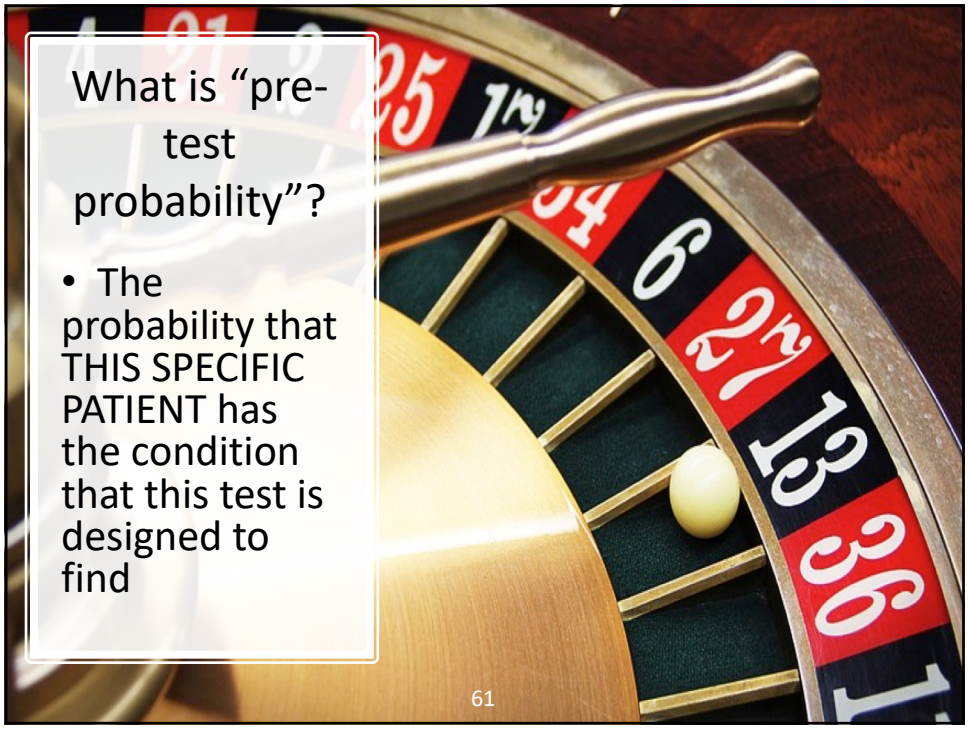

PATIENT 1

- Age 50
- Admitted from home
- No recent prior acute or long term care hospitalization
- 3 loose stools on 4th hospital day
- No antibiotics administered in last year
- Pre-test probability of CDI is
  4.4% – 15% (mean 10%)

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PATIENT 2

- Age 80
- Admitted from Skilled Nursing Facility
- 3 loose stools since admission
- On antibiotics for presumed urinary tract infection
- Pre-test probability of CDI is approximately 50% (not 99%!)

So…Are We Over-diagnosing CDI Cases?

- 90% of hospital onset diarrhea is not due to CDI
  - Tube feeding
  - Laxatives
  - Enemas
  - Medications
  - Other infections
  - Underlying disease

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CDI Testing Definitions / Methods

- Toxin immunoassay by itself is not sensitive enough, leading to under-diagnosis
- PCR is highly sensitive and specific, but its predictive value is based on the chances a specific patient could have CDI, leading to…

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ction

Original Investigation

Overdiagnosis of *Clostridium difficile* Infection in the Molecular Test Era

Christopher R. Polage, MD, MAS; Clare E. Gyorke, BS; Michael A. Kennedy, BS; Jhansi L. Leslie, BS; David L. Chin, PhD; Susan Wang, BS; Hien H. Nguyen, MD, MAS; Bin Huang, MD, PhD; Yi-Wei Tang, MD, PhD; Lenora W. Lee, MD; Kyoungmi Kim, PhD; Sandra Taylor, PhD; Patrick S. Romano, MD, MPH; Edward A. Panacek, MD, MPH; Parker B. Goodell, BS, MPH; Jay V. Solnick, MD, PhD; Stuart H. Cohen, MD

"Among hospitalized adults with suspected CDI, virtually all CDI-related complications and deaths occurred in patients with positive toxin immunoassays."

"Patients with a positive molecular and a negative toxin immunoassay had outcomes comparable to patients without *C. difficile* by either method."

"Exclusive reliance on molecular tests without tests for toxins or host response is likely to result in over diagnosis and overtreatment."

JAMA Intern Med 2015

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CDI studies that included clinical data

- 35% to 50% of patients tested for *C. difficile* do not have clinically significant diarrhea
- 20% to 40% of patients recently received a laxative
- More studies are needed to compare *C. difficile* diagnostic assays that include high quality data on both patient symptoms and patient outcomes

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Stool sample card

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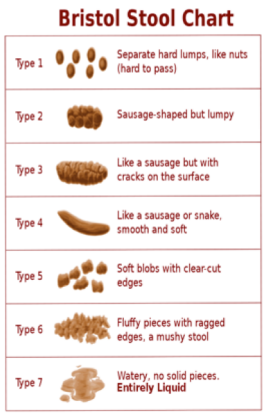
Charts and Tarts



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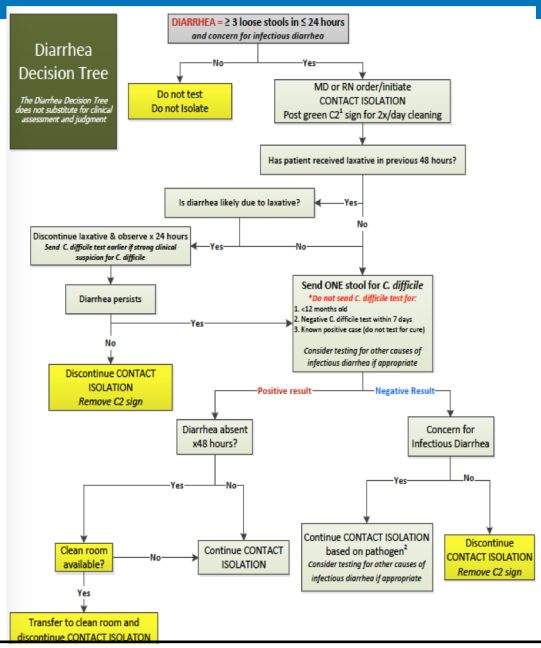
Diarrhea Decision Tree



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CAUTI

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American Journal of Infection Control ■■ (2017) ■■-■■

Contents lists available at ScienceDirect

American Journal of Infection Control

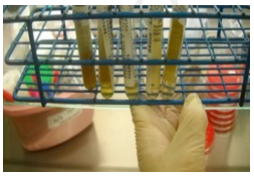
journal homepage: www.ajicjournal.org

State of the Science Review

Promoting appropriate urine culture management to improve health care outcomes and the accuracy of catheter-associated urinary tract infections

