

## ADVERTÊNCIA

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Agradecemos a Dra. Kazuko por sua generosidade em compartilhar.

Liliana Junqueira de P. Donatelli

## PARTE 1/4

## CIOSP 2014

### Limpeza dos Instrumentos e a sua monitorização: o alicerce no processamento de artigos



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## Introdução

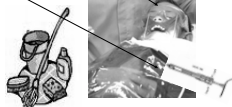


### • Infecção relacionada a procedimentos assistenciais na saúde: multicausal

- Relacionado ao Paciente
- ↓
- Relacionado à Equipe de Saúde
- ↓
- Relacionado ao Material
- ↓
- Relacionado ao Ambiente



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## RELACIONADO AO MATERIAL: SEGURANÇA MÁXIMA

- LIMPAR E ESTERILIZAR !!!!!



- MAS..... NÃO SENDO POSSÍVEL.....

Quantidade restrita x R\$

Alta rotatividade

termossensível

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## Classificação dos materiais

(Spaulding, 1968)

- **CRÍTICO** → Limpeza + Esterilização (tecido não colonizado - estéril)



- **SEMI-CRÍTICO** → Limpeza + Desinfecção (tecido colonizado)

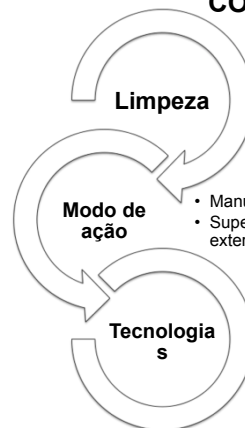


- **NÃO CRÍTICO** → Limpeza (pele íntegra ou contato indireto)



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## CONCEITOS CHAVES



- Remoção de sujidades orgânicas e inorgânicas, redução da carga microbiana.
- Conservação

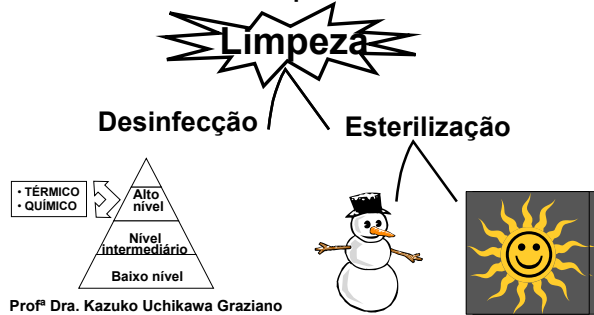
- Manual ou automatizada
- Superfícies internas e externas

- Artefatos: escovas.
- Soluções: Detergentes.
- Equipamentos: lavadoras.

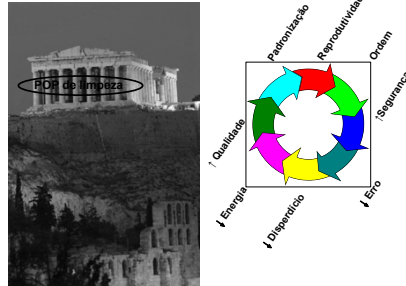
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## Infecção relacionada ao Material

- Passos básicos do reprocessamento:



- Por que a limpeza no contexto do processamento dos materiais é importante?
- Quais as implicações práticas?
- Por que um POP de limpeza é importante?



**Crença do passado:**  
**“Todo material que passa pelo processo de esterilização, torna-se esterilizado”**  
**NÃO!**  
**Não basta o material ter sido submetido a um ciclo de esterilização se não estiver limpo**  
**Proteína e sal podem proteger os microrganismos**  
**Biofouling ≠ Biofilmes idem!**

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## Evidências ?



