

Resident Distraction
as a Strategy to
Improve Perineal Care
and Reduce Catheter
Associated Urinary
Tract Infections
(CAUTI) in a Long-
Term Care Facility

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Disclosures

- ▶ Nothing to disclose

Nursing Home Infection Burden Estimates

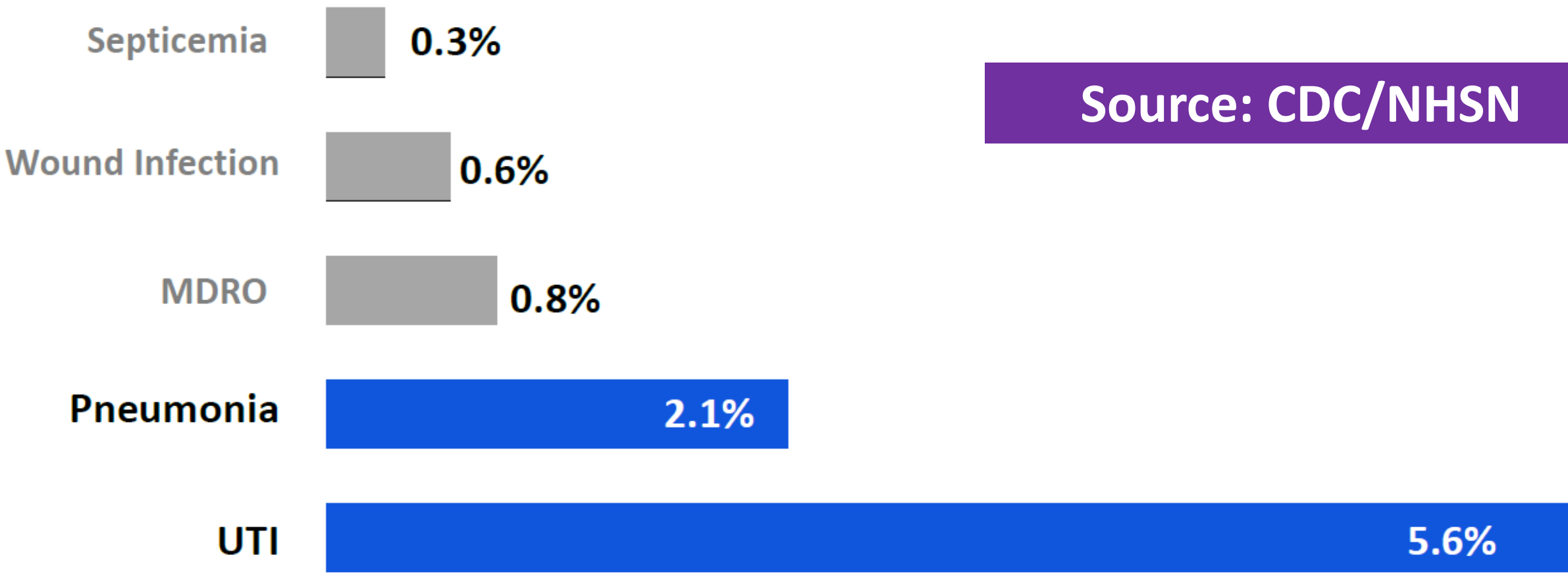
1.64 – 3.83 million infections annually

Strausbaugh and Joseph, 2000

1.13 – 2.68 million infections in 2013

Herzig et al, 2017

Source: CDC/NHSN



Note: Estimates are the 7-day prevalence for each except UTI, which are 30-day

UTI were the most commonly reported infections among all resident assessments

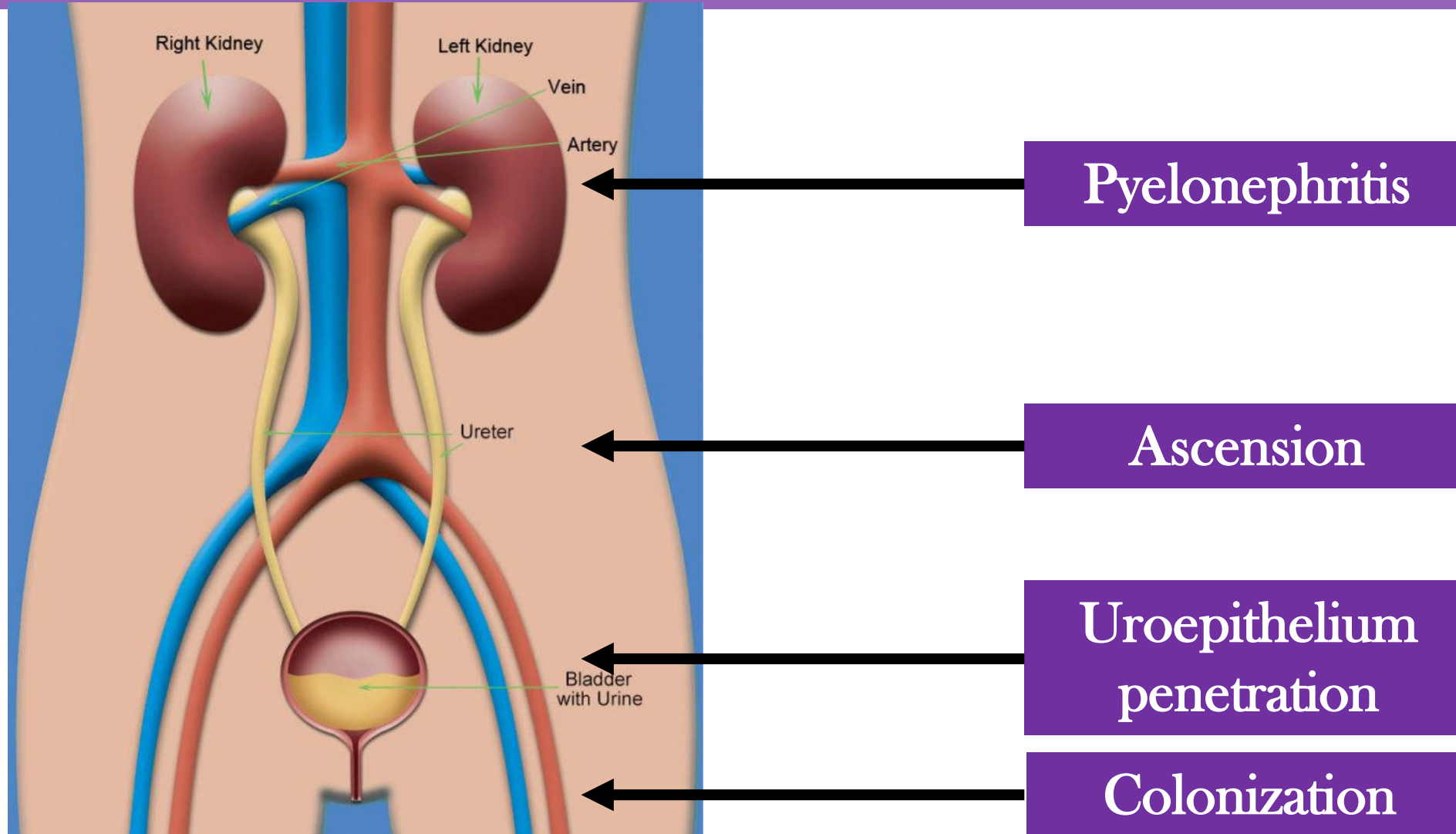
Department of Health and Human Services

OFFICE OF INSPECTOR GENERAL

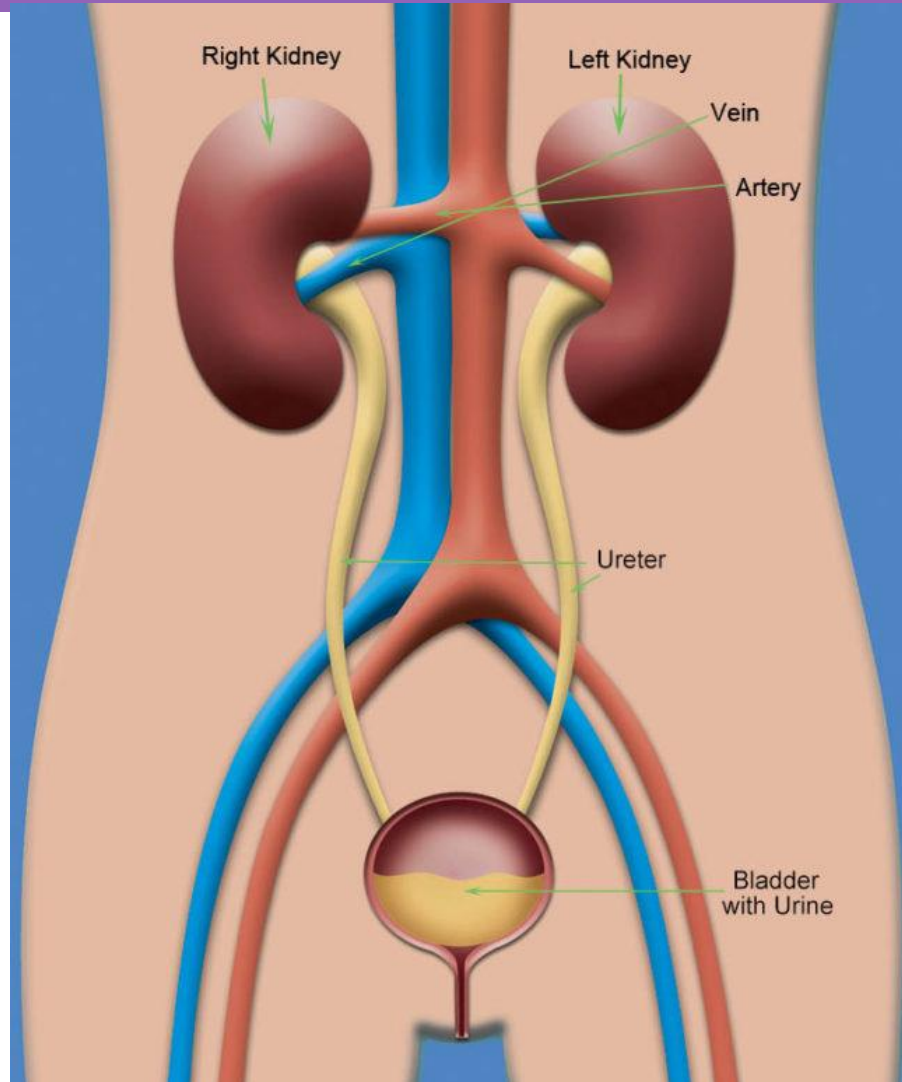
ADVERSE EVENTS IN SKILLED NURSING FACILITIES: NATIONAL INCIDENCE AMONG MEDICARE BENEFICIARIES

February 2014 OEI-06-11-00370	Sample Size (n)	Percentage	95-Percent Confidence Interval	
			Lower Bound	Upper Bound
Adverse Events Related to Infections				
Aspiration pneumonia and other respiratory infections	148	9.8%	3.8%	15.8%
SSI associated with wound care	148	4.9%	1.6%	8.3%
CAUTI	148	3.1%	0.4%	5.7%
<i>Clostridium difficile</i> infection	148	3.1%	0.4%	5.7%
Other infection-related adverse events	148	4.9%	1.5%	8.3%
Clinical Category for All Temporary Harm Events				
Medication temporary harm events	113	42.8%	33.5%	52.2%
Resident care temporary harm events	113	40.3%	30.9%	49.7%
Infection temporary harm events	113	16.8%	10.0%	23.7%

Ascending Urinary Tract Infection



Descending Urinary Tract Infection



Hematogenous
spread

Catheter Associated Urinary Tract Infection

Patient had an indwelling urinary catheter that had been in place for more than 2 consecutive days in an inpatient location on the date of event

CAUTI Signs and Symptoms

Fever

Rigors

New confusion or functional decline
(with NO alternative diagnosis AND leukocytosis)

