

Update on CSA Cleaning and Disinfection Standard Z317.12



CSA Z317.12 Cleaning and disinfection of health care facilities



How are these rooms cleaned and disinfected consistently and properly ???

IT'S NOT EASY !!

Process

- Funding by Teck Resources Ltd. – Canada’s largest mining company. They just want to do good and make patients healthier. Plus some additional funds for Webinars and Town Hall sessions.
- Thanks to CEO Don Lindsay and Alannah Cervenko, Manager, Strategic Partnerships
- Disclosure: No member of the CSA Z317.13 has any conflict of interest with Teck Resources Ltd.
- Timeframe is 15 months – On Schedule!!
- Membership is lean to move quickly: 24 S.M.E.

CSA C&D Members

- **Dr. Elizabeth Bryce, Microbiologist, Vancouver Coastal Health**
- **Dr. Michelle Alpha, Microbiologist, University of Manitoba**
- **Dr. Christine Greene, Applied Research Center, USA**
- **Ramona Rodrigues, McGill University Health Centre**
- **Julie Hoeflaak, Ontario Healthcare Housekeepers Association**
- **Keith Sophia, CAEM, Founder CleanLearning**
- **Barley Chironda, Clorox Canada**
- **Jim Gauthier, Diversey**
- **Theresa Malloy-Miller, Patients for Patients Canada**
- **Marc Beauchemin, Quebec Ministry of Health & Social Services**
- **Roberta Lee, Ontario Ministry of Health and LTC**