## EVIDÊNCIA 1

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CHICAGO JOURNALS



SHEA  
The Society for Healthcare Epidemiology of America

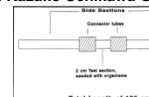
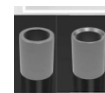
ETO 12/88  
 ETO 100% (2 fabricantes)  
 Ion Plasma de ácido peracético  
 Ion Plasma de peróxido de Hidrogênio  
 Gás de peróxido de Hidrogênio

Comparison of Ion Plasma, Vaporized Hydrogen Peroxide, and 100% Ethylene Oxide Sterilizers to the 12/88 Ethylene Oxide Gas Sterilizer  
 Author(s): M. J. Alfa, P. DeGagne, N. Olson and T. Puchalski  
 Source: *Infection Control and Hospital Epidemiology*, Vol. 17, No. 2 (Feb., 1996), pp. 92-100  
 Published by: The University of Chicago Press on behalf of The Society for Healthcare Epidemiology of America  
 Stable URL: <http://www.jstor.org/stable/30141008>  
 Accessed: 13/04/2013 12:13

### Bacterial Strains

The test bacteria included *Escherichia coli* (ATCC 25922), *Enterococcus faecalis* (ATCC 29212), *Pseudomonas aeruginosa* (ATCC 27853), *Mycobacterium chelonae* (ATCC 19677), *B. stearothermophilus* (ATCC 7953), *B. subtilis* (ATCC 9572), and *B. cereus* (ATCC 61). The bacillus strains were commercial spore suspensions (Pharmaceutical Systems Inc, Mundelein, IL) and were adjusted to achieve approximately 10<sup>6</sup> CFU/10 μL. The other organisms were grown on tryptic

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### COMPARISON OF ION PLASMA, VAPORIZED HYDROGEN PEROXIDE, AND 100% ETHYLENE OXIDE STERILIZERS TO THE 12/88 ETHYLENE OXIDE GAS STERILIZER

M.J. Alb, PhD; P. DeGagne, RT; N. Olson, BSc; T. Puchabki, BA

**ABSTRACT**

**OBJECTIVE:** The performance of a standard gas sterilizer which uses a mixture of 12% ethylene oxide (EO) and 88% chlorofluorocarbon as the sterilizing gas (12/88) was compared to selected gas, ion plasma, and vaporized hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) sterilizers that do not use chlorofluorocarbons. The effect of serum and salt on sterilizer performance was evaluated.

**DESIGN:** Test carriers (porcelain and stainless steel penicillin bottles, or 15-cm lengths of plastic tubing [internal diameter of 3.2 mm]) were inoculated with *Escherichia coli*, *Enterococcus faecalis*, *Pseudomonas aeruginosa*, *Mycobacterium chelonae*, *Bacillus anthracis* spores, *Bacillus subtilis* spores, and *Bacillus cereus* spores and then subjected to sterilization using 12/88, 100% EO, ion plasma, or vaporized H<sub>2</sub>O<sub>2</sub>. The bacterial inoculum was prepared with and without 10% serum and 0.65% salt, and the residual bacterial load after sterilization as determined using viable counts.

**RESULTS:** All of the sterilizers tested effected a 6-log<sub>10</sub> reduction of the bacterial inoculum on penicillin bottles, unless 10% serum and 0.65% salt were present, in which case the 100% EO, vaporized H<sub>2</sub>O<sub>2</sub>, and ion plasma sterilizers were not as effective as the 12/88 sterilizer. None of the sterilizers could eradicate 10<sup>7</sup> CFU of all of the bacteria in 10% serum and 0.65% salt when inoculated inside a narrow lumen.

**CONCLUSIONS:** The margin of safety for the 100% EO, vaporized H<sub>2</sub>O<sub>2</sub>, and ion plasma sterilizers is less than that of the 12/88 sterilizer. The inability of all sterilizers, including the 12/88, to kill organisms in narrow lumens reliably when serum and salt were present raises concern about the current practice of gas sterilization of flexible endoscopes (*Infect Control Hosp Epidemiol* 1996;21:750-755).

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Presença de soro (10%) e sal (0,65%) fornece grau de proteção aos microrganismos

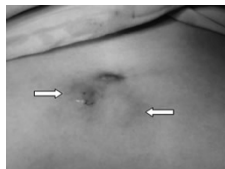
## EVIDÊNCIA 2

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### Surto por micobactérias de crescimento rápido no Brasil

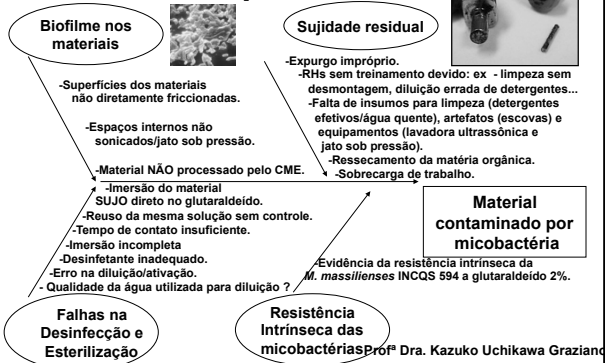


INFLAMAÇÃO CRÔNICA GRANULOMATOSA



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### Dissecando o problema....



