CAUTI Care and Removal Program

Addressing Appropriate Urinary Catheter Use in the Emergency Department: Why and How?Mohamad Fakih, MD, MPH

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ON THE CUSP: STOP HAI

An 85 year old male with dementia…

- Was transferred from the nursing home to the hospital because of a non-functioning PEG tube. In the ED, the nurse noted the patient being incontinent and placed a urinary catheter
- The patient was admitted and the PEG tube was changed. That night the patient became more confused and pulled on his catheter leading to severe hematuria and urology evaluation.
- Within 24 hours he spiked a fever and blood cultures were positive.
- He was treated for CAUTI and required a prolonged hospital stay

Objectives

- Describe urinary catheter use with focus on the emergency department (ED)
- Describe early work to reduce catheter use
- Describe the 2 ED pilots in progress (Michigan Hospital Association and Ascension Health)
- Suggest a plan for hospitals to implement improvements in the ED

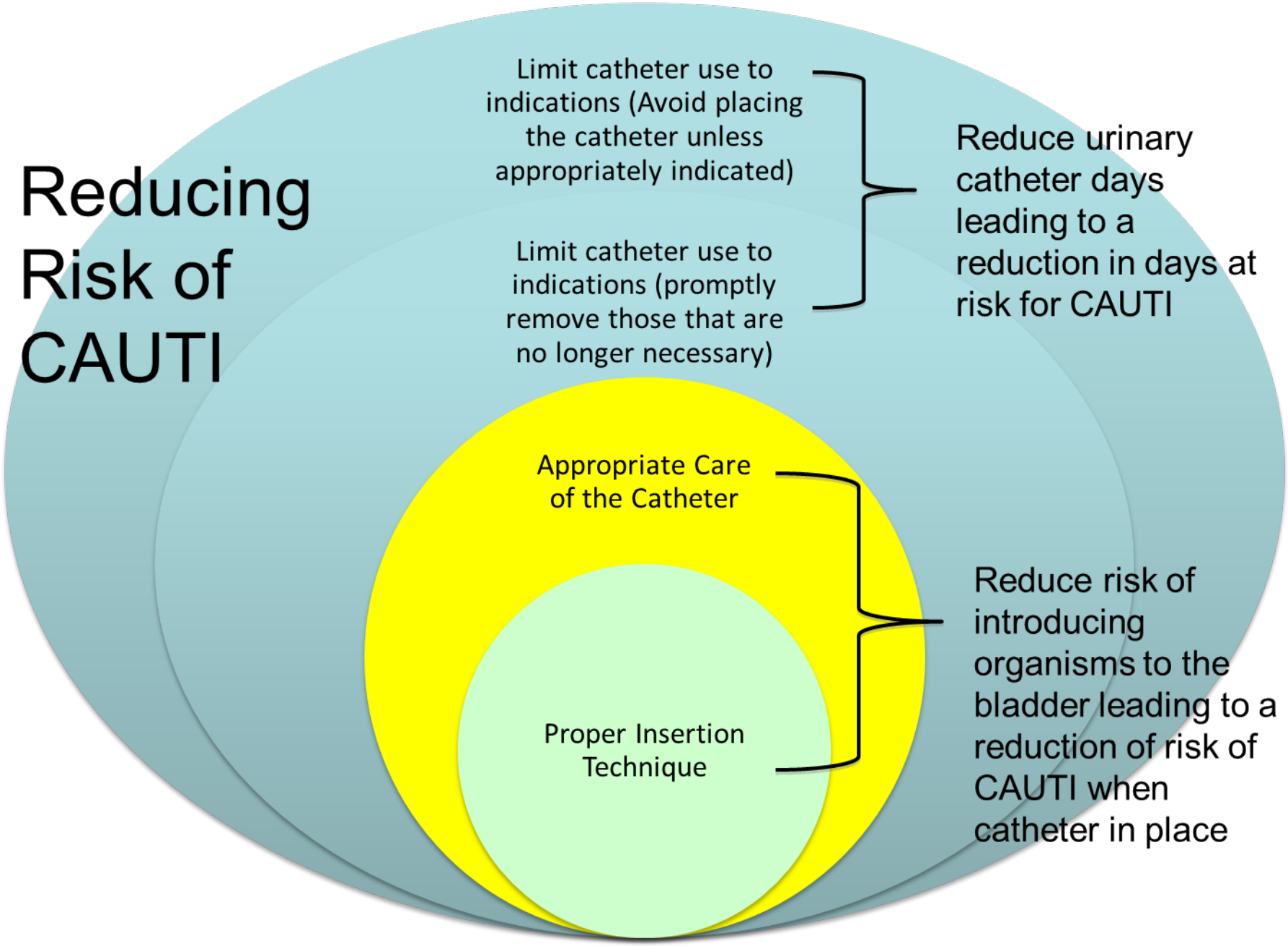
Urinary Catheter Utilization

- About 15 - 25% of patients will have a urinary catheter placed during their hospitalization.
- Many are placed either in the intensive care unit, emergency department or the operating room.