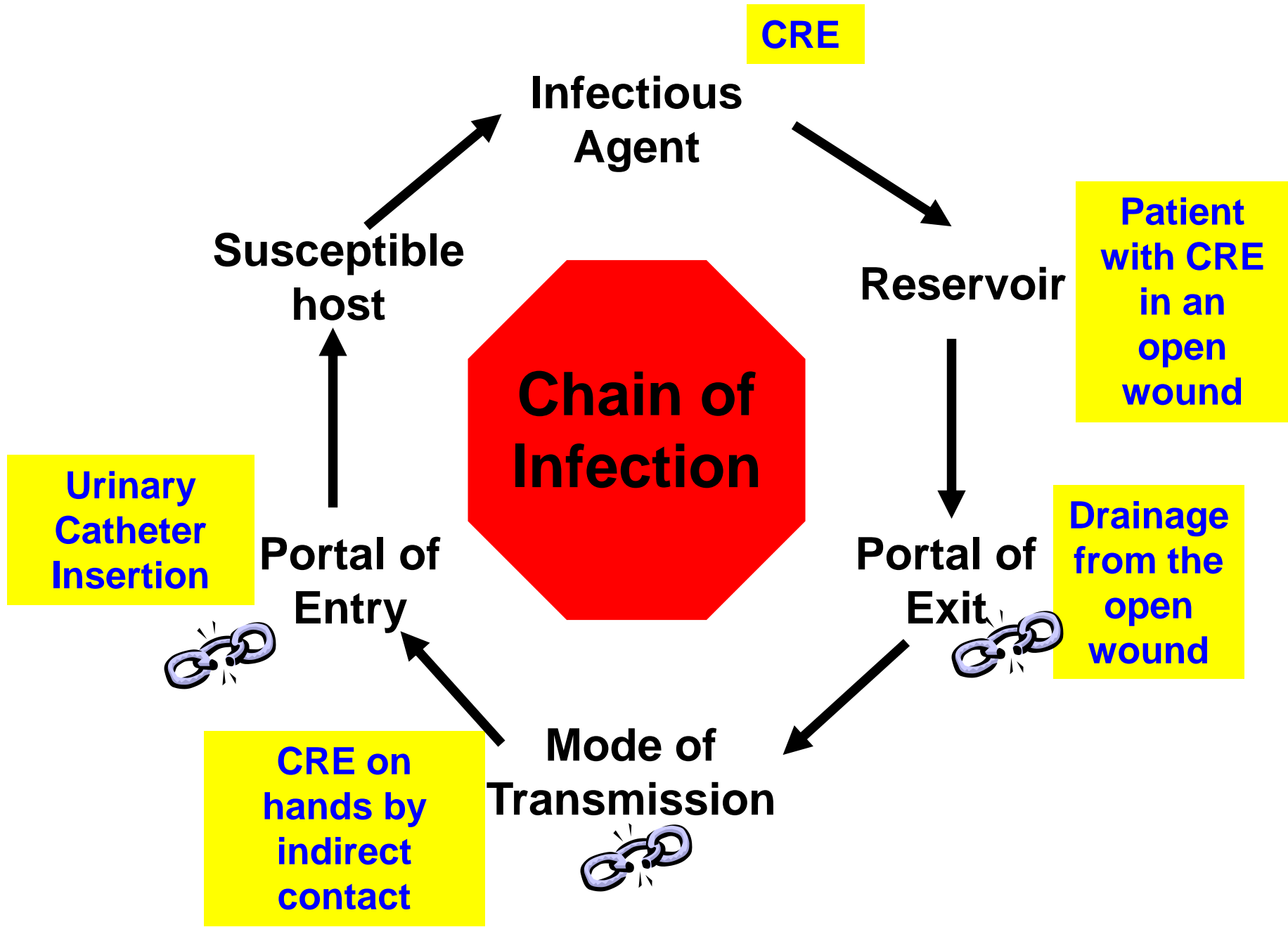
New suprapubic pain or costovertebral angle pain or tenderness

New onset hypotension
(with no alternate site of infection)

Acute pain, swelling or tenderness of the testes, epididymis or prostate

Purulent (pus) discharge from around the catheter

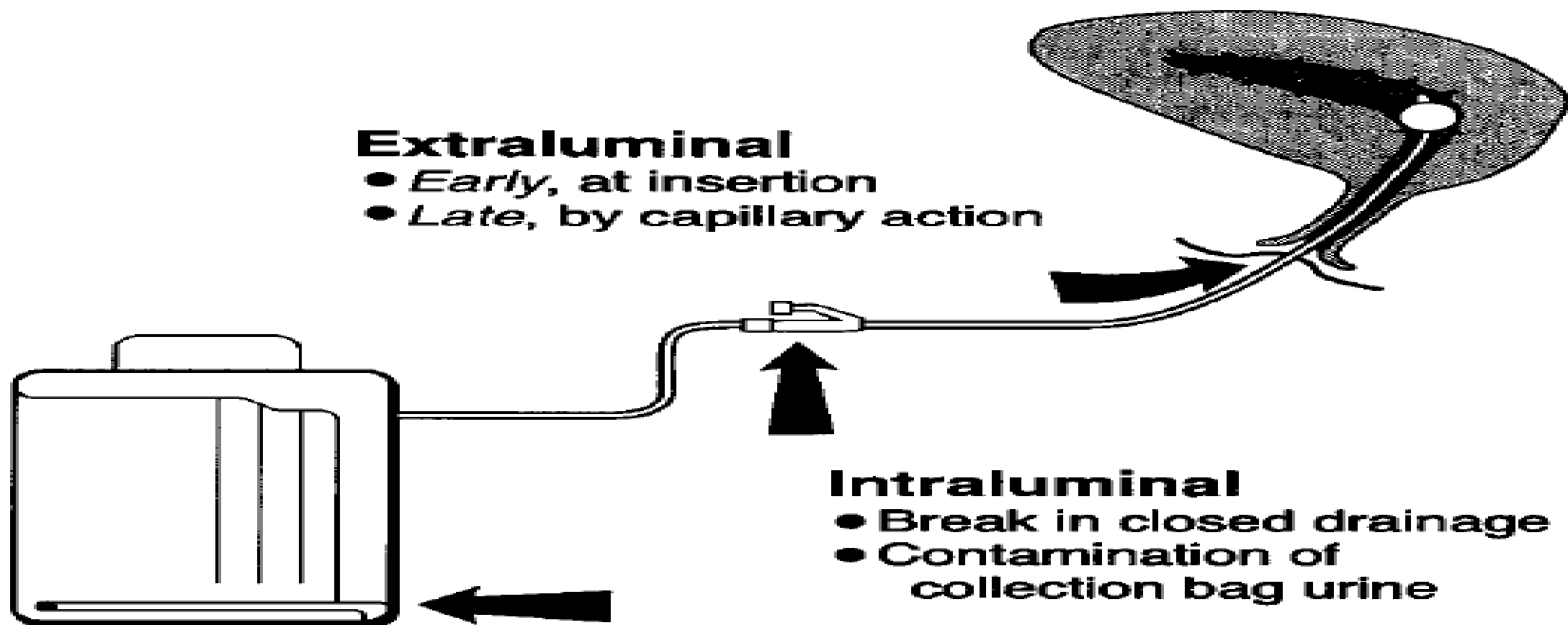
No other explanation
for the signs and
symptoms



Engineering out the risk for infection with urinary catheters.

