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Poster Presentation

How Standard Are Standard Precautions? Knowledge and Attitudes Toward Standard Precautions at an Academic Medical Center

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Background: Standard precautions are the basis of infection prevention and include a set of common-sense infection control practices that prevent transmission of diseases acquired by contact with blood, body fluids, nonintact skin, and mucous membranes. These measures include hand hygiene, personal protective equipment (PPE), cleaning and disinfecting, linen handling, waste disposal, sharps safety and respiratory etiquette. Standard precautions require that the risk for exposure be assessed and appropriate precautions taken based on risk. Observations and anecdotal evidence have led us to believe that understanding of standard precautions is lacking among healthcare personnel. **Methods:** A survey was conducted at a large health system to assess knowledge and practices related to specific elements of standard precautions. **Results:** More than 3,000 HCWs responded from inpatient settings (41%), outpatient settings (37%), and both settings (22%). Nurses comprised the majority of respondents (54%), and others included physicians (9%), respiratory therapists, as well as physical and occupational therapists. **Discussion:** The vast majority (96%) of respondents agreed that standard precautions were required in the care of all patients, but a significant proportion (34%) interpreted that to mean that standard precautions always involve wearing gloves, and 22.5% thought that PPE was always required for standard precautions. Hand hygiene and sharps safety were identified as the best understood elements of standard precautions. Respiratory etiquette and cleaning and disinfection were reported as the least understood elements, with PPE, waste disposal, and linen handling also being reported as inadequately understood components of standard precautions (Fig. 1). **Conclusions:** In an era of increasing drug resistance and fewer effective antibiotics, standard precautions are our best defense against the spread of infections in the healthcare setting. Our survey showed that there is room for improvement among healthcare workers in understanding of the elements of standard precautions. We plan to use the survey to craft a targeted education campaign to improve understanding of and adherence to standard precautions.

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How to Convince People and Get Adherence to Hand Hygiene Practices? The Success of Ozires, the Humanoid Robot!

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Background: Our team has been fighting nosocomial infections since 1991. During our journey, we often ask why people do not wash their hands! Semmelweiss discovered in the 1840s that handwashing prevented deaths from puerperal sepsis, but we still need to convince healthcare workers about hand hygiene. One answer is that washing hands is an unsophisticated gesture, without any technology, so people just do not do it. How can we improve compliance with hand hygiene? We imagined a robot in our team to remind people to wash their hands. Then, in 2016 we met Meccanoid, a US$200 toy robot: a 4-foot-tall programmable humanoid robot with voice recognition capabilities. We made adaptions in the robot (mini-projector + audio amplifier + alcohol dispenser + spy camera), and we gave him a name (Ozires) and a

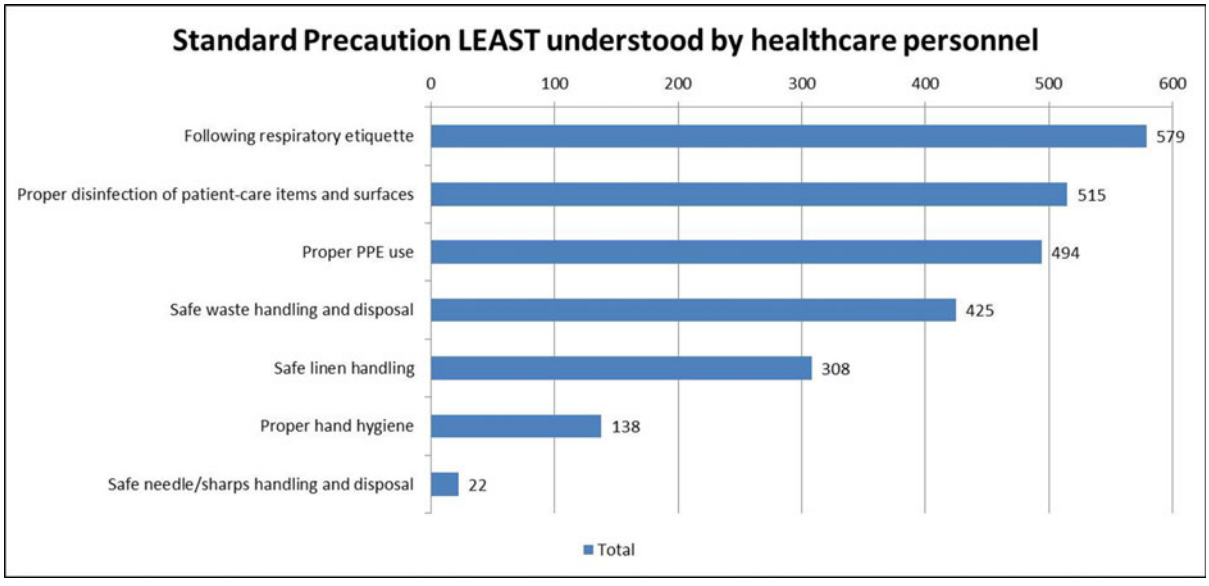

Fig. 1.