Mean Use of UCs (NHSN): ICU > General Wards

(Edwards, Am J Infect Control 2009; 37:783-805, Dudeck, *Am J Infect Control.* 2011;39(5):349-367; *Am J Infect Control* 2011;39(10):798-816)

Unit	2006-8 Urinary Catheter Utilization Ratio	2009 Urinary Catheter Utilization Ratio	2010 Urinary Catheter Utilization Ratio
ICU (med-surg, major teaching)	0.78	0.73	0.73
ICU (med-surg, >15 beds)	0.79	0.72	0.71
General Wards (med-surg)	0.22	0.19	0.19


Reducing Risk of CAUTI
Limit catheter use to indications (Avoid placing the catheter unless appropriately indicated)
Limit catheter use to indications (promptly remove those that are no longer necessary)
Reduce urinary catheter days leading to a reduction in days at risk for CAUTI
Appropriate Care of the Catheter
Proper Insertion Technique
Reduce risk of introducing organisms to the bladder leading to a reduction of risk of CAUTI when catheter in place

Reducing Unnecessary Use: Limit to Indications

Clear Identification of what is considered an appropriate indication

Inappropriate Use in non-ICU: Michigan Experience 2007-10

(Fakih et al, Arch Intern Med 2012;172:255-260)

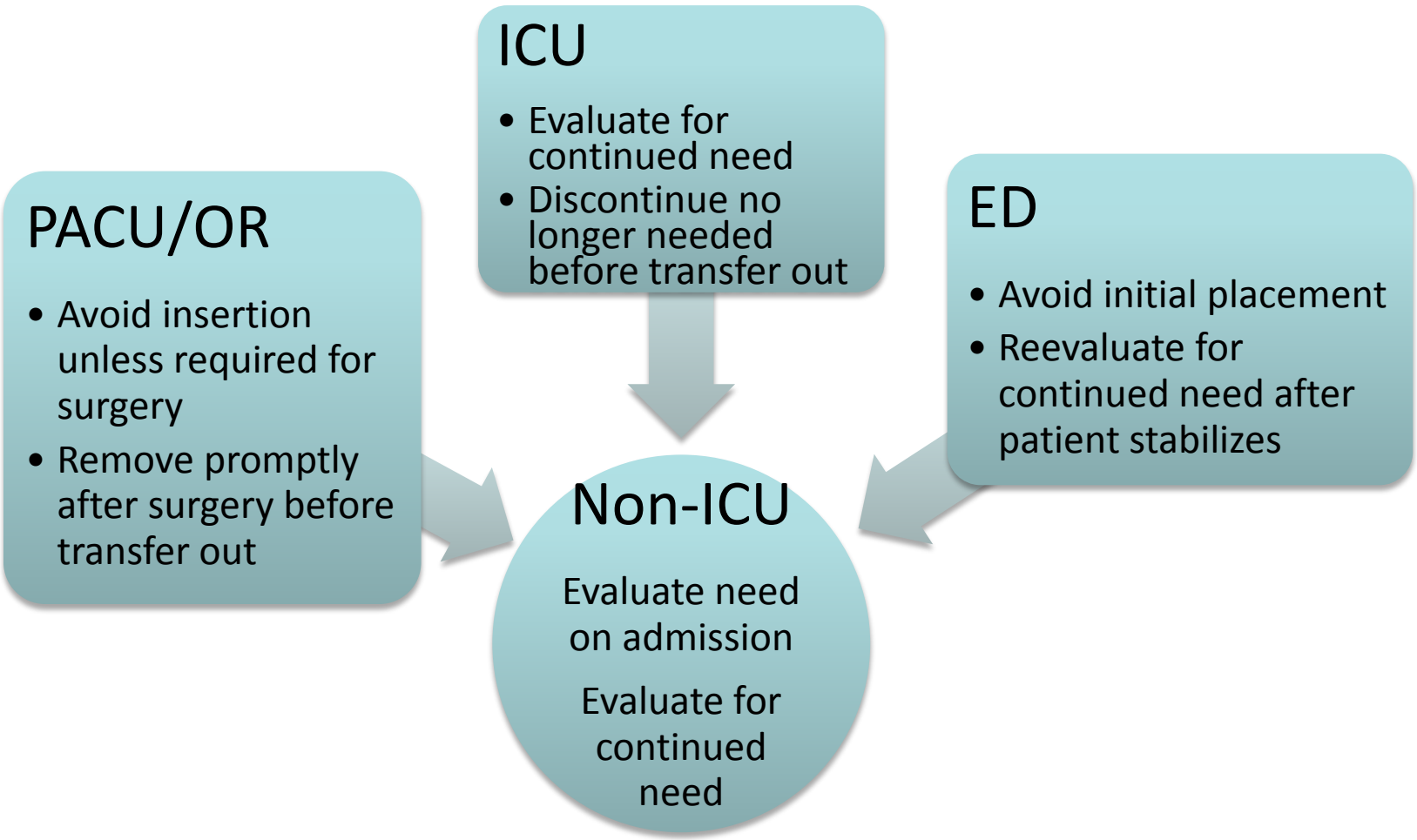
	Baseline % of all patients with catheters (57.6%)	**% of patients with catheters without appropriate indications***
Non-obstructive renal insufficiency	2.2	3.8
Transferred from intensive care	4.2	7.3
Patient request	1.5	2.6
Confusion	4.6	8.0
Incontinence	6.5	11.3
Other or no clear reasons	38.6	67.0

*Based on the 1983 CDC recommendations

Addressing the Urinary Catheters

- Most of the work has been in the non-intensive care units
- Focus has been reducing the duration of use
- But where do the catheters come from?