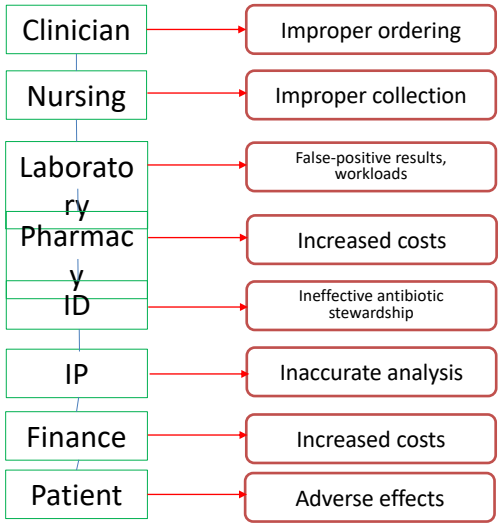
Robert Garcia BS, MT(ASCP), CIC, FAPIC [a,*], Eric Spitzer MD, PhD [b]

[a] Healthcare Epidemiology Department, Stony Brook University Hospital, Stony Brook, NY
[b] Department of Pathology, Stony Brook University Hospital, Stony Brook, NY



Am J Infect Control. May, 2017.

What Happens When Proper Urine Culture Management is Not Implemented



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Evidence for Inappropriate Ordering of UC/UA Testing

- Randomized study of 208 newly admitted patients over 1 year at the University of Michigan Health System
  - *120 (57.7%) did not meet guideline-based criteria for a urine culture*
  - *Of these, 75 patients (62.5%) had a reason documented that was inconsistent with current guidelines, including for bacteriuria before an orthopedic procedure and altered mental status*
  - *No documented reason for ordering a UC was found in 37.5% of patients*
  - *Fever was the sole indication for obtaining a UC in nearly three-quarters*

Hartley S, Valley S, Kuhn L, Washer LL, Gandhi T, Meddings J, et al. Inappropriate testing for urinary tract infection in hospitalized patients: an opportunity for improvement. Infect Control Hosp Epidemiol 2013;34:1204-7.

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Emergency Departments: Target of Intervention Efforts

- 212 patients, UA orders: *84.4% lacked symptoms and 198 (79.2%) lacked UTI and acute kidney injury*

Table 2. Frequency of UC Orders and Antibiotic Therapy Among Symptomatic and Asymptomatic General Medicine Patients Undergoing Urinalysis on Admission to a Large Academic Hospital

Characteristic	Symptomatic Patients, No. (%)[a]		Asymptomatic Patients, No. (%)	
	Positive UA Result (n = 26)	Negative UA Result (n = 13)	Positive UA Result (n = 78)	Negative UA Result (n = 133)
UC ordered				
Yes	26 (100)	7 (53.8)	59 (75.6)	59 (44.4)
No	0	6 (46.2)	19 (24.4)	74 (55.6)
Empirical antibiotic therapy				
Yes	24 (92.3)	0	17 (21.8)	1 (0.8)
No	2 (7.7)	13 (100)	61 (78.2)	132 (99.2)
UC result				
Positive	21 (80.8)	5 (71.4)	21 (35.6)	7 (11.9)
Negative	5 (19.2)	2 (28.6)	38 (64.4)	52 (88.1)
Antibiotic therapy based on UC result				
Initiated	2 (7.7)	2 (15.4)	6 (7.7)	1 (0.8)
Discontinued	0	0	0	1 (0.8)

Abbreviations: UA, urinalysis; UC, urine culture.

[a] Symptoms of urinary tract infection were considered present based on guidelines for patients with and without urinary catheters.[3,4]

Yin P, Kiss A, Leis JA. Urinalysis orders among patients admitted to the general medicine service. JAMA Intern Med 2015;175:1711-13.

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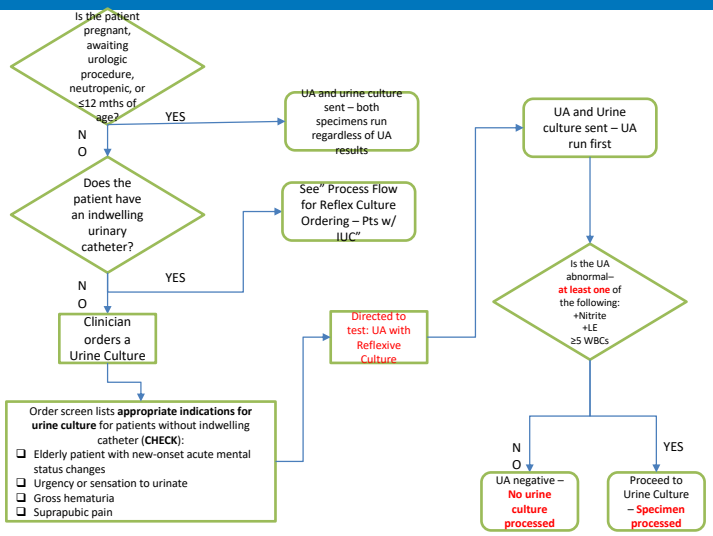
Process Flow For Reflex Urine Culture Ordering Patients w/o IUC



Hooten TM. Diag Prev and Treat CAUTI in adults: 2009 International Clin Pract Guidelines IDSA. Clin Infect Dis 2010
Nicolle LE, et al. IDSA Guidelines for Diagnosis and Treatment of Asymptomatic Bacteriuria in Adults
Talbot T. Preventing CAUTI, Partnership for Patients lecture, 1/25/16

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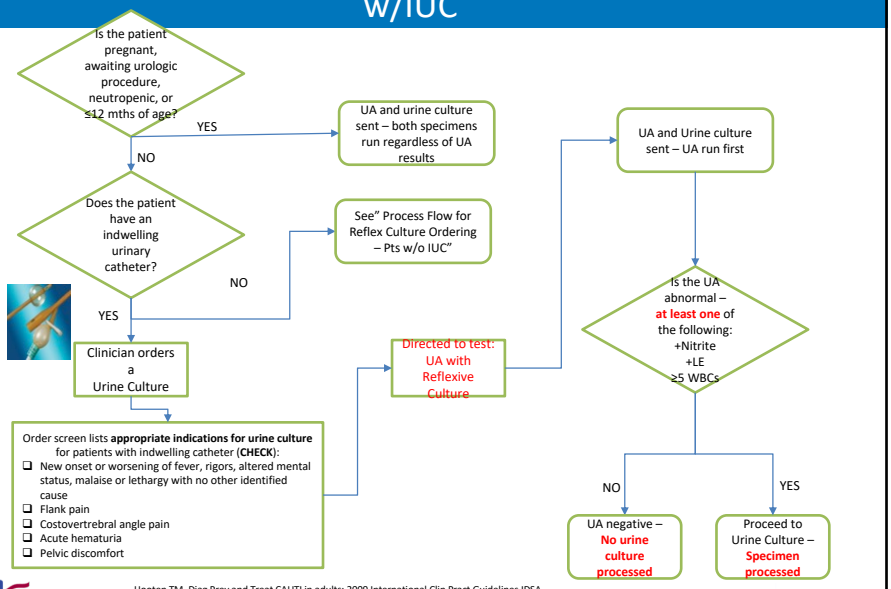
Process Flow For Reflex Urine Culture Ordering Patients w/IUC



