cases (59% vs 63%), respectively ($P = .62$) nor did the proportion with ICU stay (14.3% vs 12.3%), respectively ($P = .40$). Median LOS for drug-resistant TB cases and susceptible cases were similar: 5 days (range, 0–303 versus 4 days (range, 0–111), respectively. **Conclusions:** Rates of drug-resistant TB are lower in the VHA than in the general US population. However, improvement is needed in LTBI screening and treatment rates. Little has been published on drug resistance in extrapulmonary TB; however, our findings should alert clinicians to the possibility of resistance in these challenging infections.

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Prevalence, Distribution, and Antibiotic Susceptibilities of Nosocomial Infections at a Tertiary Hospital in Port Harcourt, Nigeria

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Background: Previously, many infections could be treated effectively based on the clinician's past clinical experience. The development of resistance to essentially all of the antimicrobial agents currently in use in clinical practice has made this scenario more of the exception than the norm. Selecting an appropriate antimicrobial agent has become increasingly more challenging; the clinician has to navigate through the variety of available agents in the face of increasing antimicrobial resistance. The diagnostic laboratory now plays very important role in clinical practice. To ensure safe and effective empirical treatment, a surveillance study of the susceptibility pattern of common pathogens and appropriate use of antibiotics is imperative. **Objective:** We report on the prevalence, distribution, and antibiotic susceptibility patterns of nosocomial pathogens isolated at the University of Port Harcourt Teaching Hospital (UPTH) and the effectiveness of the antibiotics commonly prescribed at the hospital in treating these infections. **Methods:** A retrospective cross-sectional study of specimens received at the microbiology laboratory was conducted over a 6-month period, from October 2015 to March 2016, using urine, blood, and semen specimens. In total, 5,160 samples received and analyzed at the laboratory within the study period were assessed. **Results:** Of the 5,160 specimens analyzed, 881(17.07%) were positive for bacteria: 691(78.43%) from urine, 86 (9.76%) from blood, and 104 (11. 81%) from semen. *Escherichia coli* (35.74%), *Klebsiella pneumoniae* (52.33%), and *Staphylococcus aureus* (65.4%) were the most frequently isolated pathogens from urine, blood, and semen, respectively. Widespread multidrug resistance was observed among the organisms. *Klebsiella pneumoniae*, *S. aureus*, and *E. coli* isolated from urine were resistant to amoxicillin/clavulanate, cefuroxime, ceftazidime, ciprofloxacin, ampicillin, gentamycin, and ceftriaxone. A review of the pattern of prescribing antibiotics revealed that in the emergency unit, ceftriaxone (34.09%) and metronidazole (30.09%) were most frequently prescribed, whereas in the general outpatient department, metronidazole (19.09%), amoxicillin (16.61%), amoxicillin/clavulanate (9.39%), and ofloxacin (9.39%) were often prescribed. *S. aureus* was susceptible to only ceftriaxone, whereas *K. pneumoniae* and *E. coli* were susceptible only to ofloxacin. **Conclusions:** Most of the isolated pathogens were not susceptible to the frequently prescribed antibiotics. Empirical prescribing of antibiotics without current epidemiological data of pathogens in the hospital can only further exacerbate the problem of antimicrobial resistance. The need for periodic epidemiological surveillance and rational use of antibiotics anchored on a good antibiotic stewardship program is therefore strongly recommended.

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Preventing Transmission of Vaccine-Associated Viral Infections from a Patient With Severe Combined Immune Deficiency

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Background: The transmissibility of vaccine-strain viruses from immunocompromised patients, such as those with severe combined immune deficiency (SCID) is unknown. The infection control management of a patient diagnosed with SCID and infected with vaccine-strain varicella zoster virus (VZV) and measles virus is described below. A previously healthy, full-term boy was vaccinated at 14 months with measles mumps rubella varicella (MMR) vaccine. He had received prior vaccinations, including rotavirus, without adverse effects. During the 6 weeks after vaccination, the patient developed signs and symptoms clinically consistent with chicken pox and measles. An immune work-up revealed SCID. **Methods:** The Alberta Health Services (AHS) SCID protocol was followed to manage the patient upon admission at 17 months of age. Multiple meetings with various stakeholders were held to ensure appropriate precautions were followed to minimize the risk of pathogen transmission. **Results:** The patient was placed on airborne and contact precautions in a negative-pressure room. The pressure differential of the room to the corridor was continually monitored and displayed at the entry to the room. Staff known to be immune to VZV or measles were not required to wear an N95 respirator. All intrahospital movement of the patient was coordinated with the respective care teams and departments, including infection prevention and control, facilities maintenance and engineering, respiratory therapy, and diagnostic imaging. A mask was placed on the patient when movement outside the room was required. VZV testing was positive for the Oka/vaccine strain on all samples tested (ie, nasopharyngeal, skin, blood, and cerebrospinal fluid). Nasopharyngeal swabs and blood were PCR positive for measles genotype A/vaccine strain virus. Both viruses were persistently positive in spite of treatment with acyclovir, valganciclovir, varicella zoster immune globulin, and intravenous immune globulin. **Conclusions:** There is currently no documented transmission of measles vaccine-strain virus, and transmission of VZV vaccine-strain virus is rare. According to the AHS SCID protocol, the use of airborne and contact precautions for a patient identified with measles and/or VZV supersedes the use of a positive-pressure room for patients identified with SCID. Newborn screening for SCID was

