

Conclusions: The prevalence of HAI in Korea is lower than in most Western countries. The HAI burden of *Clostridium difficile* infection is surprisingly high, which calls for prompt control at the national level. To obtain national-level data on HAI burdens, ongoing surveillance is needed.

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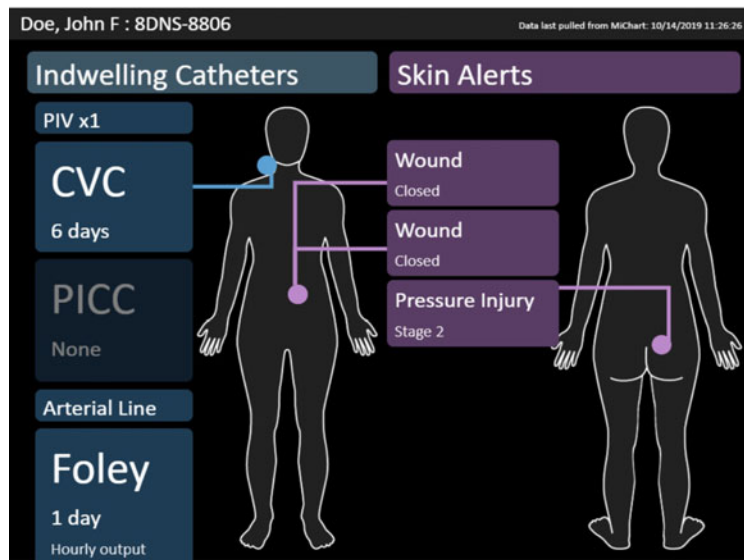
Presentation Type:

Poster Presentation

Pilot Testing a Bedside Patient Safety Display to Increase Provider Awareness of the ‘Hidden Hazards’ of Catheters and Wounds

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Figure 1. Patient Safety Display



Note: The display was located adjacent to the vitals sign monitor in the patient’s hospital room. On the display, PIV refers to Peripheral IVs. CVC refers to Central Venous Catheters, including IJ, subclavian, or femoral central lines, ports, hemodialysis lines, tunneled catheters, and Peripherally Inserted Central Catheters (PICCs, shown in separate box). Indwelling urinary catheters displayed includes Foley catheters, Nephrostomy, and Suprapubic. Pressure Injuries include stage of pressure injury. Wounds include surgical wound and incisions.

Fig. 1.

Figure 2. Results for Catheter and Pressure Injury Awareness

	Pre-Intervention Period 14 weeks January-April 2019	Post-Intervention Period 13 weeks June-September 2019	
	20 rooms WITHOUT Patient Safety Display (Pre-Intervention Rooms)	10 rooms WITHOUT Patient Safety Display (Control Rooms)	10 rooms WITH Patient Safety Display (Intervention Rooms)
Awareness* of Transurethral Indwelling Urinary Catheter (i.e., Foley)	66.0% from survey of 50 patients with Foley	80.4% from survey of 56 patients with Foley	86.0% ^{+, **, #} from survey of 50 patients with Foley
Awareness of Central Venous Catheter (CVC)**	73.9% from survey of 138 patients with >=1 CVC	63.2% from survey of 76 patients with >=1 CVC	77.0% ^{+, **, #} from survey of 100 patients with >=1 CVC
Awareness of Pressure Injury	51.9% from survey of 108 patients with >=1 Pressure Injury	45.5% from survey of 77 patients with >=1 Pressure Injury	58.1% ^{+, **, #} from survey of 62 patients with >=1 Pressure Injury

*Awareness by the rounding physician or advanced practice provider, as assessed by brief paper survey immediately after they rounded on their patients in the unit.
 **CVCs in this survey included lines such as subclavian, internal jugular, femoral CVCs, ports, hemodialysis lines, and peripherally-inserted central catheters.

[#]When comparing awareness results for Intervention Rooms compared to Pre-intervention Period Rooms, Foley awareness increase did meet statistical significance (p=0.02), but there was no statistically significant increase in CVC (p=0.59) or Pressure Injury (p=0.43) awareness.

⁺When comparing the awareness for Intervention Rooms compared to Post-Intervention Control Rooms, the increase in CVC awareness marginally did meet statistical significance (p=0.045), but there was no statistically significant increase in Foley (p=0.44) or Pressure Injury (p=0.14) awareness.

⁺When comparing the awareness for Intervention Rooms compared to pooled results from the Pre-Intervention Rooms and Control Rooms, there was no statistically significant change in Foley awareness (p=0.08), CVC awareness (p=0.20), or Pressure Injury awareness (p=0.23).

Fig. 2.