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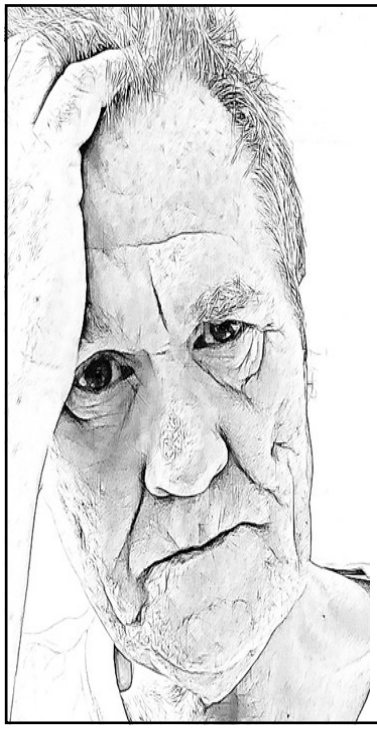

Case study

- Patient is a frail 84 year old resident of a nearby nursing home
- Recent fall, facial laceration
- History of dementia and psychiatric disease

Physical Exam

- Urinary drainage bag
- Suprapubic catheter
- Unable to urinate
- No discomfort, fever, chills
- Unsteady
- No lower abdomen or back tenderness
- No irritation at the suprapubic catheter site

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Discussion Points

- Should a urine specimen be sent for U/A and/or C&S?
- What is the chance that this patient has bacteruria?
- Are there other things that might explain the patient's risk of falling?

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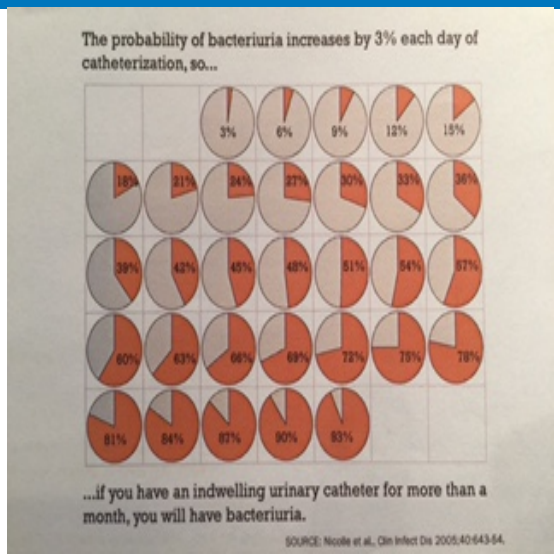

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Blood Cultures

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CLABSI

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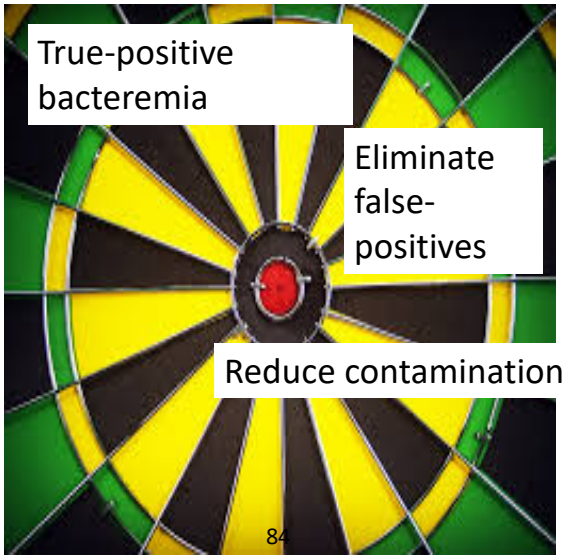
Blood Cultures



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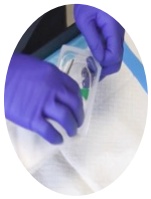
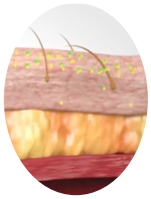
The Challenge

Current best practices can't solve the problem of blood culture contamination.



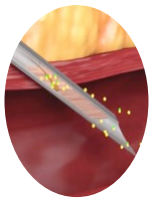
1

Human Factor(s):
Risk of contamination during assembly and preparation of supplies, and skin prep



2

Skin Flora:
You can disinfect but not sterilize the skin; Up to 20% of skin flora remains viable in the keratin layer of the skin even after skin prep[1]



3

Skin Plugs:
Skin plugs, when present, will ALWAYS enter the culture specimen bottle, and commonly will contain microorganisms

Engineered diversion of the **initial 1.5-2.0 mL of blood** using a closed system (Steripath®) has been clinically proven to **virtually eliminate** blood culture contamination[2]

[1] Anjanappa T. H, Arjun A. "Preparative Skin Preparation and Surgical Wound Infection". Journal of Evidence based Medicine and Healthcare; Volume 2, Issue 2, January 12, 2015; Page: 131-154.
[2] Mark E Rupp, R Jennifer Cavalieri, Cole Maroff, Elizabeth Lyden; Reduction in Blood Culture Contamination Through Use of Initial Specimen Diversion Device. Clin Infect Dis 2017 cix304. doi: 10.1093/cid/cix304