D. G. Maki and P. A. Tambyah

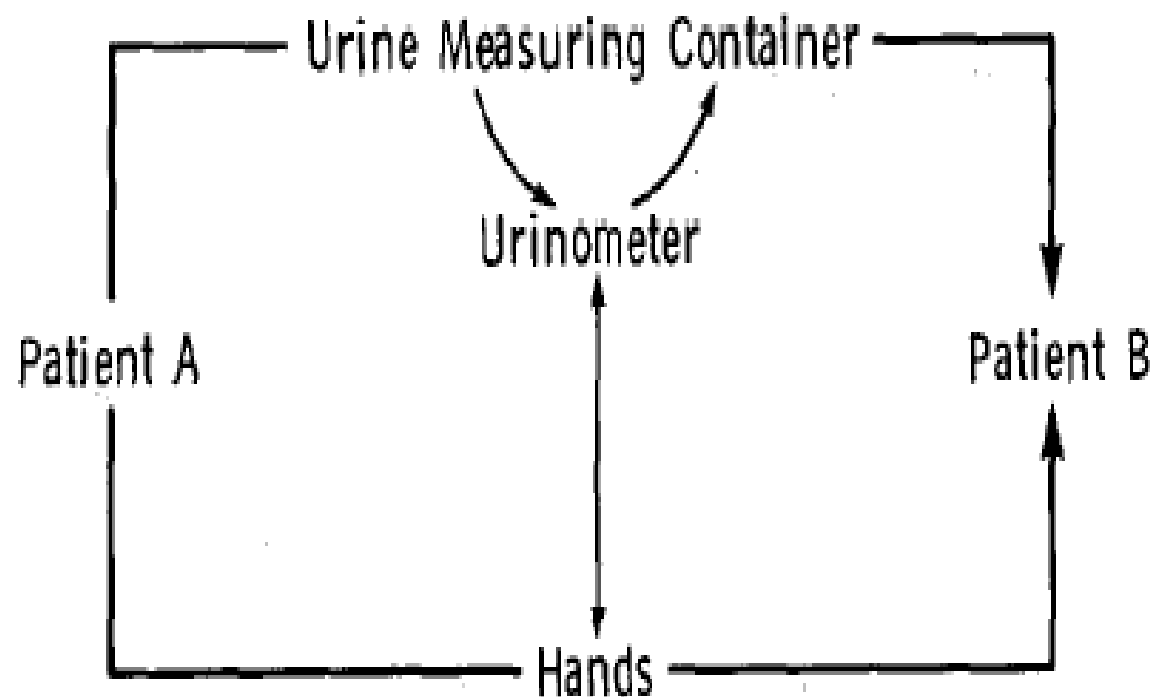
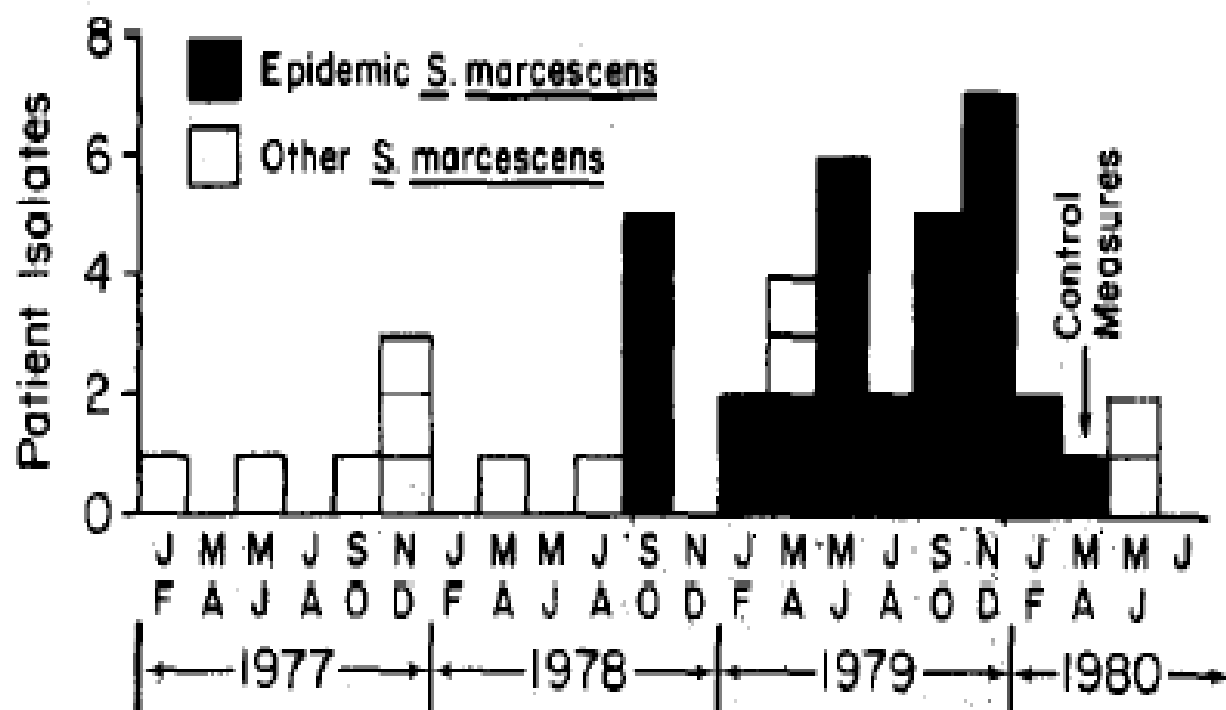
Routes of Entry of Uropathogens to Catheterized Urinary Tract



Symposium on nosocomial infections (Part II)

Serratia marcescens nosocomial infections of the urinary tract associated with urine measuring containers and urinometers ☆

William A. Rutala Ph.D. ², Virginia A. Kennedy R.N., M.S., Hope B. Loflin R.N. ^{*1}, Felix A. Sarubbi Jr M.D.



VRE Positive Sites After Cleaning



Hayden M, The Risk of Hand and Glove Contamination after Contact with a VRE (+) Patient Environment. ICAAC, 2001, Chicago, IL.

