Colour-Coding to Prevent Hospital Infections

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Abstract:

Preventing healthcare-associated infections (HAIs) is not as simple as implementing a hand hygiene program, investing in an ultraviolet disinfection robot or switching to a disinfectant with a better kill claim. The key to significantly reducing these preventable infections is to have a comprehensive, multimodal approach. The use of a colour-coded system of cleaning tools by the front-line staff has proven to be an effective solution to reducing the instances of cross-contamination in healthcare environments.

Main Article:

In an article published a little over a year ago, I cautioned hospital administrators to not overlook the important role of environmental services staff as the first line of defense in a genuine, multimodal initiative to ultimately reduce and, hopefully, eliminate healthcare-associated infections (HAIs)[10]. In that article, I described these teams of hygiene specialists as an overlooked “secret weapon” in the HAI battle.

What is certainly no secret is how the disinfection robot[6] has become a preeminent newsmaker among all the tools available to environmental services staff and other professionals to stop the increasing threat[1] and economic[7] burden posed by the spread of superbugs. The clamour around these robots - ultraviolet disinfection (UV) systems - has helped to create a market that is expected to grow from $30 million in 2014 to $80 million in 2017; these systems can cost upwards of $100,000 each[6].

Amidst the robot hubbub, some have become concerned that UV systems “are now being heralded as single-solution tools for cleaning and disinfection, much like hand hygiene has been promoted as the be-all-to-end-all solution for preventing HAIs,”[2] possibly at the expense of other systems.

Although perhaps not as exciting or newsworthy as robots, a system of colour-coding of cleaning tools to prevent cross-contamination has shown to be an effective measure of infection prevention in hospitals.

The Case for Colour-Coding

Using colour clears up confusion, simplifies training, provides oversight and reduces cross contamination. A properly implemented system works this way:

1. Reusable cleaning tools (cloths, flat mops, etc.) are provided in different colours, with each colour representing a specific use for an exclusive area of the hospital, including patient bathrooms, patient rooms, ICU and operating rooms.

2. These tools are used only for the area specified and never cross the threshold into a second room.

3. Used tools are laundered according to CDC guidelines for Blood Borne Pathogens before being put back into service.

These colour-coded systems and one-per-room methodologies can make a real and quantifiable difference. Among success stories, one hospital was able to reduce to zero its surgical unit's rate of Clostridium difficile *(C. difficile)* infection[5] by making colour-coding a part of a multimodal, collaborative intervention-type solution.

One Hospital Was Able To Reduce To Zero Its Surgical Unit's Rate Of *C. Difficile*

Lest you need a reminder about *C. difficile*, a report[8] published last November notes that it is one of the most common HAIs, that it increases hospital costs by 40 percent per case and that it puts those infected at high risk for longer hospital stays and readmissions. *C. difficile* is transmitted from person to person by the fecal-oral route, which makes the patient bathroom in a healthcare facility a prime target for thorough processing by a hygiene specialist trained in colour-coding protocols.

One such colour-coding system uses orange[9] for its bathroom tools. Thus, in a patient bathroom, fresh - *and only* – orange tools are used to clean the toilet, the sink and the tub and shower. Once used on the toilet, the orange mitt is placed into a container designated for soiled cloths and is not used anywhere else in the bathroom. This way the toilet is completely isolated from the rest of the bathroom and the bathroom from the patient care zone.

Colour Standards

The use of colour-coded products for cleaning and processing a healthcare facility has been around for years and many have called for a universal code.

In the United Kingdom, the British Institute of Cleaning Science is credited with developing a "universal" colour code for the cleaning industry in the late '90s[4]. Its code supports that of the National Patient Safety Agency's[3] (NPSA) National Colour Coding Scheme for cleaning materials. NPSA has recommended that all National Health Service (NHS) organizations adopt the code as standard. The colour-coding scheme is:

- **Red**: bathrooms, washroom, showers, toilets, basins and bathroom floors
- **Blue**: general areas including wards, departments, offices and basins in public areas
- **Green**: catering departments, ward kitchen areas and patient food service at ward areas
- **Yellow**: isolation areas

Currently there is no single colour code in use across the U.K.'s National Health Service. Likewise, in the US, there is no standard system for how to use various colours in healthcare. For example, depending on the supplier, hospital bathrooms can be designated with red, blue or the aforementioned orange.

Considering the effectiveness of colour-coding as a tool in the battle against HAIs, perhaps the time has come to move past just guidelines and recommendations and consider a more universal, enforceable procedure for processing patient environments. Standardizing on one system across all institutions and suppliers will simplify the training of front-line workers and emphasize the importance of adherence to guidelines for patient safety.

Moving Beyond the 'Headline Diseases'

The high incidence of HAIs (as well as community-associated infections) and the dangerously low levels of literacy in the general public about antibiotic resistance have been on a collision course. The general public seems to be more worried about headline diseases such as Ebola and/or Zika[11] than the one right under their noses (or their hospital bed). While global outbreaks such as Ebola and Zika are worthy of our most heroic public health efforts, in reality more global citizens will die this year and every year from HAIs than those two diseases combined.

To be sure, progress is being made on the HAI front. The ultimate goal, however, is zero preventable HAIs. This is going to take a multimodal approach on multiple fronts of the battlefield. Improved hand hygiene, high-tech solutions and increased attention to detail in cleaning all have a place in a complete infection prevention regimen. Let's ensure that colour-coding of cleaning tools is in the mix.

Editor's Note: Dr. Rohde *and* Amber H. Mitchell *will both be featured in an upcoming FOCUS series of articles on the topic of HAIs in the* Clinical Laboratory Science Journal *(Winter 2016 edition). Stay tuned for our feature on this series.*

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