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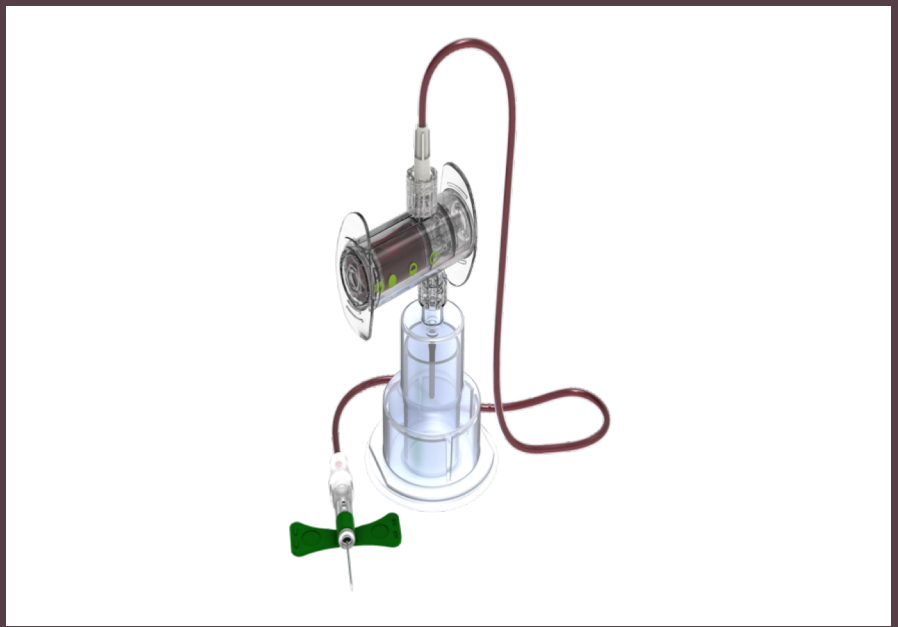
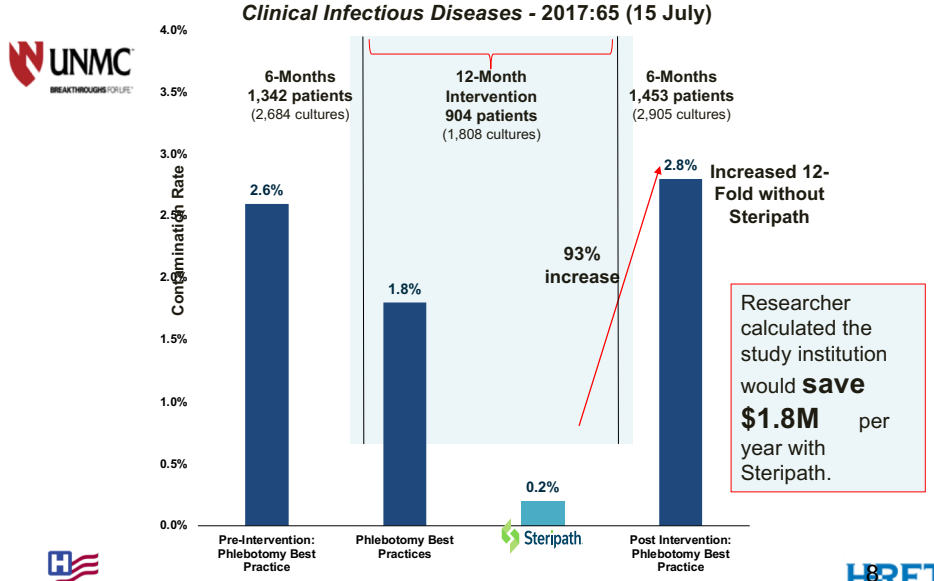


Reduction in Blood Culture Contamination Through the Use of Specimen Diversion Device (Steripath®)

Clinical Infectious Diseases - 2017:65 (15 July)



Researcher calculated the study institution would **save $1.8M** per year with Steripath.

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Impact of Improper BC Collection

- Suboptimal treatment of patient
- Increased financial burdens
- Potential over-reporting of CLABSI

Garcia RA. Multidisciplinary team review of best practices for collection and handling of blood cultures to determine effective interventions for increasing the yield of true-positive bacteremias, reducing contamination, and eliminating false-positive CLABSI. AJIC 2015.

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Implications of Culture of Culturing

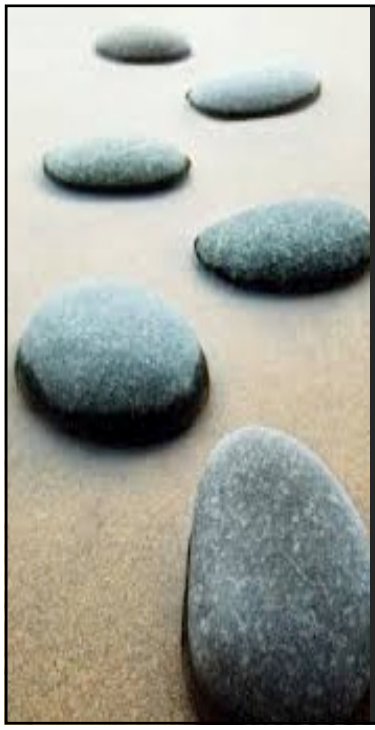
Higher HAI rates

Higher utilization of Contact Precautions

- More resources such as single rooms and personal protective equipment
- Patient anxiety and depression
- Potential adverse events
- Fewer interactions with health care workers

Implications of over-diagnosis

- Patients who do not have CDI or UTI or true bacteremia will receive treatment
  - Increased risk for drug-related adverse events
  - Selection for MDROs
  - Higher risk for CDI once treatment is stopped



What will *your* next steps be?

Questions?

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Environmental ~~Services~~ Stewardship

Shifting Services to Stewardship

Steve Tremain, MD, FACPE
Maryanne Whitney, RN, CNS, MSN
Improvement Advisors
Cynosure Health
April 3-5, 2018

Hierarchy of Intervention

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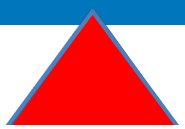
HIERARCHY OF INTERVENTION



Foundation:

Stewardship

- **Antimicrobial- patient**
- **Antimicrobial- environment**

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Stewardship

- Patient (Antimicrobial Stewardship)
- Environment (Antimicrobial Stewardship)

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Environmental Stewardship

Targeted environmental cleaning and disinfection.

- Right patient (organism/environment);
- Right disinfectant (drug/bug combination);
- Right dose (concentration);
- Right duration (contact time);
- Right route (method of application)

