U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
SUBCOMMITTEE ON RESEARCH AND TECHNOLOGY

HEARING CHARTER

Technology for Patient Safety at Veterans Hospitals

Thursday, June 26, 2014
9:00 a.m. – 11:00 a.m.
2318 Rayburn House Office Building

PURPOSE

On Thursday, June 26, 2014, the Research & Technology and Oversight subcommittees will hold a joint hearing *Technology for Patient Safety at Veterans Hospitals* starting at 9:00 a.m. The purpose of the hearing is to assess the potential benefits of new technologies to prevent hospital-acquired infections (HAIs), especially given the high percentage of HAI and mortality rates among patients at some Veterans Administration (VA) hospitals. Research supported by the National Science Foundation in robotics, nanotechnology, and other areas of the biological sciences has helped to bring about technological innovations to prevent HAIs.

WITNESS LIST

- **Dr. Chetan Jinadatha**, Chief, Infectious Diseases, Central Texas Veterans Health Care System
- **Dr. Elaine Cox**, Professor of Clinical Pediatrics, Director of Infection Prevention, Director of Pediatric Antimicrobial Stewardship, Riley Hospital for Children
- **Dr. Trish M. Perl**, Professor of Medicine and Pathology, Johns Hopkins School of Medicine; Professor of Epidemiology, Bloomberg School of Public Health; Senior Epidemiologist, Johns Hopkins Medicine
- **Mr. Jeff Smith**, President, Electro-spec, Inc.
- **Mr. Morris Miller**, Chief Executive Officer, Xenex Disinfection Services

BACKGROUND

Hospital acquired infections (HAIs) are the most common complication of hospital care. The Centers for Disease Control (CDC) estimates 1.7 million HAIs per year in the U.S. causing or contributing to up to 99,000 deaths annually. [1]

[1] http://www.ahrq.gov/qual/haiflyer.htm

A recent series of investigative reports by *The Wall Street Journal* describe significant deficiencies in quality of patient care among VA hospitals, including hospital acquired infections. Although HAIs are a national health care issue, the infection rates at certain VA hospitals exceed the worst-performing private sector hospitals by a factor of ten or more.[2]

HAIs remain the leading cause of preventable patient injuries and deaths in U.S. hospitals.[3] It is also associated with substantial and avoidable costs for health care costs. Studies have shown that the five most common HAIs increase U.S. direct health care costs by at least $10 billion annually. Both direct and indirect (e.g., post-discharge nursing care) HAI costs are estimated at up to $45 billion per year. However, this figure understates costs significantly because it omits the costs of resulting long-term disabilities and deaths. [4]

The Veterans Health Administration does not publicly disseminate comprehensive quality and patient safety relevant information, including information on HAIs. According to the CDC, approximately 5% of all U.S. hospital patients contract one or more HAIs during a hospital stay. In the most recent year (2012) for which data is available, there were 703,500 inpatient admissions to VA hospitals.[5] If the 5% estimate from the CDC also applies to VA hospitals, then approximately 35,000 patients at VA hospitals at affected by HAIs each year.

The CDC considers approximately one-third of all HAIs to be preventable. [6] Moreover, studies have shown that a large majority of HAIs are preventable if hospital leadership and staff make a sustained commitment to best clinical practices and rigorous patient safety standards.[7] According to recent reports[8], the best-performing VA hospitals sustain HAI rates significantly below those found at the best-performing private hospitals.

In the past, many hospital and health care leaders have regarded HAIs as the inevitable consequence of delivering complex health care services. However, the reality that most HAIs can be prevented has changed this view. In order to stimulate improvement, Medicare and many

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[2] http://online.wsj.com/articles/hal-scherz-doctors-war-stories-from-va-hospitals-1401233147
http://online.wsj.com/articles/veterans-affairs-hospitals-vary-widely-in-patient-care-1401753437
http://online.wsj.com/articles/political-triage-at-the-va-1402095105
http://online.wsj.com/articles/top-lawmakers-call-for-disclosure-of-va-hospital-data-1401810854
http://online.wsj.com/articles/visits-to-troubled-hospitals-1402357126

[3] Klevens RM, Edwards JR, Richards CL Jr, et al. Estimating health care-associated infections and deaths in US hospitals, 2002. Public Health Rep. 2007 Mar–Apr;122(2):160-6.

