caregiver and 73 patient/family surveys were collected. Descriptive statistics were used to analyze the frequency of injuries, patient pressure ulcers, falls related to patient handling, and perception of equipment effectiveness.
Results: On a 1–10 scale, patient/families perceived the SPHE to be safe (9.3), secure (9.2), and comfortable (8.8). Caregivers perceived the SPHE to be overall safe for the patient (8.6), efficient (7.9), effective in reducing injuries (8.4), easy to use (8.1), and comfortable (7.8). The number of staff injuries, patients with facility-acquired ulcers, patient falls, and amount of medical bill or total paid was not statistically changed after the implementation of the SPHE. There were no lost work-days or indemnity paid recorded during the one-year study period.
Conclusions: Although caregivers/patient/families have a positive perception of the effectiveness of the SPHE, in order to be instrumental in guiding research, practice, and quality improvement in the pediatric setting it will be necessary to further explore the advantages of the SPHE over a longer period of time and expand to include a larger number of units.

39. Descriptive Analysis of Nonfatal Occupational Injury Cases among Cleaning Service Workers at an Illinois Hospital

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Objectives: The objectives of the research were to determine the rates of nonfatal occupational injuries and illnesses and to identify the risk factors associated with the most severe injuries and illnesses based on median days away from work and days requiring job restriction or transfer.
Methods: Injury data on all cleaning service workers, at one hospital, were extracted from first reports of injury and OSHA 300 logs for the period from January 1, 2010 to December 31, 2012. Incidence rates were calculated as the number of injuries per 100 full-time equivalents (FTEs) equal to (N/H) X 200,000, where N = number of injuries and illnesses, H = total hours worked, and 200,000 = 100 employees working 40 h/week, 50 weeks/year. Descriptive statistics were used to calculate frequencies and summary statistics for the different demographic and injury variables.
Results: 181 work-related injuries and illnesses were reported during the study period. Approximately 70% of the incidents occurred among females. The mean injury rate requiring days away from work, restricted work or transfer was 21.5 per 100 FTEs. The total median number of days away from work was 8 and days with a job restriction was 33. The most common events were overexertion, struck by/against, and slips/trips/falls with frequencies of 28%, 20%, and 15%, respectively. The most common nature of injury was strain/sprains/tears while the two most common body parts affected were back with 15% and shoulder with 12%. Job tasks associated with the highest number of incidents were lifting or tossing trash bags, mopping, bed cleaning, and maneuvering the housekeeping cart.
Conclusion: Hospital cleaners have higher injury rates and morbidity compared to national rates with high frequencies of overexertion and body reaction injuries. More efforts are needed to control hazards such as forceful exertions, awkward postures, and repetitive motions at this workplace.

40. Outdoor Air Exposure of Underserved Urban Chicago Youth to Nitrogen Dioxide and Ozone

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Objective: The primary objective of this study was to assess NO_2 and O_3 personal exposure levels of youth in an urban environment and to assess whether ambient air concentration data collected by the U.S EPA at the nearest fixed site air monitoring stations are representative of personal exposure concentration measurements.
Methods: Thirty-six African American and Hispanic youth at two different environmental camps operated by the city of Chicago Park District (CPD) were recruited for this personal exposure assessment study. Both personal and area samples were obtained using passive NO_2 and O_3 badges. A fixed-site air monitoring station was established at each

park to measure area NO_2 and O_3 ambient air concentrations. The air monitoring data collected at the nearest urban station for the study time frame was obtained from USEPA's AIRS database. Time-activity data of participants were recorded in five-minute intervals. Statistical methods were employed to analyze the personal and area exposure concentration data along with USEPA fixed-site air monitoring data for NO_2 and O_3.
Results: Week 1 and 2, NO_2 and O_3 average weekly personal concentrations (AWPC) were below the EPA NAAQS. For Week 3, while 65% of NO_2 measurements were above NAAQS, all O_3 measurements were below NAAQS. For Week 4, 31% NO_2 and 13% O_3 measurements were above NAAQS. For Week 5 and 6, 22% and 37% of NO_2 measurements were above NAAQS, respectively. However, O_3 measurements were all below NAAQS for Week 5 and 6.
Conclusions: Current NO_2 NAAQS may not be effectively protecting underserve populations within urban areas as indicated by, personal NO_2 measurements obtained for Weeks 3, 4, 5 and 6.

41. A Compartmental Model of MRSA Transmission among Healthcare Workers in a Nursing Home

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Objectives: This study looked to: 1. Identify Methicillin Resistant *Staphylococcus aureus* (MRSA) reservoirs within nursing homes, and 2. Characterize physical processes by which MRSA is transmitted by developing a compartmental model.
Background: Methicillin-resistant *Staphylococcus aureus* (MRSA) is a ubiquitous pathogen in healthcare settings and poses a health risk to patients and workers. MRSA is transmitted through direct contact and indirect contact, where indirect contact means that MRSA moves from an infectious person to a susceptible person through an intermediate object. MRSA persists as an occupational health concern despite recommendations for hand-hygiene and personal protective equipment; this may be due to lack of compliance with infection control practices, or inefficiency of the interventions. The physical processes by which MRSA is transmitted are not well characterized, but this knowledge is required to select effective interventions.
Methods: A literature review was used to identify case series' involving MRSA transmission amongst healthcare workers (HCWs) in nursing homes, and to understand the physical processes affecting the emission and transportation of MRSA and similar infectious agents.
Results: The literature review identified several important MRSA reservoirs, including: infected, colonized, and susceptible persons, and porous and non-porous surfaces. MRSA moves between these reservoirs as a result of human activity, including touching and manipulating contaminated human tissues and objects. A common scenario in a nursing home involves a colonized HCW attending a susceptible, immune-compromised patient. MRSA can be transferred to the susceptible patient through several pathways, including: clothing-hand-patient, surface-hand-patient, HCW-patient, and clothing-patient. The compartmental model developed graphically represents the MRSA reservoirs and transmission processes.
Conclusions: Modeling the transmission of infectious diseases, such as MRSA, can help to identify points of intervention to prevent exposure and infection. Future work will simulate the compartmental model to quantify infection risks to workers, and evaluate the effectiveness of controls.

42. Near-Roadway Exposure to Air Pollutants: A Pilot Study

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Objective: Pedestrians with close proximity to roadways may experience increased exposure to traffic-related air pollution from vehicle emissions. The goal of this study was to estimate personal exposure to traffic-related air pollutants for use in epidemiological studies of the health benefits and risks of active transportation participants (i.e. walkers, joggers, cyclists) and near-road occupations (i.e. construction, mail carrier, police officers).
Methods: Personal air pollution exposure data were collected while riding 5 specific cycling

ABSTRACTS

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