Areas for Potential Interventions

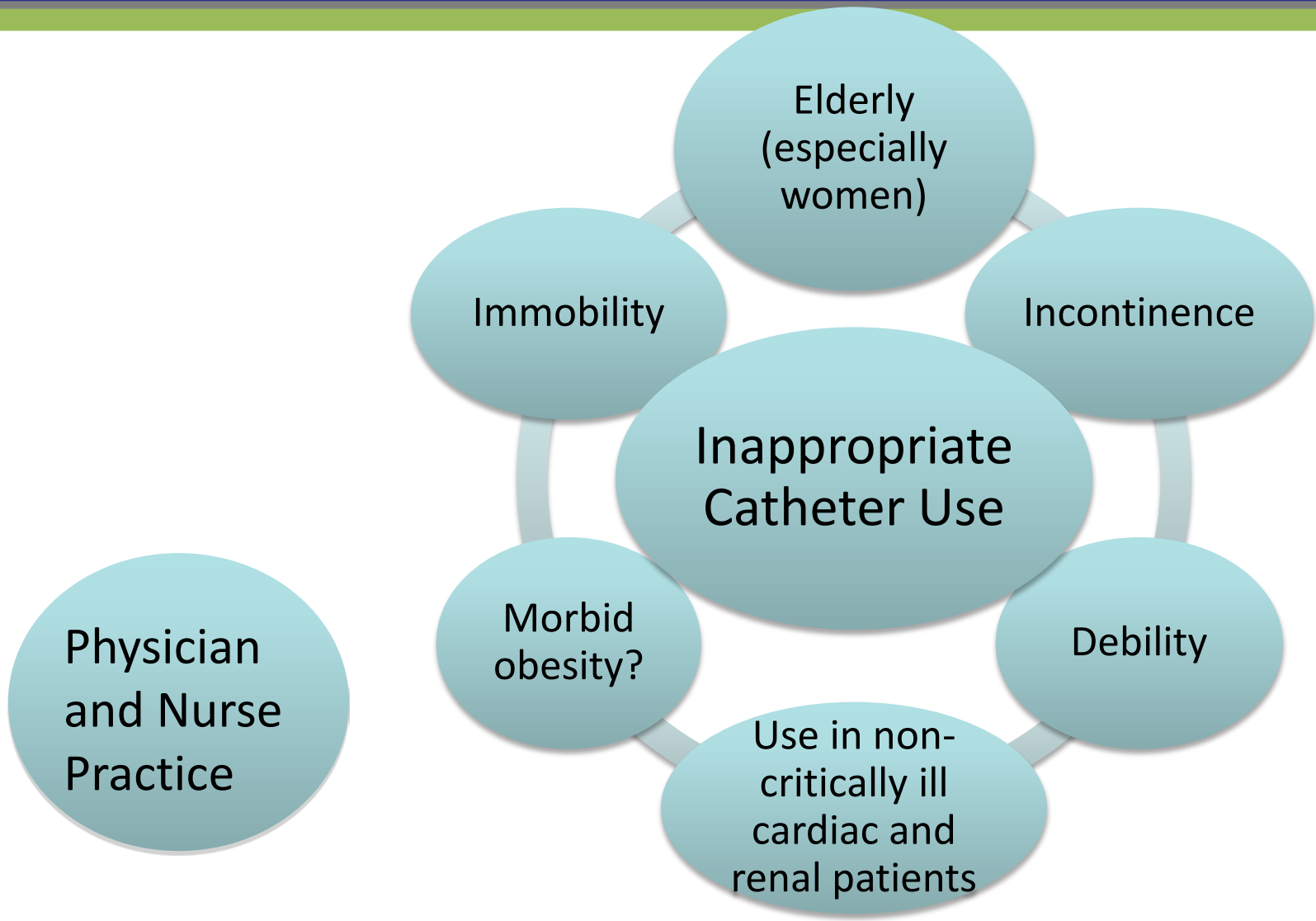


Very Elderly Women Are at High Risk for Unnecessary Utilization

(Fakih et al, Am J Infect Control 2010;38:683-8)