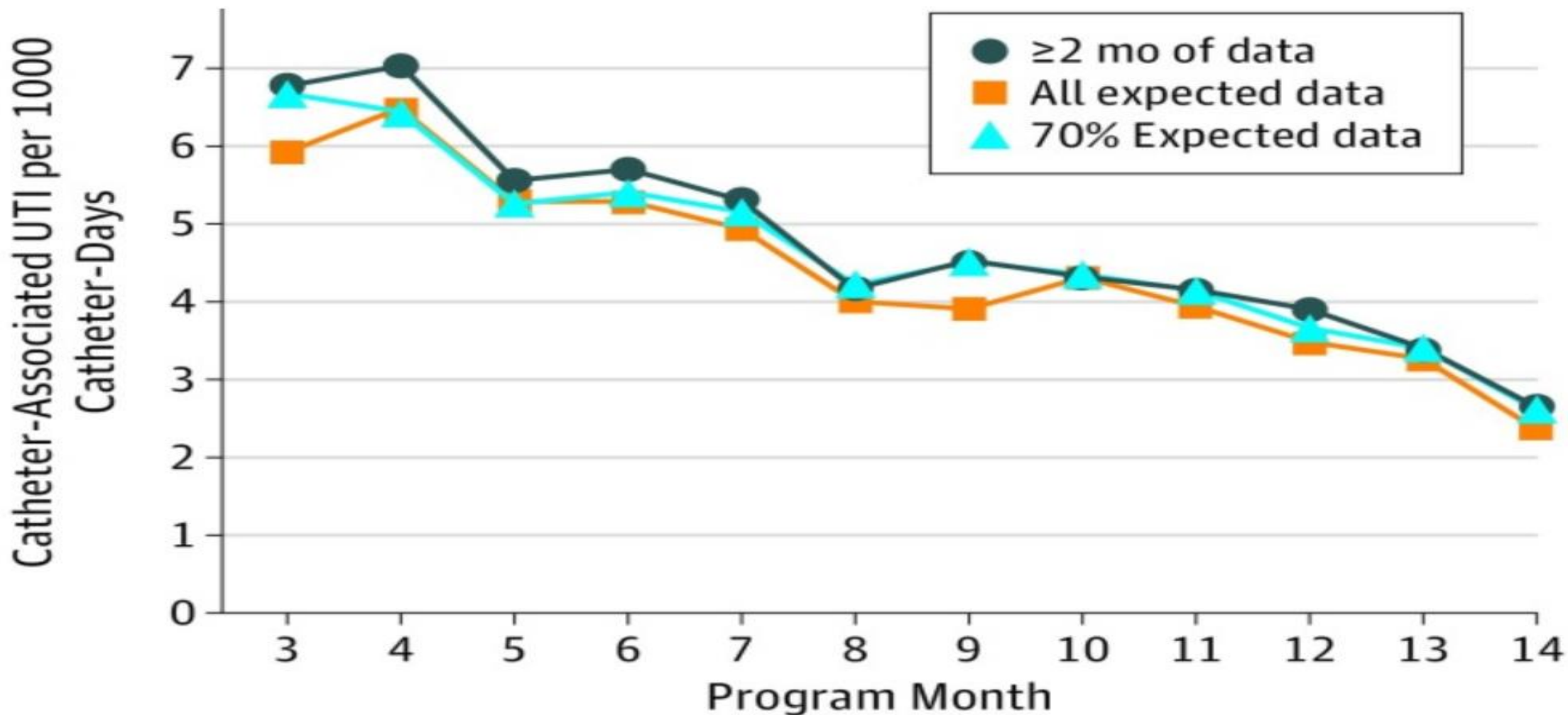
Table 1: Persistence of clinically relevant bacteria on dry inanimate surfaces.

Type of bacterium	Duration of persistence (range)	Reference(s)
<i>Acinetobacter</i> spp.	3 days to 5 months	[18, 25, 28, 29, 87, 88]
<i>Bordetella pertussis</i>	3 – 5 days	[89, 90]
<i>Campylobacter jejuni</i>	up to 6 days	[91]
<i>Clostridium difficile</i> (spores)	5 months	[92–94]
<i>Chlamydia pneumoniae</i> , <i>C. trachomatis</i>	≤ 30 hours	[14, 95]
<i>Chlamydia psittaci</i>	15 days	[90]
<i>Corynebacterium diphtheriae</i>	7 days – 6 months	[90, 96]
<i>Corynebacterium pseudotuberculosis</i>	1–8 days	[21]
<i>Escherichia coli</i>	1.5 hours – 16 months	[12, 16, 17, 22, 28, 52, 90, 97–99]
Enterococcus spp. including VRE and VSE	5 days – 4 months	[9, 26, 28, 100, 101]
<i>Haemophilus influenzae</i>	12 days	[90]
<i>Helicobacter pylori</i>	< 90 minutes	[23]
<i>Klebsiella</i> spp.	2 hours to > 30 months	[12, 16, 28, 52, 90]
<i>Listeria</i> spp.	1 day – months	[15, 90, 102]
<i>Mycobacterium bovis</i>	> 2 months	[13, 90]
<i>Mycobacterium tuberculosis</i>	1 day – 4 months	[30, 90]
<i>Neisseria gonorrhoeae</i>	1 – 3 days	[24, 27, 90]
<i>Proteus vulgaris</i>	1 – 2 days	[90]
<i>Pseudomonas aeruginosa</i>	6 hours – 16 months; on dry floor: 5 weeks	[12, 16, 28, 52, 99, 103, 104]
<i>Salmonella typhi</i>	6 hours – 4 weeks	[90]
<i>Salmonella typhimurium</i>	10 days – 4.2 years	[15, 90, 105]
<i>Salmonella</i> spp.	1 day	[52]
<i>Serratia marcescens</i>	3 days – 2 months; on dry floor: 5 weeks	[12, 90]
<i>Shigella</i> spp.	2 days – 5 months	[90, 106, 107]
<i>Staphylococcus aureus</i> , including MRSA	7 days – 7 months	[9, 10, 16, 52, 99, 108]
<i>Streptococcus pneumoniae</i>	1 – 20 days	[90]
<i>Streptococcus pyogenes</i>	3 days – 6.5 months	[90]
<i>Vibrio cholerae</i>	1 – 7 days	[90, 109]

**Environmental
Survival on Dry
Inanimate
Surfaces**

A National Implementation Project to Prevent Catheter-Associated Urinary Tract Infection in Nursing Home Residents

Lona Mody, MD, MSc; M. Todd Greene, PhD, MPH; Jennifer Meddings, MD, MSc; Sarah L. Krein, PhD, RN; Sara E. McNamara, MPH, MT(ASCP); Barbara W. Trautner, MD, PhD; David Ratz, MS; Nimalie D. Stone, MD, MS; Lillian Min, MD, MSHS; Steven J. Schweon, RN, MPH, MSN; Andrew J. Rolle, MPH; Russell N. Olmsted, MPH; Dale R. Burwen, MD, MPH; James Battles, PhD; Barbara Edson, RN, MBA, MHA; Sanjay Saint, MD, MPH



Infections are a leading cause of illness and death in long-term care facilities.

These infections include catheter-associated urinary tract infections (CAUTIs).

REMEMBER C.A.U.T.I. TO PREVENT CAUTI

C

Catheter Removal

Think about catheters in any of your residents. Are the catheters really necessary?

Remove the catheter if there is no good indication for it. (See below.)

Every resident deserves a chance to be catheter-free and infection-free.

A

Aseptic Insertion

Only trained personnel should insert catheters.

Use hand hygiene, and insert using aseptic technique.

Use the smallest catheter size that will allow good drainage for the resident.

Avoid contamination of the catheter.

Use catheter securement devices.

U

Use Regular Assessments

Insert new urinary catheters only where there is a good indication. Incontinence is NOT an appropriate indication for an indwelling urinary catheter.