implemented in Alberta in June 2019. As a result, more SCID patients will be diagnosed earlier in their course, and therefore prior to most routine vaccinations. However, newborn screening will not pick up some types of combined immune deficiencies. Some children may still be at risk of vaccine-associated illnesses due to undiagnosed underlying immune deficiencies.
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Procalcitonin Use in a Large Community Healthcare System
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Background: Appropriate testing of blood procalcitonin (PCT) can potentially inform antibiotic de-escalation in patients with severe infections. When used along with observed clinical improvements, PCT testing can support antimicrobial stewardship. However, this testing must be used optimally to ensure that it is actionable, cost-effective, and provides patient benefit. Although this test is widely used, little is known about the appropriateness of this testing in select populations. **Methods:** In this retrospective review, we evaluated PCT monitoring patterns and appropriateness of use and relationship to antibiotic days of therapy in a system of community hospitals. We evaluated the use of PCT testing in patients with known confounders, namely pregnancy, chronic kidney disease, or neutropenia, which we classified as "inappropriate use" because these conditions can affect the interpretation of PCT results. We also evaluated the relationship between PCT testing and antibiotic days of therapy for patients with sepsis, pneumonia, or lower respiratory tract infections. **Results:** In a 1-year period, ~206,302 PCT tests were performed at 146 facilities, an average of ~1,413 per facility per year. Approximately 27.7% of these tests were given to patients who were pregnant or had a confounding comorbidity such as chronic kidney disease or neutropenia. Of these "inappropriate" tests, >90% were given to patients with chronic kidney disease. Older patients (aged 60–80 years, n = 93,021) were more likely to receive a PCT test while also having a confounding comorbidities; 24% of older patients with a PCT test also had chronic kidney disease. Of all patients with a PCT test and chronic kidney disease, ~76% were also diagnosed with either sepsis, pneumonia, or lower respiratory tract infections. **Conclusions:** Confounding conditions can affect PCT levels independently of infection. Additionally, some clinicians use PCT tests as probes for other physiological maladies. This analysis demonstrated that there is opportunity for education about the appropriate use of this test, how to interpret results in the presence of confounding conditions, and how to transform PCT test results into actions that facilitate antimicrobial stewardship and better patient care.
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Process Surveillance and Follow-Up Monitoring to Increase Compliance to Standards in Medical Device Reprocessing
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Background: Effective medical device reprocessing (MDR) is essential in preventing the spread of microorganisms and maintaining patient safety. Alberta Health Services (AHS) is an Alberta-wide, integrated health system, responsible for delivering health services to >4.3 million people living in the province. In 2010, periodic province-wide MDR reviews were initiated by the provincial health system to verify that the cleaning, disinfection, and sterilization of reusable critical and semicritical medical devices met established standards. To date, there have been 3 review cycles; in cycle 3, a follow-up process for tracking and reporting corrective actions was initiated. **Methods:** As in previous MDR review cycles, cycle 3 included the use of a standardized suite of tools to measure compliance with standards set by Accreditation Canada, the Canadian Standards Association, and the Government of Alberta. Each cycle involved a review of MDR areas completed by trained reviewers. Interrater reliability among reviewers was maintained through training and debriefings following reviews to ensure agreement. Following reviews, reports were generated for areas, zones, and AHS. As part of the corrective actions and follow-up process, identified deficiencies were categorized into 5 themes. Corrective actions were tracked and periodic reports were generated showing the progress of deficiency resolution. Resolution rates (number of resolved deficiencies divided by total number of of deficiencies) were calculated for each of the identified themes as well as overall for cycle 3. **Results:** Overall compliance for cycle 3 was 93%. Cycle 3 reviews revealed that more than half of the deficiencies (58%) were identified previously in cycle 2. The resolution rates ranged from 78% to 95% for identified deficiencies for 4 of the 5 themes: documentation, technique, PPE/attire/hand hygiene, and other. The theme related to physical infrastructure showed a considerably lower resolution rate of 49%. The corrective action follow-up process showed increased overall resolution rate from 59% at the start of the follow-up process to 82% at its completion. When this resolution rate was applied to the initial survey compliance rate for cycle 3, overall compliance increased to 99%. **Conclusions:** Monitoring quality of MDR practices is essential in maintaining and improving patient safety. The standardized provincial review process identified common themes and a coordinated approach to support the resolution of many identified deficiencies. Most of those deficiencies were resolved; however, those deficiencies related to physical infrastructure of the MDR department continue to be seen across review cycles. This review process with follow up of these deficiencies can help bring attention to organization leadership and Funding: authorities during budget cycles.
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Proficiency Testing Performances Analysis of Microbiology Laboratories Participating in Cambodia Antimicrobial Resistance (AMR) Surveillance System
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