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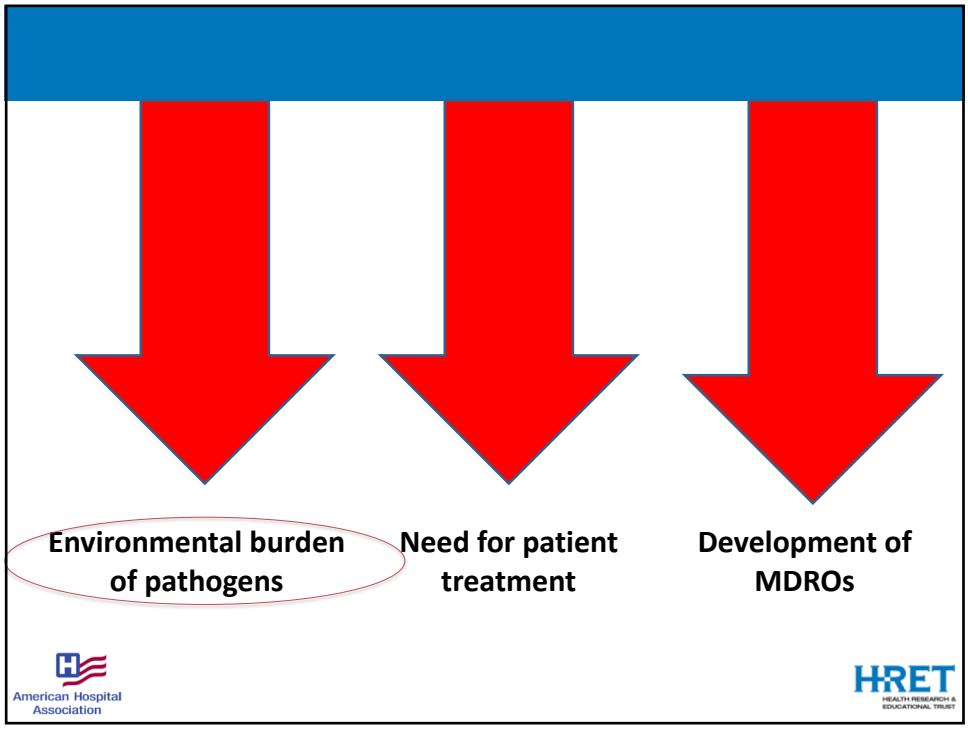
Environmental burden of pathogens
Need for patient treatment
Development of MDROs
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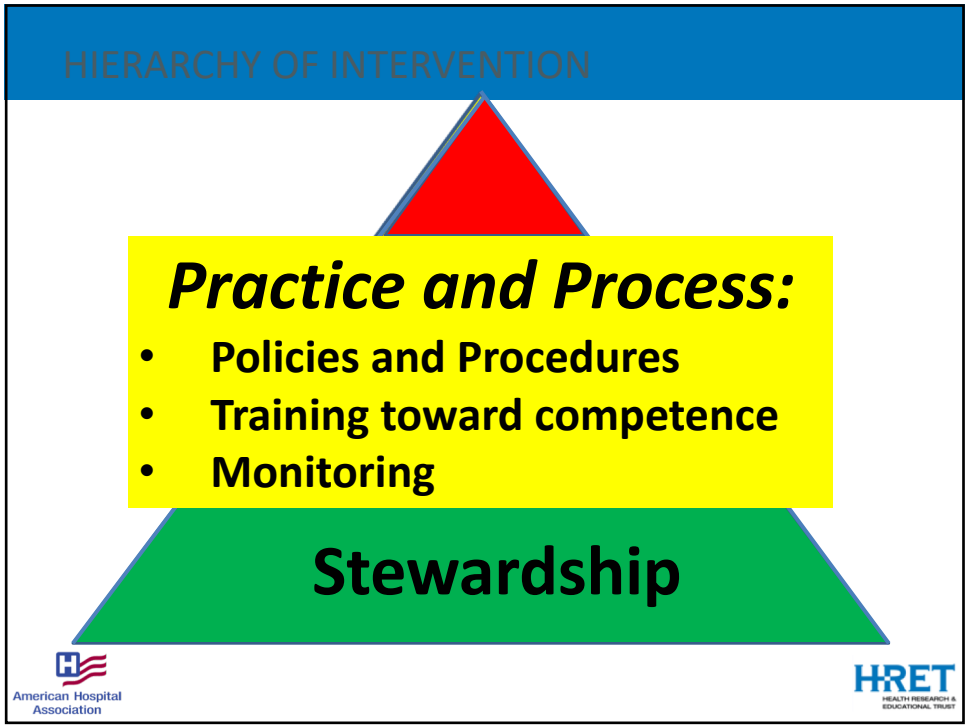
HIERARCHY OF INTERVENTION
Practice and Process:
• Policies and Procedures
• Training toward competence
• Monitoring
Stewardship
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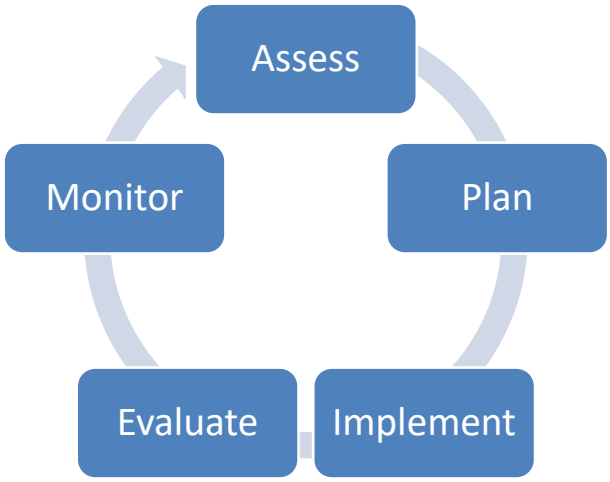
Practice and Process Improvement



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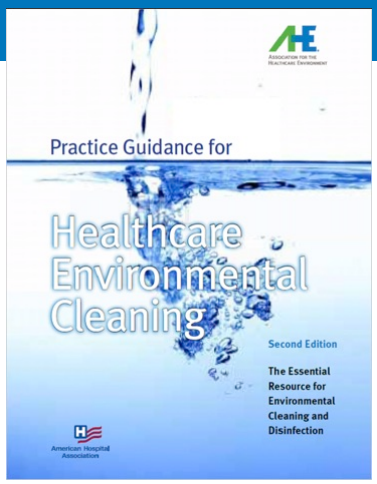

CERTIFIED HEALTHCARE ENVIRONMENTAL SERVICES TECHNICIAN™

Certificate of Mastery
CMIP
Infection Prevention and Control

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HIERARCHY OF INTERVENTION

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Special Situations

- Epidemiologic investigation
- Collaboration with other specialists
- Evaluation of adherence with existing practices
- Changing of germicide
- Changing of routine practices
- Next levels of practice and process monitoring
- BIG QUESTION: Has burden of organism(s) exceeded current capabilities?

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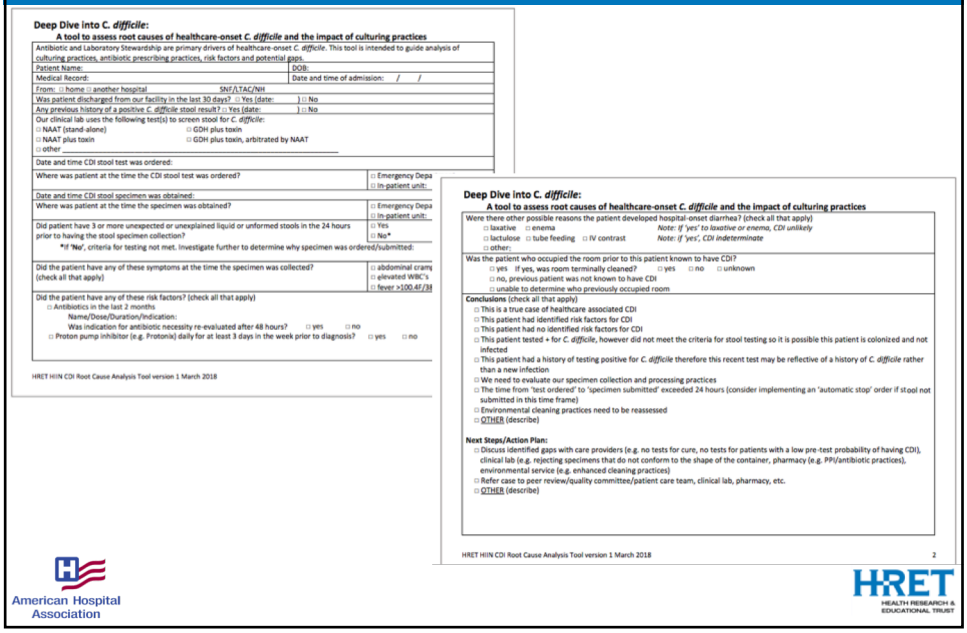
Debrief Events