Consider alternatives to using a urinary catheter.

Use a bladder ultrasound to guide management.

Implement a process to see whether residents need catheters.

T

Training for Catheter Care

Train staff, resident, and family.

Maintain a closed drainage system, and maintain unobstructed urine flow.

Use routine hygiene. Do not clean the periurethral area with antiseptics.

Routine catheter changes, urinalysis, and cultures are not required.

I

Incontinence Care Planning

Consider alternatives to using a urinary catheter when developing individual resident care plans and behavioral interventions.

Consider timed and prompted voiding and use of a voiding diary.

Remember: No catheter means no CAUTI!

Appropriate Indications for an Indwelling Urinary Catheter

To assist in healing of open sacral or perineal wounds in incontinent residents

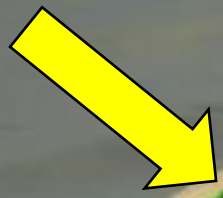
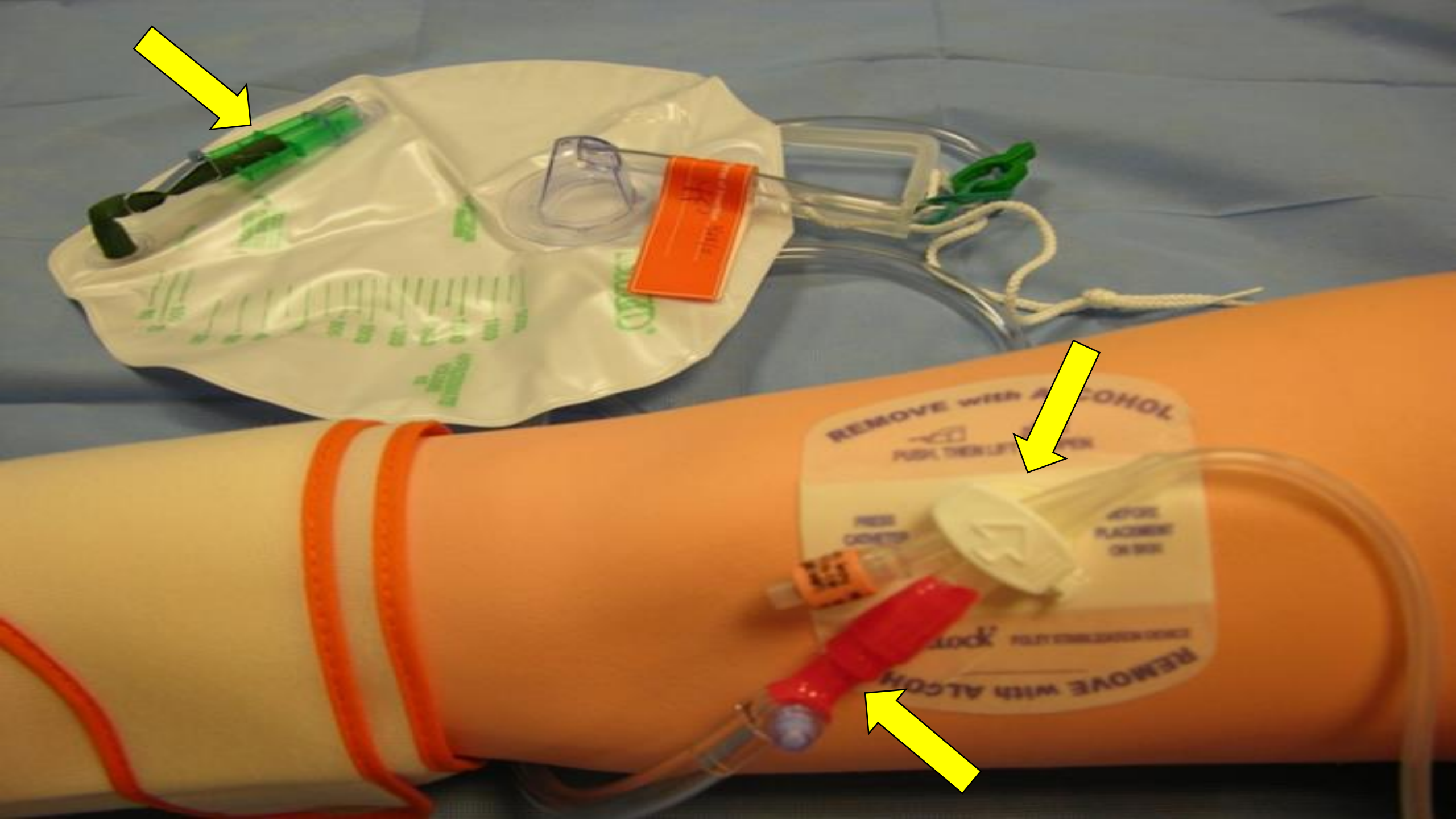


For acute urinary retention or bladder outlet obstruction

To improve comfort for end-of-life care if needed

Source: Centers for Disease Control and Prevention Healthcare Infection Control Practices Advisory Committee. Guideline for Prevention of Catheter-associated Urinary Tract Infections, 2009. http://www.cdc.gov/hicpac/cauti/09_cauti009_abbrv.html

The AHRQ Safety Program for Long-Term Care: HAIs/CAUTI provides guides, tools and educational videos that will help you provide safer care for residents. Visit <http://www.ahrq.gov/professionals/quality-patient-safety/quality-resources/tools/cauti-ltc/index.html> for more information.



Major Article

Impact of a change in surveillance definition on performance assessment of a catheter-associated urinary tract infection prevention program at a tertiary care medical center



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^c University of Cincinnati Medical Center, Cincinnati, OH