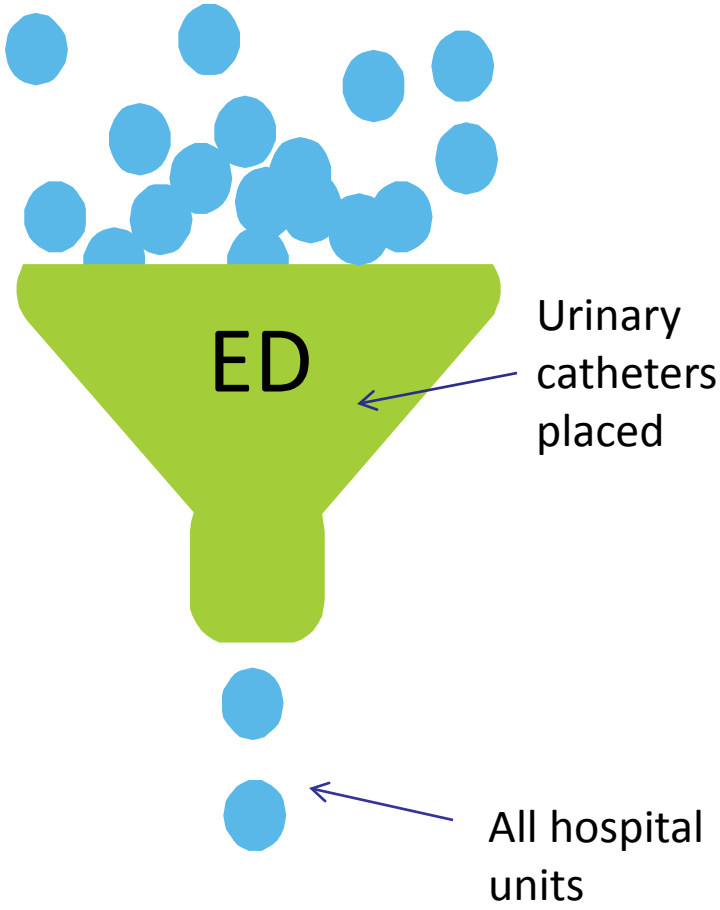
- Evaluated urinary catheter (UC) placement for all admissions from the emergency department (ED) for 12 weeks.
- 532 (11.8%) of 4521 patients had a UC placed. Of those, 69.7% were indicated, and 58.6% had a physician order documented.
- Inappropriate placement: **older** (mean age 71.3 vs. those with indication 60.0 years, $p<0.0001$, and patients with no UC placed 56.2, $p<0.0001$).
- Half of women ≥80 years with a UC placed did not have an indication.
- Independent factors: **women** were twice more likely than men, and very elderly (≥80 years) were 3 times more likely than those 50 or younger, to have UC placed without indication.

Common Conditions Where Catheter is Placed Inappropriately



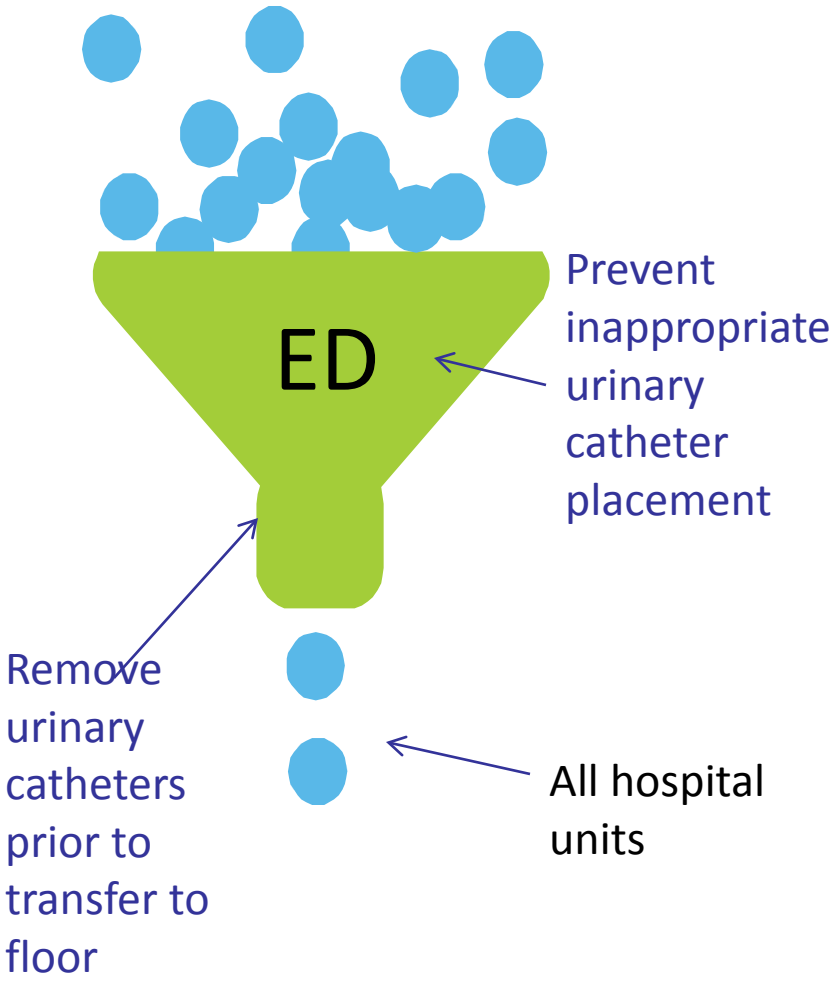
Intervening in ED

- The emergency department is an area where a large number of urinary catheters are placed.



Intervening in ED

- Addressing the appropriateness of placement of urinary catheters in the ED and promoting removal of the urinary catheters prior to transfer to the inpatient units may help reduce unnecessary urinary catheter use.



A successful story…

- ID physician talks to ED physician
- Both decide to work on improving catheter placement in ED
- They agree on a list of acceptable indications for catheter use
- They review the list with all ED physician staff
- All ED staff agree to support the work

ED Compliance with Institutional Guidelines

(Fakih et al, Acad Emerg Med 2010; 17:337–340)

- Established institutional guidelines for UC placement in ED
- Compared the rate of placement before and after guidelines
- ED physician champion involved
- Minimal nursing education/ intervention
- Pre- and post-intervention: 12 months baseline, and 9 months intervention/ sustainability (sampled 5 days per quarter)

Physician Intervention ED

(Fakih et al, Acad Emerg Med, 2010; 17:337–340)