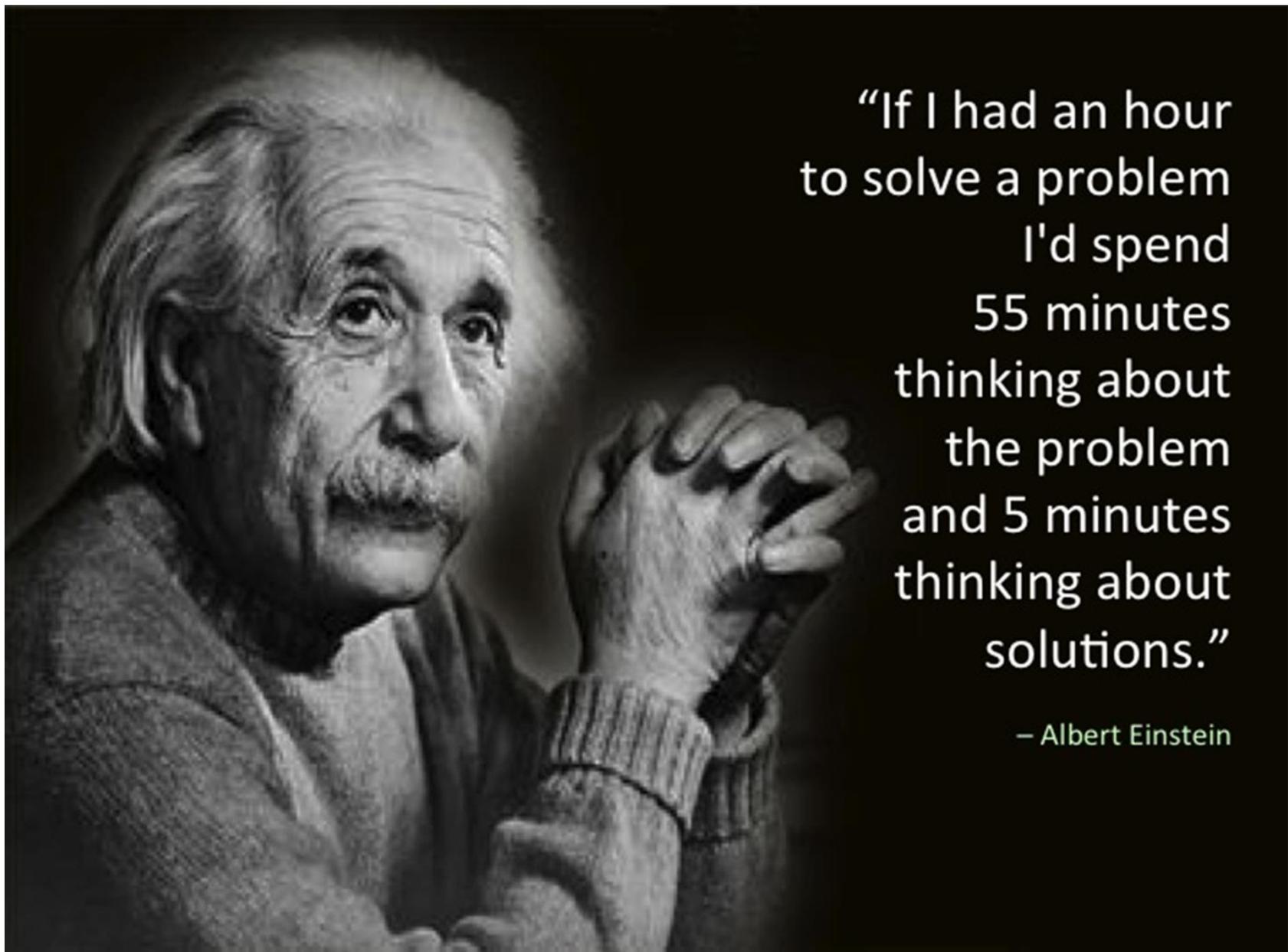
CSA C&D Members

- **Barry Hunt, PrescientX**
- **Heather Candon, Mackenzie Health, ON**
- **Melanie Henderson, The Ottawa Hospital**
- **Renee Freak, Alberta Health Services**
- **Roger Hollis, St. Mary's Hospital, Kitchener, ON**
- **Mark Heller, Hygiene Performance Solutions**
- **Kent Waddington, Canadian Coalition Green Healthcare**
- **Jennifer Boswell, CADTH**
- **Natalie Bruce, The Ottawa Hospital**
- **Jim McArthur, Albright Manor, Beamsville, ON**
- **Alan Pinkerton, Radio8 Canada**
- **Cathryn Cortissoz, CSA**



Presentation Focus

- Based on best practices of the many provincial & territorial, health authority, and healthcare facility guidelines in Canada and internationally based on clinical and scientific evidence
- National document with consistency of information
- Awareness and feedback of this standard development is essential for its success in the future



“If I had an hour
to solve a problem
I'd spend
55 minutes
thinking about
the problem
and 5 minutes
thinking about
solutions.”

– Albert Einstein

Canadian Healthcare Facilities

- Many, many are old buildings with old infrastructure
- Majority of inpatients are very ill and immune suppressed
- ES have limited budgets/frequencies
- Audits of ES cleaning indicated <50% effective
- Chemicals: majority of cleaning processes (environmental impact)
- Technology and innovations are slow to be adopted
- Patient expectations – buildings are safe havens
- There is no national cleaning & disinfection standard
- Infections Cost Canada +\$3 Billion per year, +200,000 HAI's/yr
- Cause of HAI is multifactorial, the environment has a contribution
- Several outbreaks linked to reservoirs in the environment

More Challenges

- Emerging pathogens:
 - *Multi-drug resistant organisms*
 - **ESKAPE**
 - *Enterococcus faecium*
 - *Staphylococcus aureus*
 - *Klebsiella pneumonia*
 - *Acinetobacter baumannii*
 - *Pseudomonas aeruginosa*
 - *Enterobacter spp.*
 - *Carbapenemase producing organisms (CPO) + CPE*
 - ***Candida auris***
 - **MRSA**
 - **VRE**
 - ***C Diff (new name ->Clostridioides difficile***



Antibiotics

“Without urgent action, we are heading for a post-antibiotic era, in which common infections and minor injuries can once again kill.”



[Infect Control Hosp Epidemiol](#). Author manuscript; available in PMC 2018 May

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4.

NIHMSID: NIHMS964067

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[Infect Control Hosp Epidemiol](#). 2018 May; 39(5): 541–546.

Published online 2018 Feb 28. doi: [10.1017/ice.2018.22](#)

Association Between Healthcare-Associated Infection and Exposure to Hospital Roommates and Previous Bed Occupants with the Same Organism

[Bevin Cohen](#), PhD, MS, MPH, RN,^{1,2} [Jianfang Liu](#), PhD, MAS,¹ [Adam Ross Cohen](#), BS,³ and [Elaine Larson](#), RN, PhD, FAAN^{1,2}

- **10,289 HAI's**
- **Odds of cases having been exposed to a prior bed occupant with the same organism were 5.83 times that of the control**
- **Odds of cases having been exposed to a roommate with the same organism were 4.82 times that of control**

 Terminal cleaning ???