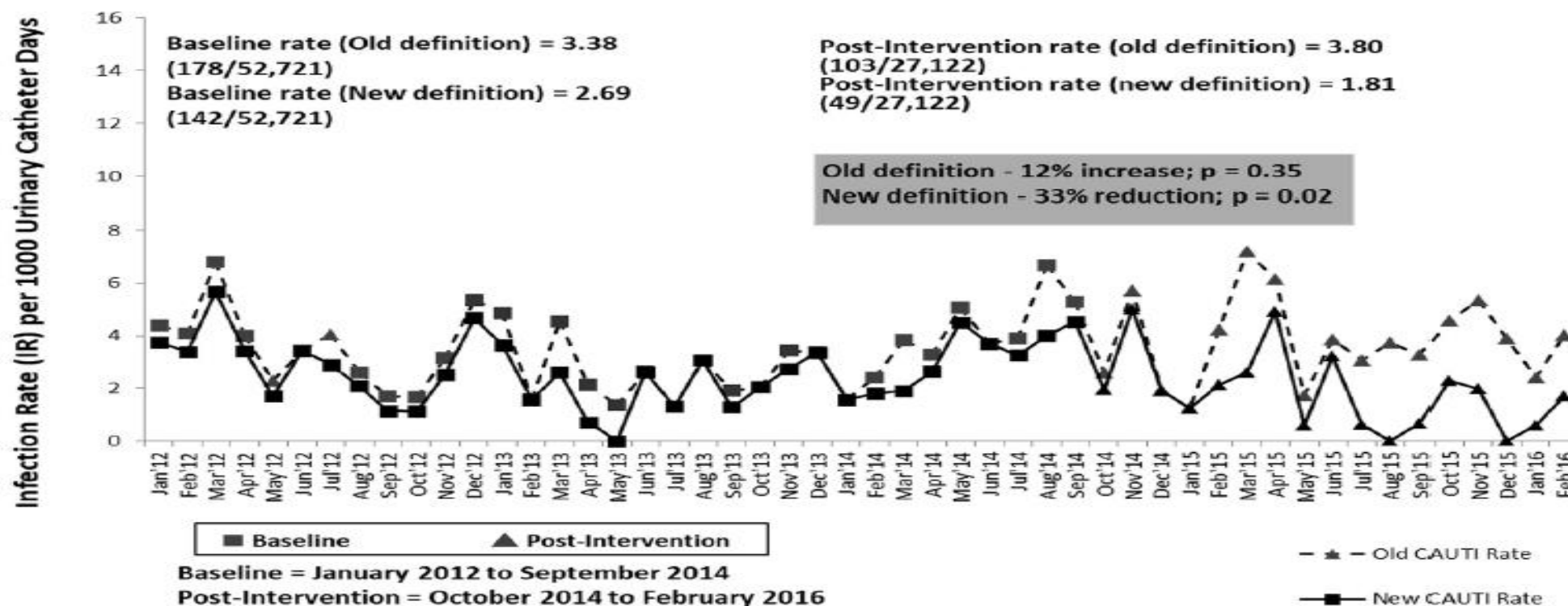


Fig 1. Catheter-associated urinary tract infection (CAUTI) rate per 1000 catheter days with surveillance performed using the CDC/NHSN CAUTI definition that was in effect before January 2015 (old definition) and after January 2015 (new definition).

CDC/NHSN = Centers for Disease Control and Prevention/National Health Safety Network



Background and Introduction

- ▶ Catheter Associated Urinary Tract Infections (CAUTIs) can lead to sepsis and death in the elderly.
- ▶ 116 bed Veteran's Community Living Center (long-term care)
- ▶ Majority males
- ▶ Average of 500 urinary catheter device days per month.
- ▶ Comorbidities include Spinal cord injury, diabetes, CVA, dementia, benign prostatic hyperplasia
- ▶ Most CAUTI bundles created for acute care and focus on removal
- ▶ Vast majority of catheters in this population are for obstruction and chronic

Observations and Measurements

Process surveillance includes insertion, urinals replaced weekly and stored in individual holder, resident/family education, securement device present, seals intact, bag below the level of the bladder, tubing not looped, kinked or otherwise blocking drainage, hand hygiene and collection of specimens.

Outcome surveillance: CAUTI based on CDC-NHSN long-term care definition

Limitations of process surveillance include staff not notifying Infection Preventionist when insertion performed, insertions performed on off shifts, residents involved in activities or sleeping during surveillance

Device days gathered on the units by Nursing staff

Annual rolling rates utilized due to small number of CAUTIs (less than 10 per year) and utilized by Strategic Analytics for Improvement and Learning (SAIL)

Calculating Annual Rolling Rates

	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2015	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	FY 2016	
CLC-B	April	May	June	July	August	September	October	November	December	January	February	March	Rolling Rate
CAUTI	0	0	0	1	0	1	1	0	2	1	1	1	8
Catheter days	386	360	327	360	396	386	386	345	306	280	255	332	4119
Rate/1000 DD	0.00	0.00	0.00	2.78	0.00	2.59	2.59	0.00	6.54	3.57	3.92	3.01	1.94
CLC-C	April	May	June	July	August	September	October	November	December	January	February	March	
CAUTI	0	0	1	0	0	0	0	0	0	0	0	0	1
Catheter days	102	119	87	121	106	147	158	127	117	105	87	90	1366
Rate/1000 DD	0.00	0.00	11.49	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.73
COMBINED CLC	April	May	June	July	August	September	October	November	December	January	February	March	
CAUTI	0	0	1	1	0	1	1	0	2	1	1	1	9
Catheter days	488	479	414	481	502	533	544	472	423	385	342	422	5063
Rate/1000 DD	0.00	0.00	2.42	2.08	0.00	1.88	1.84	0.00	4.73	2.60	2.92	2.37	1.78
Number of CAUTIs/Month	April	May	June	July	August	September	October	November	December	January	February	March	
B HALL	0	0	0.00	1.00	0.00	1.00	1.00	0.00	2.00	1.00	1	1	
C HALL	0	0	1	0	0.00	0.00	0.00	0.00	0.00	0.00	0	0	
Annual Rolling Rate B&C	1.21	1.03	0.86	0.86	0.88	1.15	1.5	1.04	1.33	1.42	1.61	1.78	

Where We Were

- ▶ Baseline period was from January 2016 to March 2017 with a CAUTI rate of 1.86 per 1000 urinary catheter days (with 12 CAUTI and 6,440 catheter days in a 15-month period)
- ▶ Previous interventions used were CAUTI bundle, voiding trials, decrease flushing, reviewing continued need during Interdisciplinary Team meetings
- ▶ Asymptomatic bacteriuria and antimicrobial stewardship education for staff

	2016												2017			
COMBINED Bonham CLC	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
CAUTI	1	1	1	1	1	0	0	0	0	1	1	2	0	2	1	12
Catheter days	385	342	422	467	444	404	390	372	377	449	482	432	488	462	524	6440
Rate/1000 DD																1.86

Huddle Process

- ▶ Safety/event huddles are used in high reliability organizations to promote a culture of safety
- ▶ Tool development
 - ▶ Sample tool <https://www.ahrq.gov/hai/cauti-tools/impl-guide/implementation-guide-appendix-o.html>
 - ▶ Evaluate staff knowledge
 - ▶ Opens conversation about potential causes