[4] Klevens RM, Edwards JR, Richards CL Jr, et al. Estimating health care-associated infections and deaths in US hospitals, 2002. Public Health Rep. 2007 Mar–Apr;122(2):160-6.
http://consumer.healthday.com/public-health-information-30/health-cost-news-348/hospital-acquired-infections-cost-10-billion-a-year-679761.html
Umscheid CA, Mitchell MD, Doshi JA et al. "Estimating the proportion of healthcare-associated infections that are reasonably preventable and the related mortality and costs." J. Infect Control Hosp Epidemiol. 2011 Feb;32(2):101-14. http://www.jstor.org/stable/10.1086/657912

[5] http://www.va.gov/vetdata/Utilization.asp

[6] http://www.cdc.gov/hai/pdfs/hai/scott_costpaper.pdf

[7] http://www.positivedeviance.org/pdf/publications/DoWhatYouCan.pdf
http://www.prhi.org/docs/VA%20long-term_10-1-2005.pdf
http://www.prhi.org/docs/Wiping%20out%20MRSA_10-1-2003.pdf

[8] http://online.wsj.com/articles/veterans-affairs-hospitals-vary-widely-in-patient-care-1401753437

private insurers have instituted direct and indirect payment penalties for hospitals that fail to meet benchmarks for HAIs and other patient safety metrics.[9]

As recently as the 1990s and early 2000s, the Veterans Health Administration hospitals and clinicians pioneering HAI prevention methods indicated that the incidence of the most common HAIs could be reduced dramatically, even among high-risk patients. Experiments at VA hospitals demonstrated significant patient safety benefits from rigorous hospital staff adherence to straightforward infection prevention measures: hand washing, use of gloves and gowns when in contact with patients, cleaning medical equipment, screening new patients for potentially harmful pathogens, and isolating patients who contracted serious infections.[10] In a few VA hospitals, the incidence rates of dangerous types of HAIs was dramatically reduced when these measures were adopted.[11]

The larger challenge for all U.S. hospitals, including VA institutions, is the need to approach 100% prevention of HAIs. Due to the rapid evolution of antibiotic resistant microbes, including a steadily increasing list of infections that no longer respond to any type of antibiotic, infected patients are at heightened risk of serious injury, permanent disability or death.

Therefore, one focus of research is on new infection prevention technologies. While rigorous compliance with conventional prevention techniques (e.g., hand-washing, isolation of infected patients, etc.) must still be common practice, promising new technologies for sterilizing medical equipment along with "touch" surfaces at hospitals are being developed. Sterilization techniques include: UV light, hydrogen peroxide vapor, and anti-microbial coatings.[12] Self-disinfecting surfaces can be created by coating surfaces with heavy metals (eg, silver or copper), germicides (eg, triclosan), or light-activated antimicrobials. These methods are under active investigation to reduce health care-associated infections. The National Institutes of Health, Centers for Disease Control, National Science Foundation, and other federal agencies fund various research projects for new HAI prevention technologies.

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[9] http://rds.epi-ucsf.org/ticr/syllabus/courses/68/2009/05/05/Lecture/readings/Dudley.pdf
http://www.hci3.org/sites/default/files/files/HCI-IssueBrief-4-2012.pdf

[10] McBryde ES, Bradley LC, Whitby M, McElwain DL (October 2004). "An investigation of contact transmission of methicillin-resistant Staphylococcus aureus". J. Hosp. Infect. 58 (2): 104–8. doi:10.1016/j.jhin.2004.06.010. PMID 15474180

[11] http://www.positivedeviance.org/pdf/publications/DoWhatYouCan.pdf
http://www.prhi.org/docs/VA%20long-term_10-1-2005.pdf
http://www.prhi.org/docs/Wiping%20out%20MRSA_10-1-2003.pdf

[12] Weber, DJ; Rutala, WA (May 2013). "Self-disinfecting surfaces: review of current methodologies and future prospects." American journal of infection control 41 (5 Suppl): S31–5. PMID 23622745