CSA Z8000-18 Single Bed Rooms



ELSEVIER



Review

'Off the rails': hospital bed rail design, contamination, and the evaluation of their microbial ecology

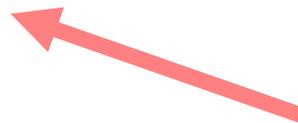
M.A. Boyle ^{a,*,†}, A. Kearney ^{a,†}, P.C. Carling ^b, H. Humphreys ^{a,c}

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- The complexity of bed rail design, composition, and surface finish has evolved
- Varies between institutions and residences
- Impact of different design elements on microbial contamination and their role in pathogen transmission is important



Copper alloys !!!

How Clean Are the Clinics? Assessment of Environmental Cleanliness in Ambulatory Care

Mark E Rupp, MD,¹ Courtney Olson, BS,² R Jennifer Cavalieri, RN,³ Elizabeth Lyden, MS,⁴ and Philip Carling, MD⁵

- **A total of 14,288 environmental surfaces (8 clinics)**
 - examination rooms 31% to 74%
 - common clinic areas 29% to 77%
 - waiting rooms 0% to 22%



Journal of Hospital Infection
Volume 68, Issue 1, January 2008, Pages 39–44



Intensive care unit environmental cleaning: an evaluation in sixteen hospitals using a novel assessment tool

P.C. Carling ^a✉, S. Von Behren ^b, P. Kim ^c, C. Woods ^c

- **Philip Carling: 47% of surfaces in patient rooms where still contaminated even after terminal cleaning**

The environment plays an important role in the transmission of potential pathogens

CSA Standard Writing 101

“**Shall**” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard;

“**Should**” is used to express a recommendation or that which is advised but not required;

“**May**” is used to express an option or that which is permissible within the limits of the standard;

“**Can**” is used to express possibility or capability.

“**Notes**” do not include requirements or recommendation but provide additional informative material

“**Authority Having Jurisdiction (AHJ)**” A federal or provincial regulatory body or a healthcare facility or a health authority responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure for a health care facility.

Disclaimer of Content

The following slides that have wording from the draft standard are subject change during the public review and/or the final editing process

Clause 3 – Definitions

Cleaning – The physical removal of foreign material (e.g., dust, soil) and organic material (e.g., blood, secretions, excretions, microorganisms).

Disinfection – The inactivation of disease-producing microorganisms



4. Quality Management System

4.1 The HCF shall establish a cleaning and disinfection quality management system with leadership from a MDT

4.2.1EVS shall establish, document, implement, and maintain a QMS that addresses cleaning and disinfection, including policies and SOPs

4.3.1 As part of a QMS, EVS in collaboration with IPAC shall identify key performance indicators (KPIs) it will use to assess, evaluate, and document the quality of its processes. Trends shall be monitored.

4.9 Microbial culture sampling audits may be considered for the high-risk types of microorganisms in Class A-1 or A-2 HCF in critical care areas where there is a higher risk or rate of transmission (e.g. operating room, intensive care, bone marrow transplant units). See Annex P.

Also Annex Q on ATP

Auditing Environmental Surfaces Utilization

1. Visual inspection (cleaning) – 95%
2. Glow germ & UV (cleaning) – 60%
3. ATP (cleaning/disinfection) – 35%
4. Microbial cultures (disinfection) – 5%



**Breaking
News**



**IPAC Environmental
Health Interest Group
working on procedures for
auditing with Glow Germ,
ATP and Culture Testing**

Thanks to Gerry Hansen – Executive Director IPAC Canada

5. Air, water and surfaces coordination

CSA health care facility standards all have to work together:

- **Bacteria circulated by HVAC lands on surfaces**
- **Toilet flushing aerosolizes fecal material in a cloud that lands on surfaces**
- **Maintenance activities may create “dust” that lands on surfaces**
- **Plume systems in an improperly maintained OR allows microorganisms to land on surfaces**
- **ES and others responsible for cleaning and disinfecting surfaces**

5. Air, water and surfaces coordination

5.2.1 Personal Electronic Communication Devices PECDs shall be able to be cleaned and disinfected. Before selection and purchase of electronic devices, MIFUs shall be reviewed to ensure that guidelines for use, cleaning, disinfection and maintenance meet the standards for cleaning and low-level disinfection of all pathogens of epidemiological significance

5.2.4. Cleaning and Disinfection If used or touched at, or near the point-of-care during an encounter with a patient, all electronic device's touch surfaces shall be cleaned and disinfected with a LLD in accordance with the MIFUs and performed whenever used between patients.