Huddle Process

Involve front line staff

Non punitive

Not just an infection on their unit but Mr. Smith

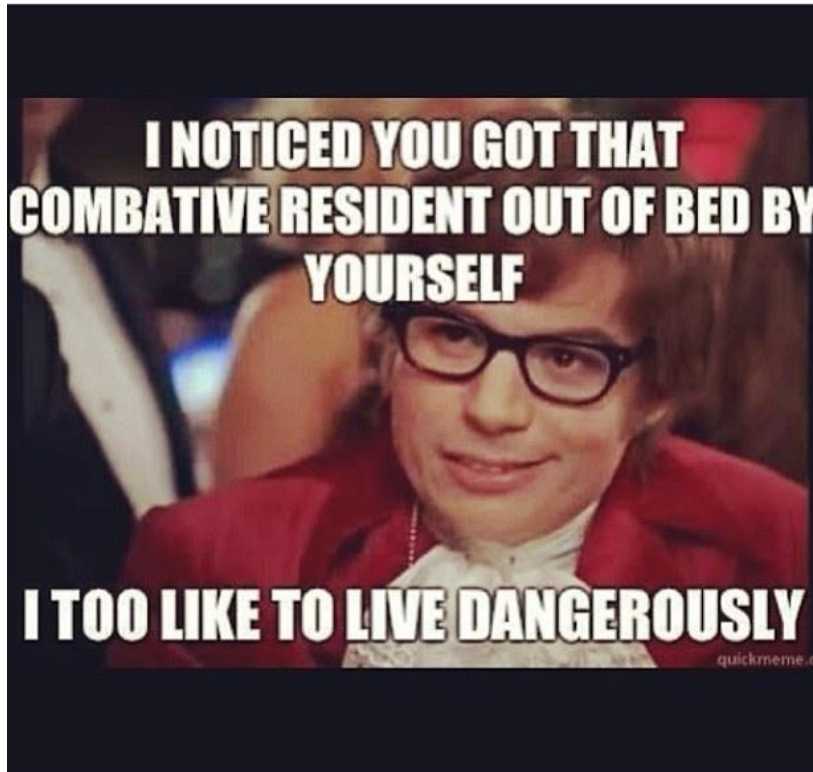
Buy in on improving care to prevent infections

Ask for solutions as well as problems

Involve staff on implementation of solutions

Initial Huddle Results

- ▶ Of first three huddles staff identified two residents had dementia and were combative during care, one other resident wanted to perform self care but was not physically able to do a thorough job



Care-Resistant Behavior (CRB) in Geriatric Patients with Dementia



Residents with dementia can perceive personal care as threatening and exhibit care-resistant behavior (CRB) such as pinching, punching and biting



Dementia decreases activity in the hippocampus and cortical structures which changes perception and the ability to reason



Combat Veterans with PTSD



Few studies exist on decreasing these behaviors during personal care

Developing the Intervention



Presented at Nursing self
governance workgroup



Developed nurse driven protocols
for distracting combative residents
and assisting residents desiring to
perform self care

Distraction Techniques

- ▶ Talking to resident about things that are important to the resident
- ▶ Holding hands and singing songs
- ▶ Turning TV to resident's favorite channel
- ▶ Allowing Veteran to hold a favorite object (stuffed animal or photograph)

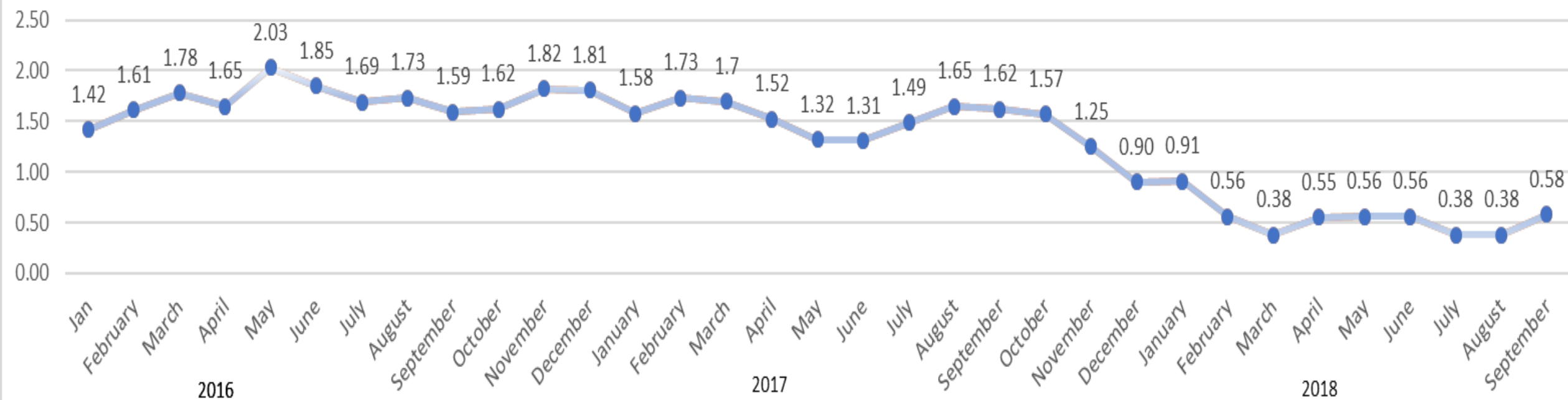


Results of Intervention

- ▶ No CAUTI's for the following 6 months
- ▶ Pizza party celebration
- ▶ Continued for 7 months straight without a CAUTI in the entire CLC
- ▶ 18 months with 5 CAUTI
- ▶ Rate reduced by 73% (p-value 0.02)

	2017										2018									
COMBINED Bonham CLC	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	
CAUTI	0	0	0	1	1	0	0	0	0	0	0	0	1	0	0	0	1	1	5	
Catheter days	431	490	445	428	456	448	530	454	408	420	333	473	526	449	400	378	405	421	7895	
Rate/1000 DD																			0.63	

Annual Rolling Rate of Catheter Associated Urinary Tract Infections from January 2016-September 2018



Beyond the Study

- ▶ Continued huddles revealed no further CAUTI in residents with dementia who were resistant during care
- ▶ All huddles revealed barriers to excellent peri-care including change in bathing preferences and body habitus issues

	2018			2019									
COMBINED CLC	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Totals
CAUTI	1	0	0	1	0	0	1	0	0	0	0	0	3
Catheter days	424	385	367	321	326	348	297	279	367	398	465	437	4414
Rate/1000 DD													0.68



On our way to "0" CAUTI's

References

[https://www.jointcommissionjournal.com/article/S1553-7250\(17\)30225-8/fulltext](https://www.jointcommissionjournal.com/article/S1553-7250(17)30225-8/fulltext)

<https://www.ahrq.gov/sites/default/files/wysiwyg/professionals/quality-patient-safety/quality-resources/tools/cauti-ltc/modules/final-report.pdf>

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3298085/>

https://www.shea-online.org/images/guidelines/UTIs_in_LTCF_2001.pdf

<https://www.cdc.gov/infectioncontrol/pdf/guidelines/cauti-guidelines-H.pdf>