# How can we measure quality and why does it matter?

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# 4 Questions:

- What is quality in healthcare environmental hygiene?
- Why do we need to measure it?
- How can we measure it?
- Why does it matter how we measure it?



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When we talk about quality, what do we mean?



# Quality:



See definitions in:

All Phonetics Music Astrology

#### noun

 the standard of something as measured against other things of a similar kind; the degree of excellence of something.



# In healthcare environmental hygiene, quality means:

- Good cleaning practices
- Lack of physical soil
- Satisfactory microbiological results (based on the area's needs)
- Safer hospitals, for patients and staff
- Making decisions with the environmental consequences/ burden in mind
- Less healthcare-associated infections



# 4 Questions:

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We know that the hospital environment tends to be full of microbes, some of which are dangerous







And we know a clean healthcare environment is important for preventing on healthcare-associated infections



## Why do we assess quality?



- The risk of infection for patients
- The risk of poor public image for the facility and health authorities
- A health and safety risk for the public and staff
- A risk of a service providing poor value for money



## Why do we assess quality?





# 4 Questions:

- What is quality in healthcare environmental hygiene?
- Why do we need to measure it?
- How can we measure it?
- Why does it matter how we measure it?



#### **CDC Environmental Checklist for Monitoring Terminal Cleaning<sup>1</sup>**

Date:	
Unit:	
Room Number:	
Initials of ES staff (optional): <sup>2</sup>	

#### Evaluate the following priority sites for each patient room:

High-touch Room Surfaces <sup>3</sup>	Cleaned	Not Cleaned	Not Present in Room
Bed rails / controls	52		
Tray table			
IV pole (grab area)			
Call box / button			
Telephone			2
Bedside table handle	52 52		
Chair			
Room sink			
Room light switch			
Room inner door knob			
Bathroom inner door knob / plate	2		5
Bathroom light switch			
Bathroom handrails by toilet			
Bathroom sink			
Toilet seat	25		
Toilet flush handle			
Toilet bedpan cleaner	30 		2



## Whatever the method is, do it!

Evaluate the following additional sites if these equipment are present in the room:						
High-touch Room Surfaces <sup>3</sup>	Cleaned	Not Cleaned	Not Present in Room			
IV pump control						
Multi-module monitor controls						
Multi-module monitor touch screen			9 5			
Multi-module monitor cables						
Ventilator control panel			8			
Ventilator control panel		5	4			

#### Mark the monitoring method used:

j.	Dir
Ű.	Sw

rect observation vab cultures Fluorescent gel ATP system

] Agar slide cultures

<sup>1</sup>Selection of detergents and disinfectants should be according to institutional policies and procedures <sup>2</sup>Hospitals may choose to include identifiers of individual environmental services staff for feedback purposes.

<sup>3</sup>Sites most frequently contaminated and touched by patients and/or healthcare workers

National Center for Emerging and Zoonotic Infectious Diseases

**Division of Healthcare Quality Promotion** 





#### Visual Inspection

- Specific guidelines are available for visual inspection of cleaned equipment, these can be adapted for hospital surfaces<sup>1</sup>
- Sometimes found to have comparable efficacy to other, more expensive ways to measure<sup>2</sup>
- Experienced managers can tell a lot from a visual inspection of surfaces and technique
- Allows for immediate, constructive feedback

<sup>1</sup>https://www.pda.org/pda-letter-portal/home/full-article/visual-inspection-practices-of-cleaned-equipment-part-l <sup>2</sup> Snyder et al. Antimicrobial Resistance and Infection Control 2013, 2:26 http://www.aricjournal.com/content/2/1/26



## The Pros & Cons of Visual Inspection

#### **Pros:**

- Instant result
- Can be used to identify mistakes in the cleaning process
- Can inspect multiple surfaces at once
- Inexpensive, uses existing labor force

Cons:

- Low tech, can be performed and repeated at will
- Unable to assess microbiological contamination or safety
- As it is subjective, it is sometimes considered the least reliable method<sup>1</sup>

<sup>1</sup> Ferreira et al. Assessment of disinfection of hospital surfaces using different monitoring methods. Rev Lat Am Enfermagem. 2015.



## **Open your eyes!**

#### **Visual Assessment of Cleanliness**

Visual assessment is only one of a number of methods available to assess the efficacy of cleaning. Visual assessment is most applicable to the monitoring of 'Hotel Clean' procedures. Evaluation of 'Hospital Clean' procedures should include other measures performed on a periodic basis, such as direct observation and environmental marking tools.