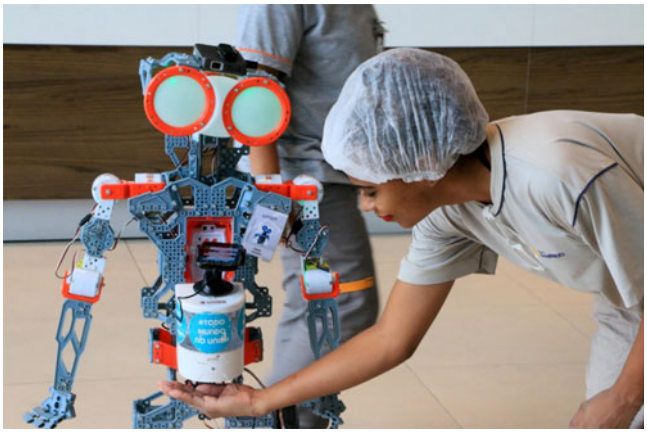

Fig. 1.

Fig. 2.

purpose: He became a professor who teaches healthcare workers how, when, and why wash their hands! Here, we describe the multimodal strategy centered around Ozires. **Methods:** The multimodal strategy consists of 7 key elements: (1) the robot, accompanied by a infection control practitioner, performs audio and video lectures about hand hygiene techniques, motivational videos, data feedback; (2) the robot's wood copies with sound alert with motion detector for hand hygiene are spread out in the whole hospital; (3) fridge magnet with robot prints (gifts for patients and healthcare professionals); (4) app for hand hygiene monitoring (Hands Clean); (5) adherence rates by professional category and individual feedback; (6) patient empowerment for hand hygiene; and (7) sound alert for hand hygiene in the patient room's door. **Results:** After the insertion of Ozires in 3 ICUs of hospital A (pilot study), the hand hygiene (HH) rate increased from ~36%, between January and July 2016, to ~68% between August 2016 and October 2019. At hospital B, Ozires started his lectures in May 2018, throughout the hospital. Hand hygiene adherence increased from 23% between July and December 2017 to 60% between June 2018 and October 2019. In the 3 months before this multimodal strategy was implemented in hospital C (June–August 2019), and the mean rate of hand hygiene was 65%. With the robot, the hand hygiene rate increased to 94% (September–October 2019). **Conclusions:** The multimodal strategy centered around the robot Ozires works! Hand hygiene compliance increased significantly after the interventions. People listen the robot much more attentively than to their human colleagues, and healthcare worker behavior changed! We need to go further improve the program, but it is sustainable. Finally, we succeeded in convincing people to improve their hand hygiene practices.

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Identification of Aminoglycoside Resistance Genes From Bacteria Isolated From Selected Municipal Drinking Water Distribution Systems in Southwestern Nigeria

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Background: Multidrug-resistant bacteria can lead to treatment failure, resulting in infectious diseases being transferred through nonpotable water. Aminoglycosides are an important class of antibiotics that are abused in Nigeria. Few studies have investigated aminoglycoside-modifying genes (AMGs) that are likely responsible for resistance in Nigeria bacteria isolates. Therefore, we aimed to characterize AMGs from isolates in drinking water distribution systems (DWDS) in southwestern Nigeria. **Methods:** Multidrug-resistant bacteria (n = 181) that had been previously characterized by 16S rDNA sequencing and that were positive for resistance to at least 1 aminoglycoside antibiotic were selected from 6 treated and untreated water distribution systems. Strains were PCR genotyped for 3 AMGs: *aph*(3")c, *ant*(3")b and *aph*(6)-1dd. **Results:** Of 181 MDR bacteria tested, 69 (38.12%) were positive for at least 1 of the AMGs. The most common was *ant*(3")c (27.6%), followed by *aph*(3")c (18.23%). Both *aph*(3")c and *ant*(3")b were found in 7.73% of tested isolates, *ant*(3")b was most commonly found in *Alcaligenes* spp (50%). Furthermore, *aph*(3")c was most commonly detected in *Proteus* spp (50%). Other genera positive for AMGs included *Acinetobacter*, *Aeromonas*, *Bordetella*, *Brevundimonas*, *Chromobacterium*, *Klebsiella*, *Leucobacter*, *Morganella*, *Pantoae*, *Proteus*, *Providencia*, *Psychrobacter*, and *Serratia*. **Conclusions:** High occurrence of *ant*(3")c and *aph*(3")c among these bacteria call for urgent attention among public health workers because these genes can be easily disseminated to consumers if present on mobile genetic elements like plasmids, integrons, and transposons.

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Identification of Colonized Patients During an Outbreak of *Candida auris* Using a Regional Health Information Exchange

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