Study Demonstrates Sustained Infection Prevention Takes a Comprehensive Strategy

A hand hygiene study conducted by researchers at the University of Nebraska published in the January 2008 issue of Infection Control and Hospital Epidemiology reports two observations of note.

The study occurred in two medical-surgical adult ICUs. Each ICU was provided with an alcohol-based hand rub (ABHR) for one year and monitored for incidences of nosocomial infections. Over a two-year period, the researchers found that hand hygiene adherence rates in the units increased substantially among all healthcare workers – from 37 percent to 68 percent in one unit and from 38 percent to 69 percent in the other. While hand hygiene rates almost doubled, the researchers found "no substantial change" in the rates of device-associated infections, infections from drug-resistant pathogens, and infections due to *C. difficile*.

Lead author Dr. Mark E. Rupp notes that several circumstances may have contributed to these findings. "We may not have crossed the unknown threshold at which hand hygiene compliance prevents infections, which could be dependent on a number of factors, such as inoculum, virulence of the organism, or host defense. In addition, the rate of infection was low to begin with and thus the study was underpowered - even though we went for two years and had thousands of observations for hand hygiene." He goes on to say, "We did not perform active surveillance cultures for MRSA and VRE, and for this reason we may have cut down on transmission of these organisms without having the ability to detect it."

While doubled hand hygiene rates did not result in dramatic decreases in nosocomial infections, culture samples from the hands of nursing staff without access to ABHRs showed an increased number of microbes, as did samples from healthcare workers' hands with longer (>2mm) fingernails and those wearing rings.

Dr. Rupp emphasizes in summary, "It is important to note that the pathogenesis of healthcare-associated infections is complex, and hand hygiene is only one ingredient in the overall recipe of infection prevention. In other words, if you do not practice a multi-pronged approach, a single intervention will not affect the outcome."

As part of this approach, he recommends the following top-three techniques to increase hand hygiene adherence and lower infection rates:

- Make sure healthcare workers have easy access to alcohol gels at the point-of-care and make sure there is a system in place to check and refill dispensers.
- Have unit personnel trained as hand hygiene compliance observers and provide rapid and frequent feedback of rates of hand hygiene compliance.
- Provide for a system of recognition and reward for units/individuals that perform well.
- Through unit and healthcare worker-specific reporting encourage friendly competition between groups of workers and units, while also having a system in place to deal with recalcitrance.