- UC utilization dropped significantly after starting the physician intervention from 212 of 1421 (14.9%) pre-intervention to 110 of 1041 (10.6%) post-intervention (p=0.002)
- Physicians ordered fewer UCs post-intervention (45 of 1041, 4.3%) compared to pre-intervention (106 of 1421, 7.5%), (p=0.002)
- Only 151 of 322 (47.0%) UCs initially placed in the ED had a physician order documented

UC Placement in the ED Pre- and Post-Intervention Accounting for Physician Order (1a)

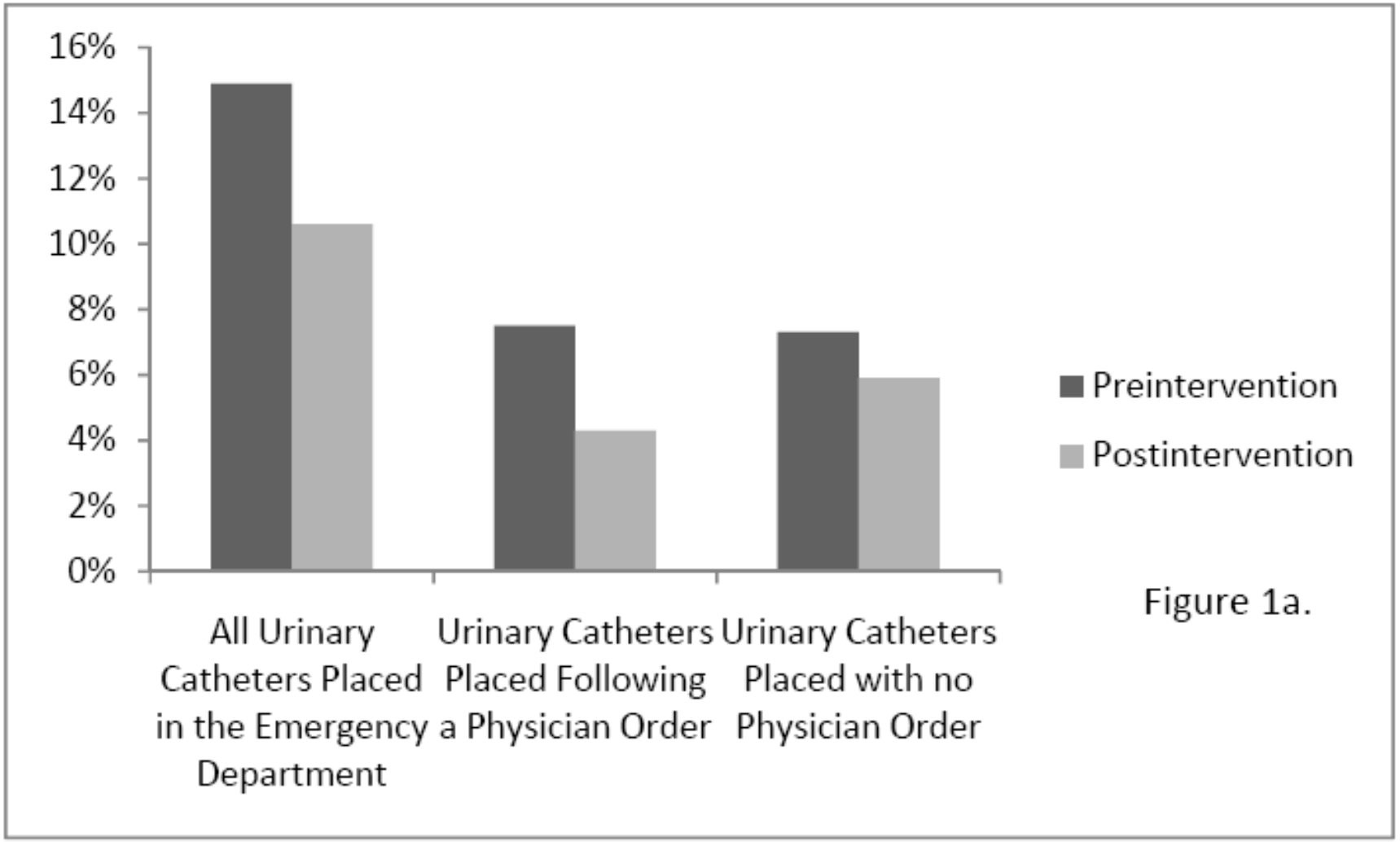


Figure 1a.

Compliance with Indications for UCs Placed Pre- and Post-Intervention (1b)