Deep Dive into *C. difficile*:
A tool to assess root causes of healthcare-onset *C. difficile* and the impact of culturing practices

Antibiotic and Laboratory Stewardship are primary drivers of healthcare-onset *C. difficile*. This tool is intended to guide analysis of culturing practices, antibiotic prescribing practices, risk factors and potential gaps.

Patient Name: DOB:
Medical Record: Date and time of admission: / /
From: □ home □ another hospital SNF/LTAC/NH
Was patient discharged from our facility in the last 30 days? □ Yes (date:) □ No
Any previous history of a positive *C. difficile* stool result? □ Yes (date:) □ No
Our clinical lab uses the following test(s) to screen stool for *C. difficile*:
□ NAAT (stand-alone) □ GDH plus toxin
□ NAAT plus toxin □ GDH plus toxin, arbitrated by NAAT
□ other

Date and time CDI stool test was ordered:
Where was patient at the time the CDI stool test was ordered? □ Emergency Depa □ In-patient unit:

Date and time CDI stool specimen was obtained:
Where was patient at the time the specimen was obtained? □ Emergency Depa □ In-patient unit:
Did patient have 3 or more unexpected or unexplained liquid or unformed stools in the 24 hours prior to having the stool specimen collection? □ Yes □ No*
*If 'No', criteria for testing not met. Investigate further to determine why specimen was ordered/submitted:
Did the patient have any of these symptoms at the time the specimen was collected? (check all that apply) □ abdominal cramp □ elevated WBC's □ fever >100.4F/38
Did the patient have any of these risk factors? (check all that apply)
□ Antibiotics in the last 2 months
Name/Dose/Duration/Indication:
Was indication for antibiotic necessity re-evaluated after 48 hours? □ yes □ no
□ Proton pump inhibitor (e.g. Protonix) daily for at least 3 days in the week prior to diagnosis? □ yes □ no

HRET HIIN CDI Root Cause Analysis Tool version 1 March 2018

Deep Dive into *C. difficile*:
A tool to assess root causes of healthcare-onset *C. difficile* and the impact of culturing practices

Were there other possible reasons the patient developed hospital-onset diarrhea? (check all that apply)
□ laxative □ enema *Note: if 'yes' to laxative or enema, CDI unlikely*
□ lactulose □ tube feeding □ IV contrast *Note: if 'yes', CDI indeterminate*
□ other:

Was the patient who occupied the room prior to this patient known to have CDI?
□ yes If yes, was room terminally cleaned? □ yes □ no □ unknown
□ no, previous patient was not known to have CDI
□ unable to determine who previously occupied room

Conclusions (check all that apply)
□ This is a true case of healthcare associated CDI
□ This patient had identified risk factors for CDI
□ This patient had no identified risk factors for CDI
□ This patient tested + for *C. difficile*, however did not meet the criteria for stool testing so it is possible this patient is colonized and not infected
□ This patient had a history of testing positive for *C. difficile* therefore this recent test may be reflective of a history of *C. difficile* rather than a new infection
□ We need to evaluate our specimen collection and processing practices
□ The time from 'test ordered' to 'specimen submitted' exceeded 24 hours (consider implementing an 'automatic stop' order if stool not submitted in this time frame)
□ Environmental cleaning practices need to be reassessed
□ OTHER (describe)

Next Steps/Action Plan:
□ Discuss identified gaps with care providers (e.g. no tests for cure, no tests for patients with a low pre-test probability of having CDI), clinical lab (e.g. rejecting specimens that do not conform to the shape of the container, pharmacy (e.g. PPI/antibiotic practices), environmental service (e.g. enhanced cleaning practices)
□ Refer case to peer review/quality committee/patient care team, clinical lab, pharmacy, etc.
□ OTHER (describe)

HRET HIIN CDI Root Cause Analysis Tool version 1 March 2018 2

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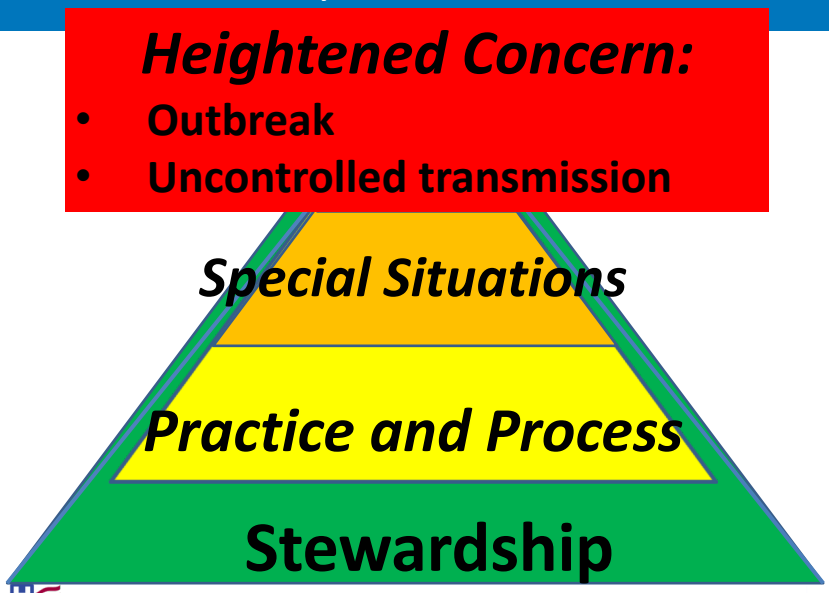
Hierarchy of Intervention



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Heightened Concern

- DEFCON 1
- Situation out of control
- Primary objective is safety
- Assumption that environmental burden exceeds current capabilities
- Intense evaluation and study
- Place for additional technology
  - Technology is used WITH practice/process NOT instead of

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Hierarchy of Intervention

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Services vs. Stewardship

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Team Building

- Safe Culture
- Value, Respect
- Communicate
- Assess/ monitor
- Teach/ learn

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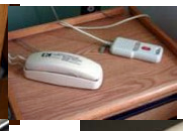
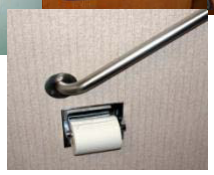
Clear Expectations

"Where the germs are"!

