<1 in 10 were hospital onset. Also, two-thirds of treated disease cases were MSSA; most were SSTIs.

Transmissible Spongiform Encephalopathies: An Underrecognized Infection Control Issue
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Background: Transmissible spongiform encephalopathies comprise a class of rapidly progressive and inevitably fatal degenerative brain disorders. The pathogenesis of these diseases is thought to be due to a change in the structure of the normal prion protein to an abnormal structure, leading to propagation of the abnormal protein. This abnormal protein is highly transmissible; thus, appropriate infection control measures should be put in place if the diagnosis is suspected. However, the diagnosis is often not considered at all, and many hospitals do not have protocols in place. Our hospital missed a case of familial fatal insomnia in a 45-year-old male. He was diagnosed with fatal familial insomnia by autopsy. The autopsy was performed without appropriate infection control measures, leading to costly contamination of medical instruments and exposure of multiple staff. This occurrence led our institution to re-evaluate hospital protocols and guidelines regarding workup and management of transmissible spongiform encephalopathies (TSEs). **Methods:** We reviewed cases of TSEs or Creutzfeldt-Jakob Disease (CJD)-like illness presenting to our hospital over a 30-month period. Patients were considered for inclusion based on clinical suspicion. CDC diagnostic criteria were used. Infection control measures were employed, including an alert in the EMR. MRI was then performed. If clinical or diagnostic suspicion was high, the patient underwent lumbar puncture. CSF results were reviewed based on criteria Creutzfeldt-Jakob Disease Foundation criteria. Infection control measures were maintained throughout hospitalization. **Results:** In total, 34 patients met the inclusion criteria: 8 patients had confirmed CJD and 25 were negative. Medical records were not available for 1 patient, who was excluded. Lumbar puncture was performed on all suspected cases. Of those confirmed cases, the 7 patients who underwent lumber puncture had a positive result for 14-3-3 protein. Also, 5 patients underwent RT-QuIC testing and were found to have a positive result. No further cases of contamination occurred using our protocol. Additionally, 1 patient with suspected CJD underwent a brain biopsy with appropriate precautions after an inconclusive lumbar puncture. Although biospy was negative, the case exemplifies how the initiation of a protocol can optimize the workflow and prevent potentially dangerous exposure. **Conclusion:** Diagnosis of TSEs remains difficult and is often missed. In our case, lack of suspicion for TSE led to a waste of resources and unnecessary exposure of staff member. It is of utmost importance to consider TSEs in rapidly progressive dementia and to employ appropriate sterile guidelines to prevent contamination of equipment and potential subsequent transmission. Healthcare providers should consider a similar protocol in cases suspicious for TSEs.

Use of Simulations to Evaluate the Effectiveness of Barrier Precautions for Prevention of pathogen Transmission
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Background: Barrier precautions (eg, gloves and gowns) are often used in clinical settings to reduce the risk for transmission of healthcare-associated pathogens. However, uncertainty persists regarding the efficacy of different types of barrier precautions in preventing transmission. **Methods:** We used simulated patient care interactions to compare the effectiveness of different levels of barrier precautions in reducing transfer of pathogen surrogate markers. Overall, 30 personnel performed standardized examinations of contaminated mannequins while wearing either no barriers, gloves, or gloves plus cover gowns followed by examination of a noncontaminated mannequin; the order of the barrier precautions was randomly assigned. Participants used their usual technique for hand hygiene, stethoscope cleaning, and protective equipment removal. The surrogate markers included cauliflower mosaic virus DNA, bacteriophage MS2, nontoxigenic *Clostridium difficile* spores, and a fluorescent tracer. We compared

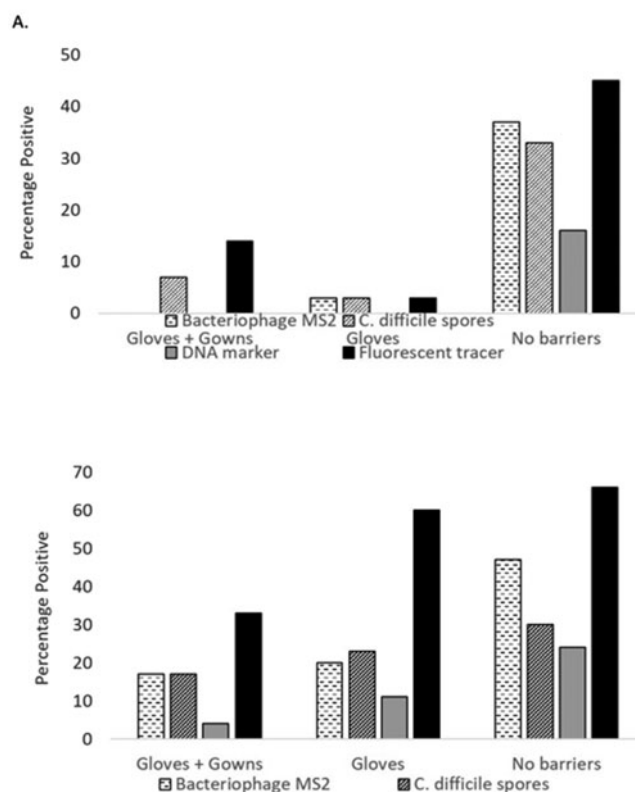Figure. Transfer of surrogate markers during simulated exams by hands (A) and stethoscopes (B)

