

changes necessary to regain compliance with standards and policies and decrease the Surgical Site Infection rate. To establish a positive culture for change by increasing OR personnel knowledge of the “basics” in the primary categories determined to have the greatest need for improvement by the team. The “Back to Basics” areas of concentration were established to be: Traffic Control in the Operating Rooms; Cleaning and Processing of Instrumentation; Environmental Cleaning and Upkeep; Surgical Attire; and Proper Handwashing methods. It was noted thru routine surveillance that there had been an increase in SSI rate. The Infection Control Nurse Clinician completed multiple detailed case studies in order to collect data for this project. As part of the case studies cultures were taken of wounds, fluids on the surgical field, and areas of the sterile field at multiple times throughout the procedures. Traffic Control studies were conducted by the Infection Control Nurse Clinician and methods to decrease traffic in and out of the ORs were devised and implemented. The Sterile Processing Department was renovated and a new Washer Sterilizer was purchased including the addition of De Ionized/filtered water for the processing of surgical instruments. All ORs were cleaned “Top to Bottom” including air vents, light fixtures, all surfaces, and all equipment. After this cleaning each OR was checked with culture plates and air quality testing. A schedule for this cleaning was established including biannual cleaning of all equipment by an outside vendor. A subcommittee was formed to address leading practice regarding Surgical Attire. Handwashing re-education and direct observation of staff was implemented and continues. Hand washing compliance increased. Hand hygiene products were also re-evaluated at this time.

Results: Multidisciplinary team utilized a variety of change methods tailored to each discipline to implement necessary changes in practice to meet leading practice standards. Staff knowledge of and compliance with the AORN Standards and APIC Guidelines was enhanced. Hospital policies were updated and uniformly enforced. The SSI Rate has been successfully decreased.

Lessons Learned: Infection Control and Perioperative Services can work together as a team to influence other disciplines to improve the quality of patient care. It is necessary to involve the entire Multidisciplinary Team in order to improve the quality of care we provide for our patients. This is a culture change, not a one time fix, and results are not immediate. The process requires ongoing maintenance of ALL items.

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Disinfection of Senior/Assisted Living Long-Term Care Facilities for Prevention of Legionnaires' Disease: Efficacy of a Novel Short Course (30-day) Treatment with Copper-silver Ionization

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Background: The Allegheny County Health Department investigates cases of Legionnaires' disease identified in elderly residents of senior/assisted living long-term care facilities in Pittsburgh, PA. Residents of such facilities are at greater risk for developing Legionnaires' disease than the general population due to age and health status. When environmental testing reveals the presence of Legionella in such buildings, recommendations are made by the Health Department for remediation. Thermal disinfection (heat & flush) of a hot water systems is temporarily effective if outlets are flushed with 160o F water for 30 min., however it is labor intensive, costly and difficult to implement in this setting. Our objective was to devise a remediation approach that was more effective, easier to implement and less intrusive to residents. Typically, copper-silver ionization is permanently installed on the hot water recirculation system of a building and is an effective long-term remediation method for controlling Legionella in hospital water systems. We implemented a temporary short-course 30 day application of copper-silver ionization in two senior/assisted living facilities following the identification of cases of Legionnaires' disease in elderly residents.

Methods: Baseline environmental testing for Legionella was performed before installation of the ionization system on a minimum of 10 samples from the hot water distribution system of the two facilities. Following installation of the ionization system (Tarn-Pure, Enrich Products, Pittsburgh, PA), levels of copper and silver ions were measured and Legionella environmental testing was repeated a minimum of three times over a 3-4 month period which included after the system had been turned off or removed. Results were expressed as percentage of sites positive (percent

positivity) and the target was <30% positivity; the 30% positivity was based on extrapolation from the environmental cutpoint used for hospital-acquired legionellosis.

Results: Baseline positivity for *Legionella pneumophila*, serogroup 1 in Facility 1 was 100% (13/13). Ten samples were collected at 21, 47 and 97 days post installation and were 30% positive at each sample point. Only unoccupied rooms with no water usage remained positive after treatment. The last sample date was approximately 60 days after discontinuation of treatment. Copper/silver concentrations (mg/L) were 0.18/0.015 and 0.33/0.033 after 4 and 26 days of treatment. Baseline positivity in Facility 2 was 71% for *Legionella pneumophila*, serogroup 1 (10/14). Fourteen samples were collected at 14, 39, 88, and 137 days after treatment and were 14%, 7%, 7%, and 21% positive respectively. The last sample date was approximately 100 days after discontinuation of treatment. Copper/silver concentrations (mg/L) were 0.45/0.048 and 0.38/0.012 at 4 and 19 days after treatment.

Conclusions: Short-course 30-day treatment of hot water distribution systems with copper-silver ionization may be an effective, low impact, remediation strategy to quickly reduce *Legionella* colonization of water systems following cases of building-associated Legionnaires' disease. Intermittent treatments at 6 month intervals may be an effective remediation approach in senior/assisted living long-term care facilities.

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Evaluation of a Hand Hygiene Intervention in K-5 Public Schools

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Issue: One of the most important infection prevention elements is personal Hand Hygiene (HH). Yet Infection Preventionists (IP) continue to struggle with HH improvement programs. As shown in other child health campaigns, i.e., seat belt use or smoking cessation, children influence adults to adopt smoke free lifestyles and use seat belts. Perhaps a child's HH program could improve adult HH? To this end, an elementary school district introduced the use of an alcohol based HH wipe.

Project: The project uses a pre-moistened alcohol wipes for daily school HH. An IRB-approved survey was developed addressing parent and teacher knowledge of HH, disease, their awareness and attitudes about personal HH and demographic data. Student and teacher absence data were analyzed pre- and during the program. Although no direct associations can be determined, school district hospitals provided HH compliance data for the same periods as the pre- and hand wipe study. The survey participants responded on a 7-level Likert item (1 strongly agree to 7 strongly disagree). The 17 HH items were analyzed using principal component analysis with Varimax rotation. Analyses were performed to examine associations between each dimension of the questionnaire and demographic data using correlation analysis and comparison of means analysis.

Results: We report results of the parent and teacher HH surveys, the student and teacher absence data and district hospital HH compliance data. Our results indicate 4 valid and highly reliable constructs can be created from the pre- and post-intervention questionnaires Table 1.

Factors	Examples of Questions
(1) Knowledge of hand hygiene (Cronbach's alpha 0.96)	My present knowledge regarding the hand hygiene program is: sufficient - insufficient.
(2) Protection with hand hygiene (Cronbach's alpha 0.87)	If I regularly practice hand hygiene, I will protect myself from acquiring serious infections: extremely likely - extremely unlikely
(3) Implementation of hand hygiene program (Cronbach's alpha 0.92)	The implementation of the hand hygiene program in the K-5 schools is: useful - non-useful.
(4) Anticipation of hand hygiene program (Cronbach's alpha 0.94)	I anticipate participating in the children's hand hygiene program, I shall: like it very much and I am eager to do it - dislike it very much and I don't want to do it.
All factors show significant correlations (Pearson correlation $p < 0.01$ 2-tailed)	

Analyses of part I data show significant differences ($p < 0.05$) in Knowledge of HH if the parent is a HCW or school employee; but, after a year of the HH program, no Knowledge differences are seen between groups. Highly significant correlations were found between the 4 constructs and both parent and teacher beliefs that the children