Figure 3. Preliminary Findings and Representative Quotes from Post-Intervention Interviews with Clinicians

Benefits of the Patient Safety Display	Quotes
1. Prompts Discussion about Catheters and Skin Issues	"As a nurse practitioner, I am guilty of not bringing up the presence of these lines on rounds, and so we don't have that discussion. I do think it prompts the conversation and, hopefully, prompts also like an assessment of these lines." [Nurse Practitioner] "I think it's a good conversation starter ... [Attending Physician]"
2. Increases Awareness of Catheters and Skin Issues	"Overall, I really liked it, specifically for my role. I also had seen some benefit from the physician standpoint too. I do think it did draw them in a little bit more and have a little bit more awareness." [Nurse]
3. Reminder to Assess Appropriateness of Catheters	"It may prompt me to ask questions. I mean, why is it in for five days? Why is it this patient has retention? Because it's out of sight, out of mind." [Attending Physician]"
Limitations of the Patient Safety Display	Quotes
1. Clinicians Often Did Not Notice Display	"It kind of blends into the background so my eyes and my mind is so used to going straight to the monitor, that it blends into the background and if I don't remember that it's there, my eyes don't tend to go to it." [Nurse Practitioner]"
2. Not as Useful for Attending Physicians	"Honestly it is not – for me, it's not useful. I think for nursing, for wound care, I think that's really useful." [Attending Physician]"
3. Repetitive to the Electronic Medical Record	"I don't really spend too much time on it because other than just looking ... it looks exactly like the avatar that we have in our computer system..." [Nurse]"

Note: Interview participants included 4 attending physicians, 1 resident, 3 nurse practitioners, 2 physician assistants, and 3 nurses.

Fig. 3.

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Background: Urinary catheters, vascular catheters, and wounds, such as pressure injuries are often hidden from view under gowns and sheets (ie, out of sight, out of mind), contributing to prolonged catheter use, infections, delayed interventions, and diagnostic errors for symptoms (eg, fever or delirium) related to catheters and wounds. We developed and pilot tested a digital bedside "Patient Safety Display" of catheter and wound information to improve awareness by rounding providers (ie, physicians and advanced practice providers, APPs). **Methods:** The display development was informed by clinical observations of provider rounds and nurse handoffs, interviews, and iterative prototype testing with clinicians in simulated cases using catheterized mannequins with wounds. The display reports the presence and duration of urinary and vascular catheter use, urinary catheter indication, and wound presence and severity, from real-time mandatory nurse documentation in the electronic medical record (Fig. 1). We conducted a pilot study in a tertiary-care medical-surgical step-down unit with 20 private rooms, including a preintervention period and a post-intervention period including 10 rooms without the display (control rooms) and 10 rooms with the display (intervention rooms). We surveyed individual providers directly after rounds to assess their awareness of their patients' catheters and wounds compared to medical record documentation. We also assessed display utility and usability from postintervention clinician interviews and we identified major themes using an adapted grounded theory approach. **Results:** In total, 787 surveys were completed: 681 medicine service with 89% response rate, 106 surgery service with 47% response rate; 363 preintervention surveys, and 424 postintervention surveys. The surveys involved 176 unique patients and 47 unique providers. Among all 787 patient encounters, 156 (19.8%) had a transurethral indwelling urinary catheter (Foley), 314 (39.9%) had a central venous catheter (including PICCs), and 247 (31.4%) had at least 1 pressure injury. Figure 2 summarizes provider awareness of catheters and pressure injuries when present as assessed for patients in the preintervention and postintervention periods. Moreover, 13 clinician postintervention interviews yielded preliminary themes regarding the display's benefits and limitations (Fig. 3). **Conclusions:** In this pilot study of a novel Patient Safety Display, although provider awareness of Foley catheters, CVCs, and pressure injuries appeared higher for patients in the intervention rooms compared to awareness as measured in the

preintervention rooms and/or postintervention control rooms, most of these comparisons did not meet statistical significance. Clinicians varied widely in their personal assessments of the display as a useful tool for improving awareness and prompting discussion about catheters and wounds.

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Disclosures: Dr. Meddings has reported receiving honoraria for lectures and teaching related to prevention and value-based purchasing policies involving catheter-associated urinary tract infection. The remaining authors report no conflicts of interest.

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Piloting a Quality Improvement Intervention for Urinary Catheter Removal to Reduce Catheter-Associated Urinary Tract Infection in a Medical Intensive Care Unit

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Background: Catheter-associated urinary tract infections (CAUTIs) are among the most prevalent healthcare-associated infections (HAIs) globally, contributing to increased morbidity, prolonged hospital stays, and increased healthcare costs. Interventions that support prompt removal of the urinary catheter are evidence-based actions to effectively reduce CAUTI rates.¹ **Objective:** At the National Hospital of Tropical Disease (NHTD), catheter removal interventions in the intensive care unit (ICU) were implemented using quality improvement (QI) methodology to reduce CAUTI incidence and urinary catheter device utilization. **Methods:** Training was performed for ICU clinical staff with knowledge checks before and after the program. A bedside visual reminder of CAUTI risk and checklist to assess catheter need were implemented. Weekly compliance of provided visual reminders and checklists were measured using a simple audit tool. Device utilization ratios (DURs, ratios of device days to patient days), and CAUTI incidence rates (per 1,000 device days) were collected at baseline (July–September 2018) and quarterly thereafter until June 2019. Statistical significance was determined by an independent *t* test. **Results:** In the first quarter (October–December 2018), the CAUTI incidence rate decreased from 8.9 to 1.3 per 1,000 device days ($P = .036$). The ICU staff trained in CAUTI prevention, mean knowledge scores before and after training increased from 68% to 87%. The DUR decreased slightly from 0.59 to 0.55 after the first-quarter training then steadily increased in the following quarter (0.60; January–March 2019) and after the intervention (0.54; April–June 2019). CAUTI incidence rates also increased but were still lower than at baseline: 4.8 and 6.3 per 1,000 days of device use. Compliance of reminders was 51% during the first quarter, increased slightly in the second quarter 62%, then