Quantification of Visual Assessment Techniques:	Example – 25 items inspected				
Record a site as clean if dust and debris are absent	Clean	= 20 items			
Record a site as dirty if any of these indicators are present	Dirty	= 5 items			
Calculate the cleaning rate as a percentage	Cleaning Rate	= 80% of items			

The pass rate for visually clean surfaces will vary with the type of activity taking place in the area. For Hospital Clean, visual assessment should have a cleaning rate of 100%. For Hotel Clean, 80% is acceptable.

Use the following descriptions of visual cleaning assessments applied to items to determine if cleaning is acceptable:

Best Practices for Environmental Cleaning for Infection Prevention & Control in All Health Care Settings (May 2012), pp. 141-146.

## **Open your eyes!**

Item	Standard of Cleanliness
Alcohol-based hand rub dispensers	<ul> <li>will be free of visible dust, soiling, stains, and residue</li> <li>product will be replaced when empty</li> <li>floor beneath dispenser will be free of product</li> </ul>
Assist rail	<ul> <li>will be free of visible dust, soiling, and stains</li> <li>loose and/or broken rails will be reported for repairs and/or replacement</li> </ul>
Baseboard	<ul> <li>will be free of visible dust, debris, and soiling</li> </ul>
Bed – air	<ul> <li>will be free of visible dust, soiling, stains, hair and strings from casters</li> <li>handles and controls will appear to be free of dust, soiling, and stains</li> <li>malfunctioning of electrical and/or mechanical, and deflated bladders will be reported for repair and/or replacement</li> </ul>
Bed – includes electrical, mechanical and stretcher	<ul> <li>will be free of visible dust, soiling, stains, hair and strings from casters</li> <li>handles and controls will appear to be free of dust, soiling, and stains</li> <li>malfunctioning of electrical and/or mechanical will be reported for repair and/or replacement</li> </ul>
Bedpan flusher / hopper	<ul> <li>will be free of visible dust, soiling, and stains. Leaks will be reported for repair</li> </ul>

Best Practices for Environmental Cleaning for Infection Prevention & Control in All Health Care Settings (May 2012), pp. 141-146.



#### Fluorescent Gel

clean hospitals



#### What You Need to Know About Candida Auris

C. auris is a mysterious and dangerous fungal infection that is among a growing number of germs that have evolved defenses against common medicines. Here are some basic facts about it.





#### By Matt Richtel





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## The Pros & Cons of Fluorescent Gel

#### **Pros:**

- Instant result
- Inexpensive
- Rooms can be prepared beforehand
- Can inspect multiple surfaces at once



#### Cons:

- Easy to remove with minimal wiping, even with no product used
- Low tech, can be performed and repeated at will
- Unable to assess microbiological contamination or safety
- May be perceived as punitive
- Easy to cheat (personnel may anticipate test sites, black light keychains are cheap)

## **Choose the bright light!**



Comparative evaluation of a novel fluorescent marker and environmental surface cultures to assess the efficacy of environmental cleaning practices at a tertiary care hospital

A. Dewangan, U. Gaikwad\*

All India Institute of Medical Sciences, Tatibandh, Raipur, Chhattisgarh, India



Journal of Hospital Infection 104 (2020) 261-268

## **Choose the bright light!**

A. Dewangan, U. Gaikwad / Journal of Hospital Infection 104 (2020) 261-268



Figure 1. Appearance of the fluorescent marker (FM) applied on a hard surface. (a) Appearance of FM after drying (the marker is barely visible to naked eye). (b) Appearance of dried FM under ultraviolet (UV) light when not removed. (c) Appearance of the hard surface under UV light when FM was removed with a moistened cloth (note the absence of fluorescence at the marked site).