- Sites most frequently contaminated and touched by patients and healthcare workers
- Germs get spread around by people touching these places
  - Patients get infections from these germs





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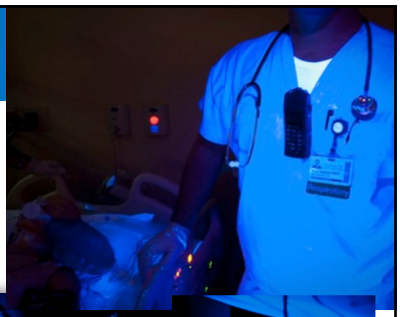
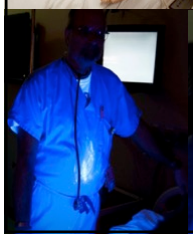
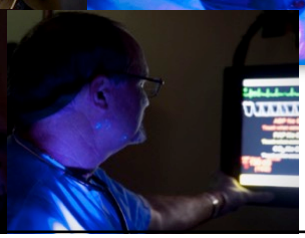
Code Blue!


Who's Job is it?

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Unit Staff Empties, Discards, or Removes	Unit Staff Cleans	EVS Discards, Removes	EVS Cleans (7 step method)
Empties: -Bedside commodes -Urinals -Urine hats -Suction canister liners, lids, and tubing Discards: -All IV fluids and medicines Discards or Removes: -All unused patient care supplies	-Telemetry boxes -CPU keyboard (without cover) -Portable pulse oximeter and cords -Scales -Blood glucometer -Dynamap -Sonosite -Lab draw carts	Discards: -Disposable blood pressure cuffs -Urinals -Urine Hats	All Horizontal Surfaces Spot clean walls Cabinet fronts All High Touch Objects: -Room door knob -CPU keyboard (covered) -Bed rail/controls -Call button -Telephone -Bedside table handle -Over bed table (tray table) -Chair -Room sink faucet handle -Bathroom door knob -Bathroom sink faucet handle -Bathroom handrail by toilet -Toilet flush handle -Bed Pan cleaner -Toilet seat
Removes: -Any patient personal belongings left in room -Any splints, boots, other OT/PT devices left in room -All unit owned equipment: refer to "Unit Staff Cleans" column		Removes to Soiled Utility: -IV pumps -SCDs -Fans -Wheelchairs -Walkers -Food trays (must be covered)	Additional items that may be in room: -Monitor and monitor cables (bleach wipes only) -In-room pulse oximeter and cords -Thermometer and cradle -In-room MAK scanner -White board -In-room refrigerator -Exterior of portable HEPA units -Flashlight -eICU call button

Common Areas

Unit Staff Cleans:	EVS Cleans:	MPD Cleans:
CPU stations/WOWs	Staff and public bathrooms	Blue optiflex bins
Refrigerators (includes medication refrigerator)	Nursing station desks and counters	
Microwave	Foyer seating, Pyxis, supply room floors	
Family room refrigerator	Isolation stations	
Family room microwave	Conference rooms	
Crash carts		

Unit staff is responsible for ensuring reusable items not listed above are cleaned between patients. This process is standardized for all units and areas. The unit manager should confer with their EVS supervisor when additional cleaning assistance is needed.

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Create a Room Cleaning Audit System

- Drivers
  - Joint Commission:
    - EC.04.01.01: The hospital collects information to monitor conditions in the environment
  - CDC, SHEA, CMS, APIC
  - C-diff infection rate
  - Increase collaboration btw/ IP and EVS
  - Target marking solution vs ATP
  - Objective, training and feedback tool
- Cleaning can be programmatically improved

Room Cleaning Audit System: Implementation

- Begin by IP attending EVS dpt meetings
  - Wear scrubs, dress down
  - Educate about C-diff, MDRO
  - Videos, infection rate graph
- Educate : Infection Prevention for EVS
  - contact time, rags per room, explain audits, cleaning concepts, general IP stuff (hand hygiene, PPE)
- Find Champions
  - silent leaders, management staff, IP staff; positive deviance

Compliment, compliment, compliment!

Room Cleaning Audits

- Conduct as partners IPs & EVS management
  - Review bed tracking and patient transport systems
  - Individual rooms, ATP
- Behaviors
  - Preserve privacy, respect
  - Stay humble
  - Scripting
  - Bring employee to room to review audit
- Reinforce right chemicals, right steps
  - contact times, purpose of work

"Thank you for saving lives!"

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117

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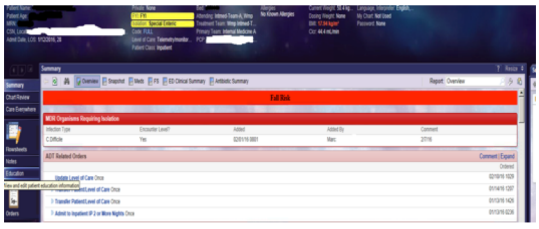
Advice for others

- Culture is key
- Quality over Quantity
- Spell it out: Don't assume
- Develop a maintenance audit program
- Use your EMR to embed Isolation Alerts on Nursing and EVS sides
- Support antimicrobial stewardship



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WakeMed Health & Hospitals
Raleigh, NC

Pearls from Your Peers

- ✓ Perform leadership walk rounds. See don't judge.
- ✓ Meet with staff and learn how you can help create an environment of care and culture of safety that will decrease HAI
- ✓ Be wise about capital purchases. Emerging technologies may play a role, but …..

Table Top Discussion

- ✓See if you have a grid that shows "who cleans what" and how often.
- ✓Do you go and see?
  - How do you really monitor environmental cleaning.
- ✓Discuss and one or two strategies to effectively engage physicians, nurses, and EVS professionals as partners in prevention techniques.

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121

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What will you try?

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Questions?

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Hand Hygiene: Secrets of Success

Getting Started

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April 3-5, 2018

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3 Hand Hygiene

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FOUNDATIONAL QUESTION:

Have I protected my patient from infections?

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Hand-washing an OLD intervention

- Since 1847 we have understood that hand hygiene (HH) makes a difference in the spread of infections
  - Dr. Ignaz Semmelweis in Vienna – Childbed fever
  - Dr. Lister – OR
  - 1980's concepts of hand hygiene in health care emerged
  - 2002 alcohol based hand rub adopted
  - 2007-2008 WHO Global clean hands initiative
- Yet the average HH compliance is 48%

We need to get it right!