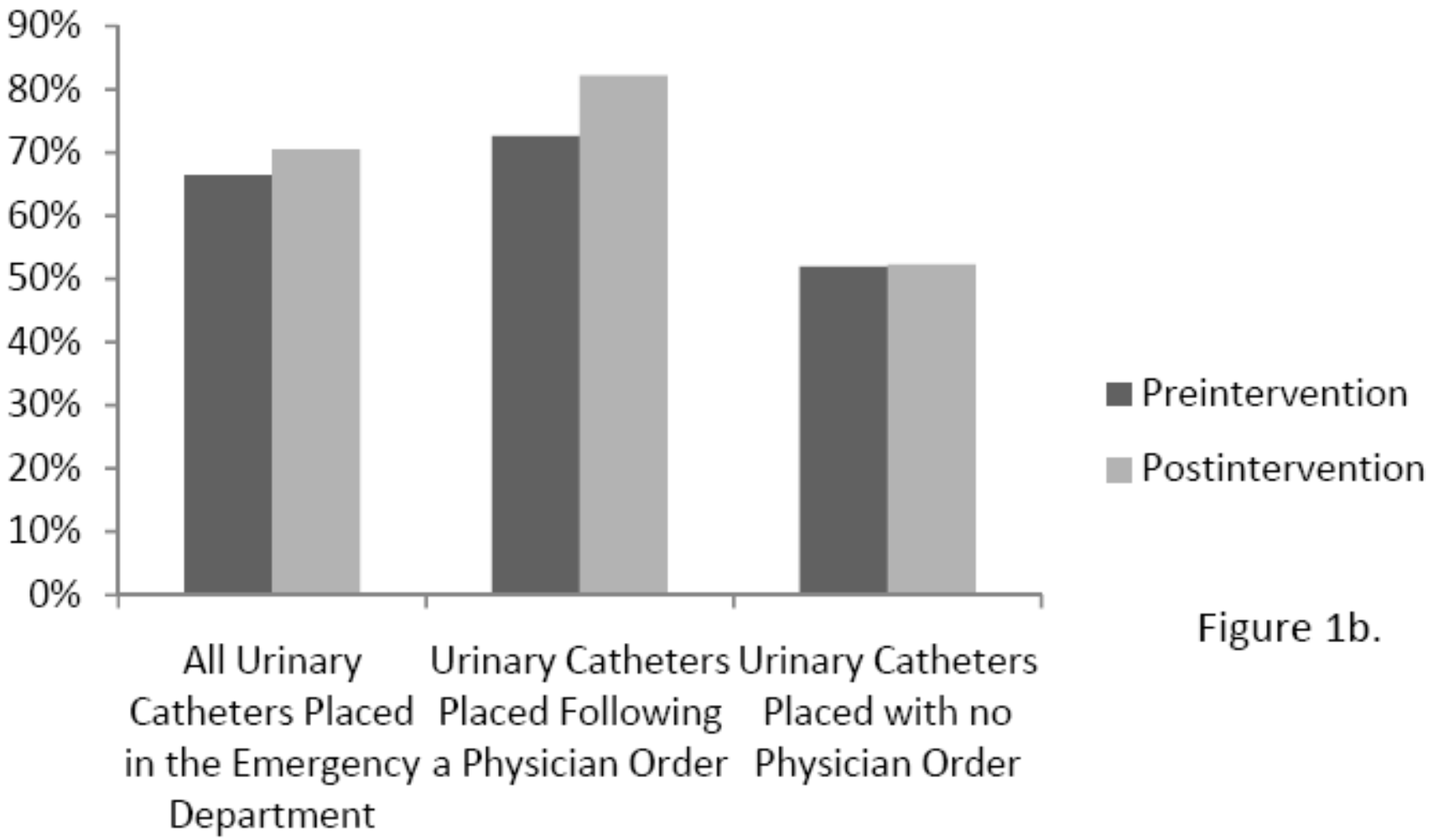


Figure 1b.

What Did we Learn?

- Essential to establish clear guidelines for UC insertion in the ED
- Physicians play a **significant** role in UC use
- Nurses play a **significant** role in UC use

What about Multicenter Efforts?

- Two pilot studies to reduce unnecessary urinary catheter use

1. Michigan Hospital Association (Michigan, collaborative with University of Michigan and St John Hospital)
2. Ascension Health (Multistate)

- Almost identical design (each about 20 hospitals)

Goals

- Improve the compliance with the appropriate indications for urinary catheter placement in the emergency department for

1. Physicians
2. Nurses

- Improve the compliance with proper technique for placement

Hospitals were requested to…

- Obtain leadership support
- Identify both nurse and physician leaders to be the point people (and champions) for the program in the ED.

1. Nurse: either an ED nursing director, or a very effective nurse manager/charge nurse.
2. Physician: an ED physician champion.

We asked all EDs to Establish Institutional Guidelines

- Encouraged appropriate indications for placement based on CDC HICPAC guidelines
- Support from ED physicians for the institutional guidelines.
- Support from ED nursing leadership for the institutional guidelines

2009 Prevention of CAUTI HICPAC Guidelines

(Gould et al, Infect Control Hosp Epidemiol 2010; 31: 319-326)

Table 2. **A. Examples of Appropriate Indications for Indwelling Urethral Catheter Use** [1-4]
Patient has acute urinary retention or bladder outlet obstruction
Need for accurate measurements of urinary output in critically ill patients
Perioperative use for selected surgical procedures: • Patients undergoing urologic surgery or other surgery on contiguous structures of the genitourinary tract • Anticipated prolonged duration of surgery (catheters inserted for this reason should be removed in PACU) • Patients anticipated to receive large-volume infusions or diuretics during surgery • Need for intraoperative monitoring of urinary output
To assist in healing of open sacral or perineal wounds in incontinent patients
Patient requires prolonged immobilization (e.g., potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures)
To improve comfort for end of life care if needed
B. Examples of *Inappropriate* Uses of Indwelling Catheters
As a substitute for nursing care of the patient or resident with incontinence
As a means of obtaining urine for culture or other diagnostic tests when the patient can voluntarily void
For prolonged postoperative duration without appropriate indications (e.g., structural repair of urethra or contiguous structures, prolonged effect of epidural anaesthesia, etc.)

Note: These indications are based primarily on expert consensus.