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Sample no.	Surface	No. tested	o. tested Clean by both		Clean by both Dir		Dirt	Dirty by both		Clean by ACC; dirty by FM		Dirty by ACC; clean by FM	
			N	%	N	%	N	%	N	%			
1	Bed railings	21	12	57.14	2	9.52	0	0	7	33.33			
2	IV stand	23	11	47.83	3	13.04	9	39.13	0	0.00			
3	Switch	22	2	9.09	14	63.64	6	27.27	0	0.00			
4	Bedside locker	20	6	30.00	12	60.00	0	0.00	2	10.00			
5	Overbed table	19	8	42.11	5	26.32	0	0.00	6	31.58			
6	Nursing station surface	21	16	76.19	2	9.52	0	0.00	3	14.29			
7	Chair handle	17	9	52.94	6	35.29	1	5.88	1	5.88			
8	Keyboard	8	0	0.00	5	62.50	3	37.50	0	0.00			
9	Bed screen	8	1	12.50	6	75.00	1	12.50	0	0.00			
10	Tap handle	13	5	38.46	7	53.85	0	0.00	1	7.69			
11	Door handle	13	2	15.38	9	69.23	1	7.69	1	7.69			
12	Almirah handle	2	1	50.00	0	0.00	1	50.00	0	0.00			
13	Bed handle	8	0	0.00	6	75.00	2	25.00	0	0.00			
14	Monitor	11	8	72.73	2	18.18	1	9.09	0	0.00			
15	Nursing trolley	17	9	52.94	5	29.41	2	11.76	1	5.88			
16	Mayo trolley	4	3	75.00	0	0.00	1	25	0	0			
17	Telephone receiver	2	1	50.00	1	50.00	0	0	0	0			
18	OT table	4	4	100.0	0	0.00	0	0	0	0			
19	OT light	3	3	100.0	0	0.00	0	0	0	0			
20	Anesthesia machine	4	3	75.00	0	0.00	1	25	0	0			
21	Hand rest	3	3	100.0	0	0.00	0	0	0	0			
22	Electrical switch boards in OT	4	4	100.0	0	0.00	0	0	0	0			
23	Coarse adjustment of the operating microscope	1	1	100.0	0	0.00	0	0	0	0			
24	Fine adjustment of the operating microscope	1	1	100.0	0	0.00	0	0	0	0			
25	Weighing machine in the NICU	1	0	0.00	1	100.0	0	0	0	0			
	Total	250	113	45.20	86	34.40	29	11.6	22	8.8			

Table II Sample-wise comparison of the cleanliness efficacy by the aerobic colony count (ACC) and fluorescent marker (FM) methods

NICU, neonatal intensive care unit.

Journal of Hospital Infection 104 (2020) 261-268



#### ATP Test:

#### ATP = Adenosine triphosphate

- An organic compound that helps drive many of the processes in living cells
- Precursor to DNA and RNA
- Only found in / around living cells

#### **ATP Test**

- Can me used to measure organic residue
- Uses Luciferase- an enzyme from fireflies
- Degrades the ATP when it comes in contact with it
- This emits light
- The test device measures this light







## ATP tests are used for many applications

1st generation of tests were to find contamination on a clean surface this is how we use them in Healthcare environmental hygiene

2<sup>nd</sup> generation of tests can find evidence of living cells in contaminated samples and have applications for:

- biological treatment reactors
- biocide dosing
- Determine water cleanliness
- Assessing soil activity
- And more

https://en.wikipedia.org/wiki/ATP\_test



## The Pros & Cons of ATP

#### Pros:

- 2-minute result
- Can be used to identify mistakes in the cleaning process
- Not punitive (can ask HEH personnel to clean surface before testing)

#### Cons:

- Expensive
- Can only test one surface at a time
- Doesn't necessarily mean a surface is unsafe



#### **Microbiological Sampling**



Environmental sampling: surfaces

6 913 vues · 29 déc. 2016

https://www.youtube.com/watch?v=QRs3z2mCfg8&t=97s



### The Pros & Cons of Microbiological Sampling

#### **Pros:**

- Able to assess microbiological contamination or safety
- Precise identification of microorganisms
- Can inform specific cleaning or disinfection procedures



#### Cons:

- Results take a long time
- Cost is high
- Need available staff and equipment
- Can only analyze one surface at a time
- Possibility for failure in the sampling



## For those who like to see the beast!



Review

#### How to carry out microbiological sampling of healthcare environment surfaces? A review of current evidence

S. Rawlinson<sup>a</sup>, L. Ciric<sup>a</sup>, E. Cloutman-Green<sup>a, b, \*</sup>

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> ean nospitals

#### For those who like to see the beast!



Figure 2. Devices most commonly used for the collection of microbiological samples from surfaces in the publications included in this review: (a) contact plate, 24%; (b) dipslide, 6%; (c) petrifilm, 3%; (d) swab, 53%; (e) sponge, 9%; and (f) wipe/gauze, 5%.