6. Patient Engagement

To increase commitment and engagement of all stakeholders, including patients and families, and to improve cleaning and disinfection processes, HCFs shall

- a) include patient/ family advisors as equal members of the IPAC MDT and quality and patient safety committees applicable to cleaning and disinfection;
- b) involve patients/family advisors in the selection process of cleaning agents, surfaces and equipment and disinfection technology;
- c) devise manageable, realistic auditing process that includes patients and families as well as respects and motivates front-line HCW;
- d) at the point of care, empower patients and families to speak up about environmental/equipment cleaning and disinfection processes;



7. Equipment Procurement

When purchasing a new piece of equipment the HCF should consider

- a) cleaning and disinfection of the equipment;
- b) impact on infection prevention and control;
- c) functional need for the equipment;
- d) previous equipment maintenance history;
- e) health and safety, and
- f) the adequacy of MIFUs re: cleaning and disinfection.



8. Approach to Cleaning and Disinfection

8.1.3.1. Cleaning and disinfection of items in the patient care area that have been identified by the MDT risk assessment shall be performed daily, between patients, and as indicated by the MDT.

8.1.3.2 Frequency of cleaning and disinfection shall be increased under the direction of the MDT. Examples include but are not limited to

a) patients at greater risk for contaminating the environment (e.g., diarrhea, patient on contact precautions or droplet precautions); and

b) during outbreaks based in consultation with the outbreak management team.



8. Approach to Cleaning and Disinfection

8.3.2 Hand Hygiene

Reference to standards and guidelines by others:
IPAC Canada, WHO and Health Canada
or document by the ‘authority having jurisdiction’

Hawthorne Effect ???



8. Approach to Cleaning and Disinfection

8.3.2 Gloves shall be used, when indicated, as an additional measure to reduce the risk of hand contamination with microorganisms and chemicals. The following shall also apply:

- a) ES personnel shall not walk from patient environment to patient environment and between patient and health care environments wearing gloves.**
- b) ES personnel shall wear a new set of disposable gloves when entering a patient environment and discard the gloves immediately when exiting the patient environment.**
- c) Hand hygiene shall be performed immediately before putting on gloves and immediately after gloves are removed.**
- d) Disposable gloves shall not be washed and re-used.**
- e) ABHR shall not be applied to gloves for re-use.**
- f) Gloves shall not be worn when moving clean equipment (e.g. housekeeping carts) and supplies (e.g. clean linen) and when performing clean processes.**
- e) Puncture-resistant gloves shall be used if the task has a high risk for percutaneous injury (e.g., sorting linen, handling waste)**
- f) Gloves shall be removed and hand hygiene performed upon leaving each patient room or bed space.**

9. Technologies

- 9.1.1 HCFs should consider the use of automated technologies (see Annex D) to increase compliance, consistency, efficiency, and frequency of cleaning and disinfection.
- Notes:
- *Automated technologies can*
 - *reduce variability of cleaning efficacy;*
 - *increase the level of disinfection of HVAC supplied air;*
 - *increase the level of cleaning and disinfection of surfaces;*
 - *increase number of surfaces cleaning and disinfected;*
 - *increase frequency of cleaning and disinfection;*
 - *protect against recontamination between episodic cleaning and / or disinfection;*
 - *provide redundancy in cleaning and disinfection.*

See also CSA EXP06

9.1.2 The IPAC MDT shall appoint an IPAC Technology Leader who is well-informed on the available cleaning and disinfection technologies and shall provide regular input to the cleaning and disinfection MDT

9. Technologies

9.2 Chemical disinfectant vapour or mist systems

9.3 Ultraviolet light (UVC)

9.4 Visible light disinfection

9.5 Air disinfection using ultraviolet germicidal irradiation (UVGI)

9.6 Self-sanitizing surfaces (i.e. copper alloys) Annex O

9.7 Photocatalytic disinfection

9.8 Other technologies

9.9 No touch fixtures



10. Education, training and monitoring

10.2.2.1 The HCF shall have documented policies and SOPs for personnel qualifications, occupational health and safety, education, training, experience, and competency assessment for each employee position. These policies shall indicate how often each educational, training, and competency assessment process shall occur. All personnel involved in environmental cleaning and disinfection shall be prepared for the function they perform through appropriate education and training. Education and training should follow a standardized curriculum and have a mechanism for assessing proficiency. **Proficiency shall be assessed during the training process**



11. Specialized Areas

11.1.6 Cleaning carts shall have the following format:

- a) a separation between clean and soiled items;
- b) a closed section to store hygienic paper (e.g. toilet paper, paper towels) separate from products;
- c) not contain personal belongings, clothing or grooming supplies, food or beverages;
- d) thoroughly cleaned and disinfected at the end of the day;
- e) equipped with a locked compartment for storage of hazardous substances and each cart shall be locked at all times when not attended, and stored, when not in use, within a locked EVS storage closet;
- f) separate disposables and chemicals to avoid the risk of contamination;
- g) documented expiration dates of chemicals used; and
- h) not to be left unattended when not in use and be placed back in their EVS closet when the shift has been completed.