Examples of Common Conditions where Catheter May Be Placed Inappropriately

Who is Critically Ill?	Unconsciousness vs Agitation
• Admitted to ICU • Requiring high amounts of Oxygen (eg, >4 liters, >6 liters, or on 100% O2 non-rebreather)?	• Agitated patients: higher risk of trauma related to catheter • Evaluate your standing orders for the treatment of acute stroke
Emergent Pelvic Ultrasound evaluating for Pregnancy?	**Frail and Immobile patients**
• Placing urinary catheter would increase the risk for introducing bacteria to the bladder • Patients can drink fluids and will have a full bladder without risk • It is usually an issue with flow in ED	• The urinary catheter reduces mobility, and makes patients at a higher risk for pressure ulcers. • Frail patients: risk of more deconditioning with the catheter and infectious complications (CAUTI)

Example of ED Appropriate Indications (SJHMC)

- **Urinary flow obstruction or retention:** covers prostatic hypertrophy, hematuria with clots, urethral stricture, trauma to area involved; neurogenic bladder (including paraplegia/ quadriplegia or other conditions that lead to non-obstructive retention including medications)
- **Perioperative use in selected surgeries:** includes urologic surgery or surgery on contiguous structures of genitourinary tract, and perioperative surgical where prolonged duration of surgery is anticipated, need for large volume infusion, and intraoperative monitoring of fluid. This may include some emergent surgeries.
- **Need for prolonged immobilization:** either related to trauma or surgery (eg, potentially unstable thoracic or lumbar spine, multiple traumatic injuries such as pelvic fractures, may consider hip fracture if risk of displacement)

Example of ED Appropriate Indications (SJHMC)

- **Monitoring fluids in critically ill patients:** defined as those that may end up being admitted to intensive care. This group may initially be critically ill and improve with treatment in the ED (eg, pulmonary edema). If catheter is initially placed and patient improves, then removal of catheter prior to ED exit is recommended. To this group, we may add those that require high amounts of oxygen (≥6 liters per minute nasal cannula or ≥40% face mask FIO2). This may also include all patients intubated except those on hemodialysis (or chronic anuria).
- **Assist healing of sacral and perineal wounds in those with incontinence:** need to have an ulcer or wound and risk of worsening with incontinence. Incontinence alone is not an acceptable indication.
- **To improve comfort for end of life care:** this is related to patient comfort. Some patients may not want the catheter.

The Different Study Periods

Baseline

Urinary catheter initial placement prevalence with evaluations for indications

Implementation

Nursing and physician staff education. Avoiding urinary catheter placement for those that do not meet appropriate indications. Education on proper insertion technique. Urinary catheter initial placement prevalence with evaluation for indications. Feedback on performance

Sustainability

Urinary catheter initial placement prevalence and evaluating indications monthly. Feedback on performance

ED Physician Champion

- Motivated, want to help improve safety, interested in making a change.
- Have recognition and respect from colleagues
- Likely to be engaged in efforts if interested in reducing the harm related to the catheter.
- Engage the ED champion from the start and make sure s/he is visible to both staff and other physicians.

Role of Physician Champions

1. Educate physicians on the guidelines for urinary catheter use and risks of the catheter (lectures, providing educational materials).
2. Encourage physicians to comply with the guidelines.
3. Support the work of the team to resolve any barriers to implementation.
4. Provide technical expertise for the team.
5. Provide feedback to other physicians about the progress of the project; share the results.

Physician Champions and Other Physicians

- Spread the word to physicians about the effort to reduce CAUTI and unnecessary utilization and the importance of physician support (may need to present the project to multiple disciplines in the hospital).
- Clarify with other physicians their concerns about any reasons for use that are not considered appropriate and work with physicians to gain their support.
- Address physicians in training and midlevel providers to obtain their support.

Implementation: Nurses

- Nurse champion promotes use of appropriate indications and proper insertion technique by all ED nurses.
- The goals of the program and the potential benefits to patients are discussed with nurses.
- Nursing staff are educated about the appropriate indications for urinary catheter placement and insertion procedures.
- Printed educational material, lectures, posters, and pocket cards may be useful tools.

Pocket Cards for Physicians & Nurses

DO NOT PLACE URINARY CATHETERS UNLESS NEEDED!
Emergency Department-Specific Guidelines

Always obtain physician order before placement of a urinary catheter.

Urinary Catheters are NOT Indicated for:

- **Incontinence**
- **Morbid obesity**
- **Dementia/Confusion**
- **Patient's request**
- **Nursing convenience**
- **Urine specimen collection (may straight catheterize if unable to obtain specimen)**

Urinary catheters can increase:

- **Infections**
- **Length of Stay**
- **Cost**
- **Patient Discomfort**
- **Antibiotic Use**

Urinary Catheters can lead to more immobility, which increases the risk of skin breakdown and deep venous thrombosis.

PREVENTION IS KEY.

Front

DO NOT PLACE URINARY CATHETERS UNLESS NEEDED!
Emergency Department-Specific Guidelines

Appropriate Urinary Catheters Indications:

- Acute urinary retention or obstruction
- Perioperative use in selected surgeries
- Assist healing of perineal and sacral wounds in *incontinent* patients
- Improve comfort for end of life care (Hospice/ palliative care)
- Required immobilization for trauma or surgery
- Monitoring fluids in the critically ill patients

Urinary catheter use is also considered acceptable:

Chronic urinary catheter use or present on admission

Always obtain a physician order before placement of a urinary catheter.