Journal of Hospital Infection 103 (2019) 363-374



#### Efficiency of cleaning and disinfection of surfaces: correlation between assessment methods

Eficiência da limpeza e desinfecção de superfícies: correlação entre métodos de avaliação Eficiencia de la limpieza y desinfección de superficies: correlación entre métodos de evaluación

Oleci Pereira Frota<sup>1</sup>, Adriano Menis Ferreira<sup>1</sup>, Odanir Garcia Guerra<sup>11</sup>, Marcelo Alessandro Rigotti<sup>11</sup>, Denise de Andrade<sup>111</sup>, Najla Moreira Amaral Borges<sup>11</sup>, Margarete Teresa Gottardo de Almeida<sup>1</sup>

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Rev Bras Enferm [Internet]. 2017;70(6):1176-83. DOI: http://dx.doi.org/10.1590/0034-7167-2016-0608



 Table 2 –
 Characteristics of non-microbiological methods, according to the comparison with a microbiological culture for the definition of a clean or dirty surface

Mathad	Characteristics of the test to define a surface as dirty (%)						
Method	Sensitivity	Specificity	PPV <sup>+</sup>	NPV <sup>‡</sup>	Accuracy		
Visual inspection	83.1	64.4	52.5	89	70.4		
ATP*(< 5 RLU/cm2)	78	42.9	39.2	80.5	54.1		
ATP*(< 8 RLU/cm2)	62.3	61.4	43.2	77.5	61.7		

Notes: \*ATP-bioluminescence; +positive predictive value; +negative predictive value.

Rev Bras Enferm [Internet]. 2017;70(6):1176-83. DOI: http://dx.doi.org/10.1590/0034-7167-2016-0608



Snyder et al. Antimicrobial Resistance and Infection Control 2013, 2:26 http://www.aricjournal.com/content/2/1/26



#### RESEARCH

**Open Access** 

#### Effectiveness of visual inspection compared with non-microbiologic methods to determine the thoroughness of post-discharge cleaning

Graham M Snyder<sup>1,2\*</sup>, Aleah D Holyoak<sup>2</sup>, Katharine E Leary<sup>2</sup>, Bernadette F Sullivan<sup>2</sup>, Roger B Davis<sup>3</sup> and Sharon B Wright<sup>1,2</sup>



Table 3 Test characteristics for three methods of determining effectiveness of post-discharge cleaning as tested against a microbiologic comparator

Test	Test characteristics to determine clean (95% CI)							
	TDC score	Sensitivity	Specificity	Positive predictive value	Negative predictive value			
ACC ≤ 5 CFU	72.1%	RT IS	<del>87 -</del> 8		17-72			
Fluorescent ma <mark>r</mark> ker	49.3%	51.2% (44.2-58.2)	55.6% (44.1-66.6)	74.8%	30.6%			
Visual inspection	56.9%	60.3% (53.3-67.0)	51.9% (40.5-63.1)	76.4%	33.6%			
ATP (RLU < 250)	66.2%	70.3% (63.6-76.4)	44.4% (33.4-55.9)	76.6%	36.7%			

Note. CI, confidence interval; ACC, aerobic colony count; CFU, colony-forming units; TDC, thoroughness of disinfection cleaning; ATP, adenosine triphosphate; RLU, relative light units.

Snyder et al. Antimicrobial Resistance and Infection Control 2013, 2:26 http://www.aricjournal.com/content/2/1/26



**CSIRO** PUBLISHING

Healthcare Infection, 2014, 19, 101-107 http://dx.doi.org/10.1071/HI14010

#### Evaluation of the relationship between ATP bioluminescence assay and the presence of organisms associated with healthcare-associated infections

Shawn G. Gibbs<sup>1,6</sup> PHD, MBA, CIH Harlan Sayles<sup>2</sup> MS, BS Oleg Chaika<sup>1</sup> PHD, MS

Angela Hewlett<sup>3</sup> MD, MS, BA

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Fig. 3. Log-adjusted relative light units (RLU) from ATP bioluminescence assay v. log-adjusted colony-forming units (CFU) from culture-based methods for Escherichia coli across all 17 surfaces and three concentrations (n=51).