- Protect our patients from HAI by performing HH.
- Promote patient and family engagement- give them permission to "speak up for clean hands."
- Promote patient HH for patients.

http://www.cdc.gov/handhygiene/patients/index.html

MUST DO's

SOAP-UP Must Do's

1. Prompt Peer Performance
2. Track Quietly and Trend Loudly
3. Drive Drift Down

MUST DO # 1
Prompt Peer Performance

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MUST DO #2
Track Quietly and Trend Loudly

Hand Hygiene

vs.

Healthcare-Associated Infections

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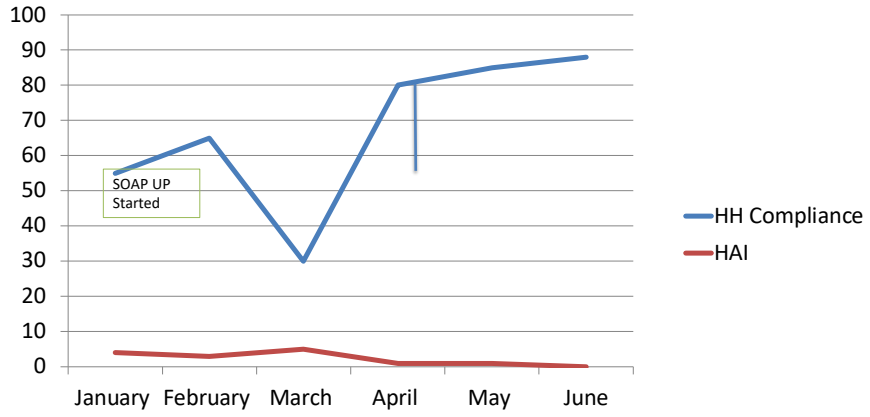
Track Quietly & Trend Loudly



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MUST DO #3
Drive Drift Down

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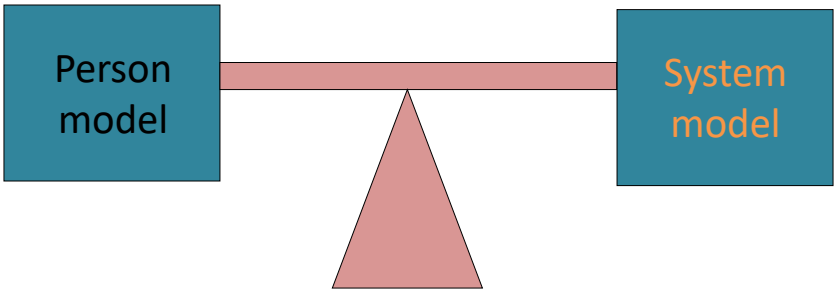
The Right Balance



Important to get the balance right.
Both extremes have their pitfalls.

Shared Accountability

Instructions:
- Do not share with anyone that you are conducting the audit
- Observe all staff-nurses, physicians, RT's, housekeeping staff, etc. (see other side of form for Staff Codes)
- Observe for 30 minutes. This may be broken up in small increments of time. *OR,*
- Observe at least 15 staff members

Unit/Department _____ **Date** _____ **Time** _____

Indicate below what activity was observed and check the one box that applies to that activity

PERSON ENTERED THE ROOM FOR DIRECT CONTACT WITH THE PATIENT OR ENVIRONMENT	HAND HYGIENE SUPPLIES (SOAP, HAND SANITIZER, TOWELS) ARE ADEQUATE		DID YOU SEE HIM/HER USE SOAP OR ALCOHOL GEL WHEN ENTERING THE ROOM?		PERSON EXITED THE ROOM AFTER DIRECT CONTACT WITH THE PATIENT OR ENVIRONMENT	DID YOU SEE HIM/HER USE SOAP OR ALCOHOL GEL WHEN EXITING THE ROOM?		PERSON EXITED THE ROOM WITH GLOVES ON AFTER DIRECT CONTACT WITH THE PATIENT OR ENVIRONMENT	DID YOU SEE HIM/HER USE SOAP OR ALCOHOL GEL AFTER REMOVING GLOVES?	
Enter Staff Code	Yes	No	Yes	No	Enter Staff Code	Yes	No	Enter Staff Code	Yes	No
1.										
2.										
3.										
4.										
5.										
6.										
7.										
8.										
9.										
10.										
11.										
12.										
13.										
14.										
15.										
Total # of Staff Observed	Total		Total	Total	Total # of Staff Observed	Total	Total	Total # of Staff Observed	Total	Total

Adapted with permission from Stanford Health Care, Palo Alto, CA

What works?

- Observation and surveillance of hand hygiene is the best way to ensure appropriate compliance.
- Schedule an unscheduled observation by trained observers.
- Intervene immediately if a breach in HH is observed.
- Provide scripts for reminding peers to perform HH.
- Promote culture of safety .

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Table Top Activity: Peer reminders

- Develop a “sticky” message to prompt handwashing.
- Report out

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SOAP UP Checkpoint

Must Do's

1. Prompt Peer Performance
2. Track Quietly and Trend Loudly
3. Drive Drift Down

Next Steps

- ✓ Do you display hand hygiene (HH) compliance results in highly visible places at the department/unit level?
- ✓ Have you implemented scripting to remind other team members to perform HH when it is not observed?
- ✓ Do you have a system in place that holds all team members accountable to the HH expectations?

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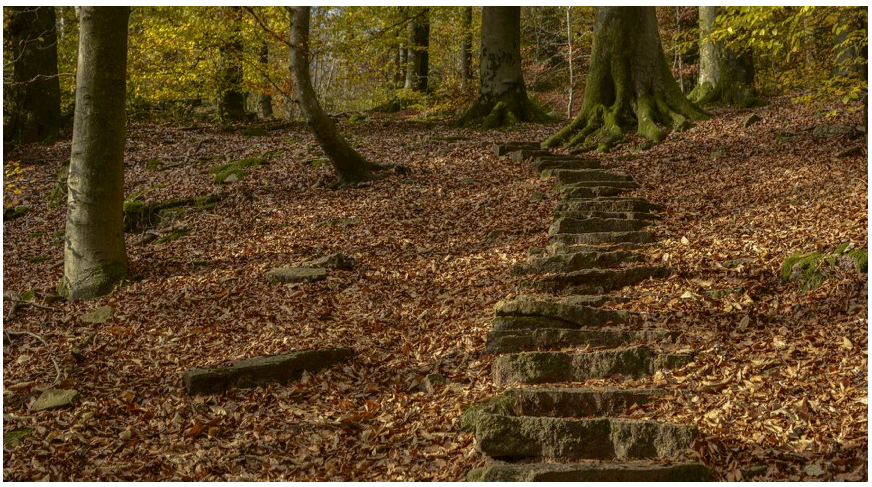
What Will Your Next Steps Be?



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Thank you

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