PLANO DE AÇÃO: formação e informação RH; qualificar a estrutura e processos de trabalho nas CMEs; água controlada; cumprimento da RDC ANVISA 35/2010 do glutaraldeído 2%.

## EVIDÊNCIA 3

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ORIGINAL ARTICLE

### Outbreak of *Pseudomonas aeruginosa* Surgical Site Infections after Arthroscopic Procedures: Texas, 2009

Prithvi K. Tosh, MD,<sup>1,2\*</sup> Maureen Disbot, MS, RN, CCRN,<sup>3</sup> Jonathan M. Duffy, MD, MPH,<sup>1,2</sup> Marc L. Boon, MD, MBA,<sup>4</sup> Gary Heshelme, MD, MPH,<sup>5</sup> Arjun Srinivasan, MD,<sup>6</sup> Carolyn V. Gould, MD, MSCR,<sup>7</sup> Sandra I. Berríos-Torres, MD<sup>1</sup>

**SETTING:** Seven organ/space surgical site infections (SSIs) that occurred after arthroscopic procedures and were due to *Pseudomonas aeruginosa* of indistinguishable pulsed-field gel electrophoresis (PFGE) patterns occurred at hospital X in Texas from April 22, 2009, through May 7, 2009.

**OBJECTIVE:** To determine the source of the outbreak and prevent future infections.

**DESIGN:** Infection control observations and a case-control study.

**METHODS:** Laboratory records were reviewed for case finding. A case-control study was conducted. A case patient was defined as someone who underwent knee or shoulder arthroscopy at hospital X during the outbreak period and subsequently developed organ/space SSI due to *P. aeruginosa*. Cultures of environmental and surgical equipment samples were performed, and selected isolates were analyzed by PFGE. Surgical instrument reprocessing practices were reviewed, and surgical instrument lumens were inspected with a borescope after reprocessing to assess cleanliness.

**RESULTS:** The case-control study did not identify any significant patient-related or operator-related risk factors. *P. aeruginosa* grew from 62 of 288 environmental samples. An isolate from the gross decontamination sink had a PFGE pattern that was indistinguishable from that of the case patient isolates. All surgical instrument cultures showed no growth. Endoscopic evaluation of reprocessed arthroscopic equipment revealed retained tissue in the lumen of both the inflow/outflow cannulae and arthroscopic shaver handpiece. No additional cases occurred after changes in instrument reprocessing protocols were implemented. After this outbreak, the US Food and Drug Administration released a safety alert about the concern regarding retained tissue within arthroscopic shavers.

**CONCLUSIONS:** These SSIs were likely related to surgical instrument contamination with *P. aeruginosa* during instrument reprocessing. Retained tissue in inflow/outflow cannulae and shaver handpieces could have allowed bacteria to survive sterilization procedures.

*Infect Control Hosp Epidemiol* 2011;32(12):1179-1186

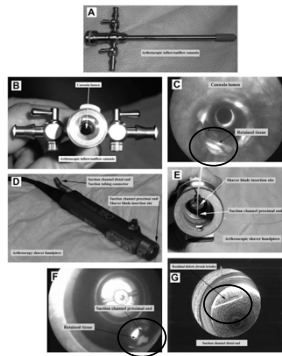


FIGURE 2. Anterated photographs of self-flowing cements and shorter handpieces. A. External view of an self-flowing cement. B. External view of an self-flowing cement handpiece. C. Internal view of an self-flowing cement handpiece using a broncope demonstrating residual debris. D. External view of an orthodontic shorter handpiece. E. External view of an orthodontic shorter handpiece showing the shorter tube insertion site and the proximal end of the suction channel. F. External view of an orthodontic shorter handpiece using a broncope. G. External view of an orthodontic shorter handpiece using a broncope and demonstrating residual debris from a betel nut used for cleaning. A color version of this figure is in the online edition.