Fig. 6. Log-adjusted relative light units (RLU) from ATP bioluminescence assay v. log-adjusted colony-forming units (CFU) from culture-based methods for Staphylococcus aureus across all 17 surfaces and three concentrations (n=51).

Fig. 2. Log-adjusted relative light units (RLU) from ATP bioluminescence assay v. log-adjusted colony-forming units (CFU) from culture-based methods for Candida albicans cells across all 17 surfaces and three concentrations (n=51).

5

Log (CFU)

6

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Healthcare Infection, 2014, 19, 101-107 http://dx.doi.org/10.1071/HI14010



Regression

## A monitoring tool!

Infection Control & Hospital Epidemiology (2019), 40, 798–800 doi:10.1017/ice.2019.115



#### **Concise Communication**

## Implementation of cleaning and evaluation process for mobile patient equipment using adenosine triphosphate

Sara M. Reese PhD, MPH, CIC, FAPIC<sup>1</sup>, Bryan C. Knepper MPH, MSc, CIC<sup>2</sup>, Jennifer Kurtz RN, MS, BSN<sup>2</sup>, D. Christy LeQuire RN, BSN<sup>3</sup>, Tina Van Winks RN, MSN, CMSRN<sup>3</sup>, Jennifer Bonn RN, MSN-Ed<sup>3</sup> and Heather L. Young MD<sup>4</sup> <sup>1</sup>Department of Quality Management, Swedish Medical Center, Englewood, Colorado, <sup>2</sup>Department of Patient Safety and Quality, Denver Health Medical Center, Denver, Colorado, <sup>3</sup>Department of Nursing, Denver Health Medical Center, Denver, Colorado and <sup>4</sup>Department of Medicine, Denver Health Medical Center and University of Colorado School of Medicine, Denver, Colorado



#### A monitoring tool!



Infection Control & Hospital Epidemiology (2019), 40, 798-800

doi:10.1017/ice.2019.115



# 4 Questions:

- What is quality in healthcare environmental hygiene?
- Why do we need to measure it?
- How can we measure it?

Why does it matter how we measure it?



# The most important question hospitals need to ask:

WHAT exactly do we want to test?

# **Question:** Do we want to measure cleaning, disinfection, or behavior?





#### **Visual Inspection**

• Is testing *behavior*- (did someone wipe this surface?)

#### **Fluorescent gel**

- Is testing *behavior* (did someone wipe well enough to remove gel?)
- Can also affect HEH personnel behavior and perception

#### ATP

• Is measuring *cleaning* 

#### **Microbiological Sampling**

• Is testing disinfection



## Scoring

Pass/fail (Visual inspection and fluorescent gel)

F

- Scoring level of biological contamination (ATP)
- Scoring the type of microbial contamination (Microbiological)

## MEASURING QUALITY

Quality measurement is not useful if measured in a vacuum!



**CSIRO** PUBLISHING

Healthcare Infection, 2011, 16, 156-163 http://dx.doi.org/10.1071/HI11024

#### An assessment of high touch object cleaning thoroughness using a fluorescent marker in two Australian hospitals

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<sup>5</sup>Corresponding author. Email: Cathryn\_Murphy@health.gld.gov.au



## **Assessing is not improving!**

	Objects cleaned	Objects not cleaned	Total no. of objects marked	% cleaned
Phase 1 – 17/1/11–21/1/11	169	326	495	34.1%
Hospital A	67	162	229	29.3%
Hospital B	102	164	266	38.3%
Phase 2 – 14/3/11–16/3/11	131	114	245	53.5%
Hospital A	52	62	114	45.6%
Hospital B	79	52	131	60.3%
Phase 3 – 9/5/11–11/5/11	101	145	246	41.1%
Hospital A	24	90	114	21.1%
Hospital B	77	55	132	58.3%
Overall	401	585	986	40.7%

Table 1. Overall and hospital specific aggregate proportion of cleaned HTOs by phase



#### Importance of the system:

- None of these ways of measuring quality are enough to improve quality by themselves
- Need to be integrated into a comprehensive system of improvement
- Education, support, good products and tools, management, and work culture are all crucial



## **Be multimodal!**

Infection Control & Hospital Epidemiology (2019), **40**, 1024–1029 doi:10.1017/ice.2019.183



#### **Original Article**

# Sustained improvement in hospital cleaning associated with a novel education and culture change program for environmental services workers