Fig. 2.

the frequency and route of transfer of each of the surrogate markers to the second mannequin or to the surrounding environment. **Results**: As shown in Fig. 1, wearing gloves alone or gloves plus gowns significantly reduced transfer of each of the surrogate markers by the hands of participants ($P < .05$ for each marker). However, wearing gloves or gloves plus gowns only modestly reduced transfer by stethoscopes despite cleaning of stethoscopes between exams by approximately half of the participants. Contamination of the clothing of participants was significantly reduced in the glove plus gown group versus the gloves only or no-barriers groups ($P < .05$). **Conclusion:** Barrier precautions are effective in reducing hand transfer of pathogens from patient to patient, but transfer may still occur via devices such as stethoscopes. Cover gowns reduce the risk for contamination of the clothing of personnel.

Presentation Type:
Top Rated Posters

Validation of a Semiautomated Surveillance Algorithm for Deep Surgical Site Infections After Primary Hip or Knee Arthroplasty

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Background: Surgical site infections (SSIs) complicate ~2% of primary total hip (THAs) or total knee arthroplasties (TKAs). Accurate and timely identification through surveillance is essential for targeted implementation and monitoring of preventive interventions. Electronic health records (EHR) facilitate (semi)-automated surveillance and enable upscaling. A validated algorithm is a prerequisite for broader implementation of semiautomated surveillance. **Objectives:** To validate a previously published algorithm for semiautomated surveillance of deep SSI after THA or TKA in 4 independent regional Dutch hospitals. The algorithm was developed and implemented in the University Medical Centre Utrecht and relies on retrospective routine care data. **Methods:** For this multicenter retrospective cohort study, the following data required for the algorithm were extracted from the EHR from all patients under THA and TKA surveillance: microbiology results, antibiotics, (re)admissions, and surgical

Table 1.

Table 1. Overview of Surveillance Data and Algorithm Performance per Hospital

	Time period	Number of THA/TKA surgeries	Deep SSI reference data, %	Sensitivity, % (95%CI)	PPV, % (95%CI)	Workload reduction, %
Hospital 1	2012-2015	2,395	26 (1.1%)	100.0 (86.8-100)	72.2 (54.8-85.8)	98.5
Hospital 2	2015-2016	1,601	23 (1.4%)	95.7 (78.0-99.9)	68.8 (40.0-83.3)	98.0
Hospital 3	2017-2018	1,029	15 (1.5%)	100.0 (78.2-100.0)	57.7 (36.9-76.7)	98.5
Hospital 4	2012-2017	3,353	31 (0.9%)	93.6 (78.6-99.2)	55.8 (41.3-69.5)	98.4

Abbreviations: THA=Total Hip Arthroplasty; TKA=Total Knee Arthroplasty; SSI=Surgical Site Infection; PPV=Positive Predictive Value, 95%CI= 95% Confidence Interval.

procedures within the 120 days following the primary surgery. Patients were retrospectively classified with a low or high probability of having developed a deep SSI after THA or TKA, according to the algorithm. Sensitivity, positive predictive value (PPV), and workload reduction (defined as the proportion of manuals requiring review) were calculated compared to the traditional (manual) surveillance results, as reported to the national surveillance PREZIES. Discrepancy analyses were performed to understand algorithm results. **Results:** Data from 8,378 total THA and TKA surgeries (deep SSI n = 95, 1.1%) performed between 2012 and 2018 were extracted by 4 hospitals (Table 1). Sensitivity ranged across centers from 93.6% to 100%, with a PPV from 55.8% to 72.2%. In all hospitals, the algorithm resulted in >98% workload reduction. Cases missed by the algorithm could be explained by incomplete data extraction. **Conclusions:** This study shows that the surveillance algorithm performance is good in general Dutch hospitals. Broader implementation of this semiautomated surveillance for SSIs after THA or TKA may be possible in the near future and will result in a substantial workload reduction.

Presentation Type:
Top Rated Posters

Water Management and Monitoring Practices in Hospitals—United States, 2018

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Background: Water management programs (WMPs) are needed to minimize the growth and transmission of opportunistic pathogens in healthcare facility water systems. In 2017, the Centers for Medicare & Medicaid Service (CMS) began requiring that certified hospitals in the United States have water management policies and procedures; in response, the National Healthcare Safety Network (NHSN) Annual Hospital Survey included new, voluntary questions on practices regarding water management and monitoring. Of 4,929 hospitals surveyed in 2017, 3,821 (77.5%) reported having a WMP. Of these 3,821 facilities, 86.9% reported regular monitoring of water temperature; 66.2% monitored disinfectant (eg,