11.0 Specialized Areas

11.2.3.4 Cleaning and disinfecting of NICU equipment shall be done in a separate room that has a soiled and clean area that supports one-way workflow. Cleaning and disinfection shall follow the MIFUs. All equipment shall be inspected for defects, scratches and clouding or streaking. A clean storage area for clean NICU equipment shall be provided. Personnel responsible for cleaning and disinfection shall document date, time and name of personnel who completed the clean.



11. Specialized Areas

11.2.4 Emergency room/urgent care patient and public bathrooms shall be cleaned and disinfected

a) every four hours or more frequently based on need; and

b) disinfected with a hospital grade Health Canada licensed and approved disinfectants

11.2.5 Play areas

Areas that have toys shall have policies and SOPs for daily cleaning and disinfection of the toys and addressing recalls and damages.

Note: See PIDAC annex #13.



Reference only, not included in standard

12. Care and Storage of Supplies

12.2.2 Equipment used to clean and disinfect toilets (e.g., toilet brushes, toilet swabs) shall not be carried from room-to-room. The toilet brush should remain in the patient's bathroom for the duration of the patient's stay; if not feasible, then disposable toilet swabs shall be used. Toilet cleaning and disinfecting tools should be discarded when the patient/resident leaves or sooner if required. In multi-bed rooms, a system should be developed for replacement of toilet brushes on a regular basis or as required. When choosing a tool for cleaning toilets, consideration should be given to tools that will minimize splashing



13. Health and safety

13.1.2 To minimize the risk of infections, patients and families shall be provided with information that is visible, readily accessible, and contains language about the possible manner in which they might contact infectious microorganisms. This shall include

- a) basic infection prevention and control education and training;
- b) transmission routes of bacteria and viruses;
- c) hand hygiene washing requirements for all; and
- d) information about immunizations.



14. Pest Control

14.1 Integrated pest management system (IPM)

The IPAC MDT shall develop and document an effective integrated pest management system (IPM).

14.2.3.2 Pest control contracts shall only be awarded to contract services that are licenced, insured and follow environmental regulations and guidelines. This includes applying poison, insecticides, pesticides and devices that exterminate pests.



15. Sinks and drains

15.2.1 Hand hygiene sinks, and other sinks in the health care environment, including showers, are surfaces that shall be cleaned and disinfected daily.

- **Note:** *If hand hygiene sinks become contaminated, decontamination of the sink can be difficult, likely due to the presence of biofilm in the tail piece and p trap.*

15.2.5

Hand hygiene sinks located in patient, staff, or public washrooms shall not be used for disposing of liquid waste (e.g. body fluids, partially used IV solutions).

15.5 Drainage systems

- **Drain system surveillance shall include directives for**
- **where and when to culture the drain to detect contamination with CRO or pseudomonas (e.g. the drain sample is collected by swabbing the drain area);**
- **testing sink drains for CRO or pseudomonas at the time of patient discharge/transfer;**
- **room quarantine until drain culture results are available; and**
- **OHS training for all personnel who deal with sink drains specifically (e.g. ES, maintenance).**

16. Waste

16.5.1.1 Management of feces in the patient room/space

16.5.1.2 Minimizing transportation and risk of spilling feces

- 16.5.2.5 Human waste disposal systems

16.5.2.5 Human Waste disposal systems

The IPAC MDT shall assess the features to assist in choosing and validating the most appropriate human waste system for the HCF or patient area. These include macerator, washer-disinfector and bag-type bedpan liner.

Note: See Appendix K



Moving Canada Forward

- Canada needs a National Cleaning & Disinfection Standard.
- Patients are counting on us to save their lives.

Good, Better, Best

We Shall Never Rest,

Until the Good Becomes Better,

And the Better Becomes Best



CSA Cleaning and Disinfection in Health Care Facilities Z317.12



Early 2020

Questions ??



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