Elena K. Martin MPH<sup>1</sup>, Elizabeth L. Salsgiver MPH<sup>1</sup>, Daniel A. Bernstein BA<sup>1</sup>, Matthew S. Simon MD, MS<sup>1,2</sup>, William G. Greendyke MD<sup>2,3</sup>, James M. Gramstad MBA<sup>2</sup>, Roydell Weeks BA<sup>2</sup>, Timothy Woodward BS<sup>2</sup>, Haomiao Jia PhD<sup>3</sup>, Lisa Saiman MD MPH<sup>2,3</sup>, E. Yoko Furuya MD, MS<sup>2,3</sup> and David P. Calfee MD, MS<sup>1,2</sup> <sup>1</sup>Weill Cornell Medicine, New York, New York, <sup>2</sup>NewYork-Presbyterian Hospital, New York, New York and <sup>3</sup>Columbia University Irving Medical Center, New York, New York



#### **Be multimodal!**



Fig. 1. Assessment of the thoroughness of high-touch surface cleaning in occupied patient rooms before, immediately after, and 1 year after an educational program for environmental service workers. The 3M CleanTrace hygiene management system was used to sample and test surfaces before and immediately after daily, occupied patient room cleaning. A standardized sampling protocol was used. A surface was determined to have "passed" the cleanliness test if the relative light unit (RLU) value was <250.

Infection Control & Hospital Epidemiology (2019), 40, 1024–1029 doi:10.1017/ice.2019.183



## **Be multimodal!**

Understanding Barriers to Optimal Cleaning and Disinfection in Hospitals: A Knowledge, Attitudes, and Practices Survey of Environmental Services Workers

Daniel A. Bernstein, BA;<sup>1</sup> Elizabeth Salsgiver, MPH;<sup>1</sup> Matthew S. Simon, MD, MS;<sup>1,2</sup> William Greendyke, MD;<sup>3</sup> Daniel P. Eiras, MD, MPH;<sup>1,4</sup> Masahiro Ito, ASQ-CSSBB, CMQ/OE, CHA;<sup>2</sup> Dean A. Caruso, MBA;<sup>2</sup> Timothy M. Woodward, BS;<sup>2</sup> Odette T. Perriel, MS;<sup>2,5</sup> Lisa Saiman, MD, MPH;<sup>2,3</sup> E. Yoko Furuya, MD, MS;<sup>2,3</sup> David P. Calfee, MD, MS<sup>1,2</sup>

In this study, we used an online survey to assess knowledge, attitudes, and practices related to environmental cleaning and other infection prevention strategies among environmental services workers (ESWs) at 5 hospitals. Our findings suggest that ESWs could benefit from additional education and feedback as well as new strategies to address workflow challenges.

Infect Control Hosp Epidemiol 2016;37:1492-1495

Survey Category and Question

Knowledge and feedback related to appropriate cleaning practices I have been taught to do daily cleaning properly I have been taught to do discharge cleaning properly I clean surfaces around the patient bed during daily cleaning I clean surfaces around the patient bed during discharge cleaning I receive useful feedback about my work I know when the UV light disinfection device should be used in a patient room Workflow challenges I have time to perform daily cleaning I have time to perform discharge cleaning I know the isolation type when I enter a room for discharge cleaning I can easily find out the isolation type if no isolation sign is posted It is clear what ESW are responsible for cleaning I am interrupted during cleaning to perform another task I avoid cleaning near patients to avoid disturbing them The over bed table is too cluttered to clean Beliefs about personal safety I worry that my cleaning products may be harmful to me I worry I may get sick from patients while cleaning Attitudes about contributions of ESW to patient safety My work is very important to keep patients safe Doctors show appreciation for my work Nurses show appreciation for my work NOTE. ESW, environmental services workers.

clean hospitals

## Be open to patient experience!

• Complains, quotes, quality indicators...

"It's not very clean in here for being a hospital ... how can you get good, safe health when the insides of the rooms look like hell." (P6)

> New et al. BMC Health Services Research (2019) 19:199 https://doi.org/10.1186/s12913-019-4014-4



# In conclusion:

- Choose your method and your standard, and stick to it
- First learn then teach,
- Be fair and transparent,
- Don't take the tool for the purpose,
- Define an improvement strategy,
- Whatever your means are, there is a room for improvement!



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## **Future:**