For questions, please contact
[Enter contact information here].

Back

Implementation: Nurses

- Emphasize the importance of obtaining a physician order for placement if they believe the patient requires urinary catheterization.
- Use other strategies to reduce the need for indwelling urinary catheterization (alternatives to the urinary catheter).

What was the process?

Physician and nurse evaluate patient

Decision to place a urinary catheter based on appropriate indication

ED nurse responsible for the patient prior to transfer to unit reevaluates need for catheter and reason for use

Data Collection in the Emergency Department

- A form is completed by the ED nurse transferring the patient to the hospital unit:

1. Patient with or without catheter
2. Physician order present if catheter
3. Reason for use of catheter
4. If no appropriate reason, nurse to evaluate removal

Data Collection in the Emergency Department: Advantages

- Prospective data collection on indications and documentation of physician order
- Only one unit/department is involved in data collection: the ED.
- Feedback on utilization is more accepted because it is collected by the ED staff.

Data Collection in the Emergency Department: Disadvantages

- Multiple people are obtaining data. Ensure that data collection is accurate!
- The sheet itself may have some impact on the placement, thus underestimating the baseline rate.
- *More sheets to use!!* Especially cumbersome in hospitals who have established EMR

ED Urinary Catheter Baseline Collection Tool for Patients **Admitted to the Hospital:**

Patient #_____ Date:_____

Urinary (Foley) catheter placed in ED: ☐ Yes ☐ No

If yes, physician order present: ☐ Yes ☐ No

If placed in ED, select only one reason:

Reason for Urinary Catheter Placement (*please select only one option*).

- ☐ Urinary flow obstruction or retention (e.g., prostatic hypertrophy, hematuria with clots, urethral stricture, trauma to urethra, neurogenic bladder, including paraplegia/quadriplegia if unable to straight catheterize).
- ☐ Perioperative use in selected surgeries (e.g., urologic procedures, surgeries contiguous to genitourinary tract, emergency surgery with anticipated large fluid resuscitation or extended duration, or if needed for intraoperative urine output monitoring).
- ☐ Need for immobilization because of trauma with multiple fractures (e.g., pelvic fractures, hip fractures with risk of displacement) or unstable spine.
- ☐ Incontinence
- ☐ Morbid obesity
- ☐ Immobility not related to trauma
- ☐ Dementia/chronic confusion
- ☐ Debility (very frail patients)
- ☐ Monitoring fluids in critically ill patients
- ☐ Assist healing of sacral and perineal wounds in those with incontinence
- ☐ Monitoring fluids in non-critically ill patients
- ☐ Urine specimen collection
- ☐ Patient request
- ☐ To improve comfort for end of life care (e.g., hospice, palliative care, comfort care)
- ☐ If other, please state:

Example of the form that may be used for those collecting data in the emergency department (ED) **Baseline**

ED Urinary Catheter Implementation Collection Tool for Patients **Admitted to the Hospital**:

Patient #_____ Date:_____

Urinary (Foley) catheter placed in ED: ☐ Yes ☐ No

If yes, physician order present: ☐ Yes ☐ No

If placed in ED, select only one reason:

Appropriate Indication	Inappropriate Reasons for Placement
☐ Urinary flow obstruction or retention (e.g., prostatic hypertrophy, hematuria with clots, urethral stricture, trauma to urethra, neurogenic bladder, including paraplegia/quadriplegia if unable to straight catheterize). ☐ Perioperative use in selected surgeries (e.g., urologic procedures, surgeries contiguous to genitourinary tract, emergency surgery with anticipated large fluid resuscitation or extended duration, or if needed for intraoperative urine output monitoring). ☐ Need for immobilization because of trauma with multiple fractures (e.g., pelvic fractures, hip fractures with risk of displacement) or unstable spine. ☐ Monitoring fluids in critically ill patients ☐ Assist healing of sacral and perineal wounds in those with incontinence ☐ To improve comfort for end of life care (e.g., hospice, palliative care, comfort care) ☐ Acceptable conditions per institutional guidelines:	☐ Incontinence ☐ Morbid obesity ☐ Immobility not related to trauma ☐ Dementia/chronic confusion ☐ Debility (very frail patients) ☐ Monitoring fluids in non-critically ill patients ☐ Urine specimen collection ☐ Patient request ☐ If other, please state reason: **If selected reason is inappropriate, was the urinary catheter removed?** ❑ Yes ❑ No

Example of the form that may be used for those collecting data in the emergency department (ED) **Intervention/ Sustainability**

Preliminary Results of Pilots

- Significant improvements in use with intervention (less catheters placed) and increased appropriateness of use
- Improved physician documentation for placement order
- More noticeable improvement in hospitals who started with a higher baseline use

What made the pilots successful?

- ED physician and nurse champions
- Agreed upon ED institutional guidelines
- Provided resources (educational and process)

Sustainability

- Make sure that the process is part of the **daily** function of both physicians and nurses.
- Provide feedback to the ED regarding urinary catheter placement rate and appropriateness of utilization.
- If no improvement is seen, then evaluate the unit for barriers to implementation; consider re-education or re-implementation of the program.

Where do we go from here?

- Hospitals may start by evaluating the urinary catheter placement in their ED (% placed, and % appropriate)
- Consider enrolling in the ED intervention if you find a high utilization or significant inappropriate use

Thank You!