Lessons Learned: Supportive relationships develop among BMT patients and families resulting in visitation that occurs in the inpatient and outpatient settings. In this case it was discovered one patient was hosting dinner parties at the Hope Lodge for other BMT patients. Once the outbreak was recognized, patients were asked to cease visitation with other patients. This report underlines the importance of identifying the risk of transmission that can occur outside the hospital setting such as outpatient and residential settings. Early identification of suspected respiratory infections, education of staff and patients, and institution of precautions is paramount in preventing further transmission.

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Surveillance for Nosocomial *Legionella pneumophila*: a 6 Years Report from a Large Italian Hospital and Impact of the Copper - Silver Ionization System

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Issue: Since the 80s it has been known that nosocomial legionellosis can result from exposure to bacterium living in hospital water distribution systems. *Legionella pneumophila* is a bacterium that typically grows in hot water (at a suitable temperature range between 20° to 50°C) and causes pulmonary disease in vurnerable patients if disseminates by aerosol/droplets. The risk of nosocomial infection increases when *Legionella* spp. concentrations in water circuits is high.

Legionnaire's disease still remains a big issue in hospitals despite the installation and implementation of control procedures. Our hospital (an academic center in north Italy) in 1999 started a surveillance program based on epidemiological, microbiological and technical assessments/measures.

In January 2000, in our water distribution system was installed a new copper-silver ionization method. This procedure generates copper and silver ions with a known persistent activity against bacterial proliferation by means of bacterial cell wall disruption and lysis.

The goals of this study were:

1. To determin the effect of copper-silver ionization on *L.pneumophila* colonization in the hospital water distribution system
2. To evaluate the impact of using of the copper-silver ionization system on environmental legionellosis and in preventing new cases

Project: We prospectively collected water samples for bacteriological analysis and for copper-silver ion determination from high and medium risk hospital ward water sources (total: 243 samples, mean value of samples that tested positive for *L.pneumophila* 32.5%, range 0%-83%). Bactericidal activity was assured when copper concentration was 0.3 ppM and silver concentration was 0.03 ppM, as measured with an atomic absorption spectrophotometer. To reduce bacterial proliferation, when water *L.pneumophila* colonization was too high (1000 CFU/L was considered a threshold limit for positivity/risk exposition) a thermal shock was performed.

Results: The intensity of epidemiological investigations was determinate according to the numbers of cases reported (isolated/sporadic, foci or clusters). Using the copper-silver ionization system in water distribution system, we got a significant reduction in *L.pneumophila* colonization, in comparison to other methods previously used. The mean colony count decreased from 11.706 CFU/L (year 2000) to 3.537 CFU/L (year 2007), and mean percentage value of samples tested positive for *L.pneumophila* was reduced from 56% (year 2000) to 20% (year

2007)(X^2 square test = 2.12). The most isolated serogroup was 2-14 (119 times). The incidence of legionellosis disease decreased, during the same period, from 2 to 0 cases (p not statistically significant).

Conclusions: Our study shows that environmental colonization of water by *Legionella* species, in association with a decrease of legionellosis disease, can be successfully reduced using a properly monitored copper-silver ionization system, even if we didn't found a between percentage values.

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Central Line Associated Blood Stream Infections among Pediatric Hematopoietic Stem Cell Transplant Recipients in Inpatient and Outpatient Settings.

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Background/Objectives: Central line associated blood stream infections (CLABSIs) often complicate hematopoietic stem cell transplantation (HSCT) causing increased morbidity and mortality. Interventions to decrease CLABSIs have primarily focused on applying relevant bundle strategies for non-tunneled catheters in hospitalized patients. There are limited CLABSI rate and intervention data available for long-term, tunneled central venous catheters (CVCs) which are increasingly used in the outpatient setting.

Methods: In 2007, we implemented relevant bundle strategies for CVCs among hospitalized children undergoing HSCT. As these catheters are inserted in the operating room, we focused on bundle strategies related to catheter maintenance, i.e., hand hygiene, aseptic technique during dressing changes, skin disinfection at the insertion site with 2% chlorhexidine, and disinfecting the cap and hub with alcohol prior to line access. These strategies were taught to staff and families as such practices are relevant to CVC care in both inpatient and outpatient settings. To determine the effectiveness our interventions, we compared rates of hospital-onset CLABSIs (occurring $\geq$ 48 hours after admission) and community-onset CLABSIs (presenting $<$ 48 hours of admission) for all pediatric patients undergoing HSCTs before (2006) and after (2007) implementation of the interventions.

Results: During the study period, 54 patients underwent HSCT of whom 44 were allogeneic HSCTs. The majority had 2-3 lumen tunneled CVCs placed. The overall CLABSI rate was 10.9 vs. 7.9 CLABSI per 1000 catheter-days in 2006 vs. 2007, respectively. The rates for hospital-onset CLABSIs declined from 8.4 to 4.9 and for community-onset CLABSIs declined from 13.4 to 10.9 CLABSI per 1000 catheter-days, in 2006 vs. 2007, respectively. Overall, 88 CLABSIs occurred in 35 (65%) patients of which 18% occurred within the first 30 days of HSCT. Overall, 44.7% of pathogens causing CLABSIs were gram positive cocci and 52.4% were gram negative rods including 14 polymicrobial infections. The distribution of pathogens is shown in the Table.

Conclusions: Our focused interventions appear to have reduced both hospital- and community-onset CLABSIs. However, there was a predominance of gram negative pathogens suggesting that interventions focused on skin flora may have limited impact on CLABSIs in the HSCT population. Furthermore, interventions to reduce CLABSI may have failed reach all individuals involved with outpatient CVC care (e.g., patients, families, and home care agencies). More research is needed to determine the optimal strategies to reduce CLABSIs in this challenging patient population.