Another publication by Booth CM (2014) using a “simulated vomiting system” has demonstrated the extent of environmental contamination and additional risks that may be associated with projectile vomiting during norovirus infection. This will be invaluable information for those managing norovirus outbreaks.

In addition publications and commentary in the US (Epstein L et al [2014], Rutala WA and Weber DJ [2014] and Muscarella LF [2014]), relating to carbapenem-resistant Enterobacteriaceae (CRE) transmission linked to duodenoscopes used on patients undergone endoscopic retrograde cholangiopancreatography (ERCP) procedures are bringing important issues and concerns to healthcare providers. Duodenoscopes are complex and can be difficult to clean. Issues relating to monitoring/surveillance strategies to identify such infections, training and credentialing of staff involved in reprocessing and discussions around the need to shift from disinfection to sterilisation are highlighted in these publications.

The importance of these publications in identifying critical issues and enhancing quality improvement will be discussed.

KS 8

THE IMPORTANCE OF MANAGEMENT OF THE SURFACE ENVIRONMENT IN CONTROLLING HEALTHCARE-ASSOCIATED INFECTIONS

David J. Weber, MD, MPH. University of North Carolina, NC, United States

This lecture will review the evidence demonstrating the importance of contamination of hospital surfaces in the transmission of healthcare-associated pathogens and interventions scientifically demonstrated to reduce the levels of microbial contamination and decrease healthcare-associated infections. It will also discuss methods to improve cleaning, monitoring cleaning effectiveness, new germicides for surface disinfection, new “no touch” methods of room disinfection, and “self-disinfecting” surfaces.

The contaminated surface environment in hospitals plays an important role in the transmission of methicillin-resistant Staphylococcus aureus (MRSA), vancomycin-resistant Enterococcus spp. (VRE), Clostridium difficile, Acinetobacter spp., and norovirus. Hospital surfaces are frequently contaminated with important healthcare-associated pathogens. Contact with the contaminated environment by healthcare personnel is equally likely as direct contact with a patient to lead to contamination of the healthcare provider’s hands or gloves which may result in patient-to-patient transmission of nosocomial pathogens. Admission to a room previously occupied by a patient with MRSA, VRE or C. difficile increases the risk for the subsequent patient admitted to the room to acquire the pathogen. Improved cleaning and disinfection of room surfaces decreases the risk of healthcare-associated infections. “No-touch” methods of room disinfection (i.e., devices which produce ultraviolet light or hydrogen peroxide) and “self-disinfecting” surfaces (e.g., copper) also show promise to decrease contamination and reduce healthcare-associated infections.

KS 9

ALL-TIME TOP INFECTION CONTROL LITERATURE

Robert A. Weinstein, M.D. Cook County Hospital & Rush University Medical Center, United States

The progress in understanding and controlling healthcare-associated infections over the past eight decades has been impressive — often occurring in step-like fashion prompted by regulators, payers, and patient advocates — though still a work-in-progress. The most striking advances worldwide have been made in control of the “Big 4” (BSIs, SSI, VAEs, & UTIs) device- and procedure-related complications. In part this reflects improved technology and in part bundled device-care protocols. These improvements are in major contrast to difficulties in some countries in reducing rates of Clostridium difficile infection.

Our efforts to understand and control antimicrobial resistance have been marked by repeated commissioning of national task forces, controversies over active surveillance culturing, greatly broadening use of antiseptic bathing, slow adopting of antimicrobial stewardship, gradually improving hand hygiene rates, and advancing antibiotic resistance. Quality improvement programs, especially pay-for-performance and penalty-based movements, have had variable impacts. Information Technology has improved data capture, facilitated public reporting and accountability, and opened new approaches for intervention.

Disinfection and sterilization procedures are effective but await a quantum leap. The threat of Ebola virus disease has called needed re-attention to gown, garb, and environmental concerns.

The molecular era — human genome exploration, bacterial genome sequencing, and human microbiome analysis — has led to new understandings of health and disease and to rebirth of interventions aimed at controlling gut flora. Attempts to develop vaccines for nosocomial pathogens have been unsuccessful. And the aging and increasing immunosuppression of our patients remain major infection control challenges.

Our advances have depended increasingly on more rigorous study designs, use of multi-center trials to improve generalizability, and greater sophistication in our statistical analyses of study outcomes. The all-time most impactful literature for infection control will be reviewed.

KS 10

THE EMERGING GLOBAL CHALLENGE OF NONTUBERCULOUS MYCOBACTERIAL (NTM) INFECTIONS

David E. Griffith, M.D. The University of Texas Health Sciences Center at Tyler (UTHSCAT), United States

Mycobacterium tuberculosis remains the most important mycobacterial pathogen from the perspective of global public health. It has recently become clear, however, that diseases caused by nontuberculous mycobacterial (NTM) pathogens are being recognized more frequently in essentially all parts of the world. This increased recognition is largely due to the wider availability of improved microbiological methods utilized for TB evaluation and diagnosis. Although the true global burden of NTM disease is unknown, in some industrialized countries, NTM lung disease now occurs with much greater frequency than TB. It can be reasonably anticipated that the global prevalence of NTM disease will continue to grow for the foreseeable future. The appropriate management of these patients will place increased demands on already scarce and hard pressed medical care resources. Additionally, new insights into the acquisition of NTM pathogens from the environment will challenge public health and infection control authorities to create workable NTM disease prevention strategies.

KS 11

THE IMPACT OF EMERGING NEW DIAGNOSTIC TECHNIQUES ON CLINICAL INFECTIOUS DISEASE

Franklin R. Cockerill, III, MD. Mayo Clinic, United States

This Lecture reviews seminal technology developed in the 20th Century and its important application to the diagnosis of infectious diseases. This technology includes immunoassay, flow cytometry, mass spectroscopy, nucleic acid amplification (especially PCR) and nucleic acid sequencing. Examples of applications of these methods to the detection and quantification of pathogens and the subsequent dramatic impact on the effective control and treatment of infectious diseases are presented. Pathogens include HIV,