Encontro de Profissionais de Controle de Infecção Hospitalar

Análise de limpeza e desinfecção de superfícies

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Enfermeira
Coordenação de controle de infecção hospitalar HUCFF/UFRJ
Comissão de controle de infecção hospitalar HMLJ/SMSDC

Conflito de interesses

- Estudo recebeu apoio das industrias Plastlabor®, Wolff® e Ecolab® no que se refere ao fornecimento dos desinfetantes durante o período da pesquisa e os materiais utilizados na investigação microbiológica (placas de rodac e swabs)

- Limpeza: um quarto sujo é fonte certa de infecções, ao paciente, e para quem executa a assistência pois, "remove matérias nocivas do sistema".

TEORIA AMBIENTALISTA DE FLORENCE NIGHTINGALE

- Além de proporcionar alívio e conforto, à enfermeira, que "deve estar sempre limpa" e deve "ter o cuidado de lavar as mãos freqüentemente durante o dia".

BMC Infectious Diseases

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Research article

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How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

Axel Kramer*[1], Ingeborg Schwebke[2] and Günter Kampf[1,3]

Address: [1]Institut für Hygiene und Umweltmedizin, Ernst-Moritz-Arndt Universität, Greifswald, Germany, [2]Robert-Koch Institut, Berlin, Germany and [3]Bode Chemie GmbH & Co. KG, Scientific Affairs, Hamburg, Germany

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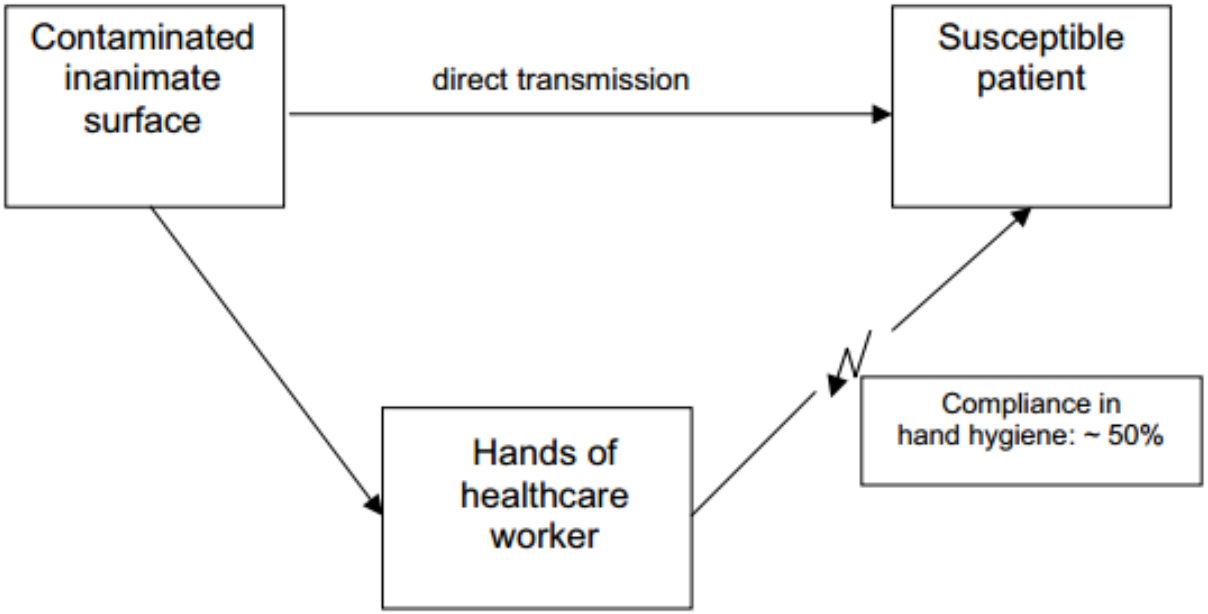
Table 1: Persistence of clinically relevant bacteria on dry inanimate surfaces.

Type of bacterium	Duration of persistence (range)	Reference(s)
Acinetobacter spp.	3 days to 5 months	[18, 25, 28, 29, 87, 88]
Bordetella pertussis	3 – 5 days	[89, 90]
Campylobacter jejuni	up to 6 days	[91]
Clostridium difficile (spores)	5 months	[92–94]
Chlamydia pneumoniae, C. trachomatis	≤ 30 hours	[14, 95]
Chlamydia psittaci	15 days	[90]
Corynebacterium diphtheriae	7 days – 6 months	[90, 96]
Corynebacterium pseudotuberculosis	1–8 days	[21]
Escherichia coli	1.5 hours – 16 months	[12, 16, 17, 22, 28, 52, 90, 97–99]
Enterococcus spp. including VRE and VSE	5 days – 4 months	[9, 26, 28, 100, 101]
Haemophilus influenzae	12 days	[90]
Helicobacter pylori	< 90 minutes	[23]
Klebsiella spp.	2 hours to > 30 months	[12, 16, 28, 52, 90]
Listeria spp.	1 day – months	[15, 90, 102]
Mycobacterium bovis	> 2 months	[13, 90]
Mycobacterium tuberculosis	1 day – 4 months	[30, 90]
Neisseria gonorrhoeae	1 – 3 days	[24, 27, 90]
Proteus vulgaris	1 – 2 days	[90]
Pseudomonas aeruginosa	6 hours – 16 months; on dry floor: 5 weeks	[12, 16, 28, 52, 99, 103, 104]
Salmonella typhi	6 hours – 4 weeks	[90]
Salmonella typhimurium	10 days – 4.2 years	[15, 90, 105]
Salmonella spp.	1 day	[52]
Serratia marcescens	3 days – 2 months; on dry floor: 5 weeks	[12, 90]
Shigella spp.	2 days – 5 months	[90, 106, 107]
Staphylococcus aureus, including MRSA	7 days – 7 months	[9, 10, 16, 52, 99, 108]
Streptococcus pneumoniae	1 – 20 days	[90]
Streptococcus pyogenes	3 days – 6.5 months	[90]
Vibrio cholerae	1 – 7 days	[90, 109]

Como ocorre a transmissão



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How long do nosocomial pathogens persist on inanimate surfaces? A systematic review

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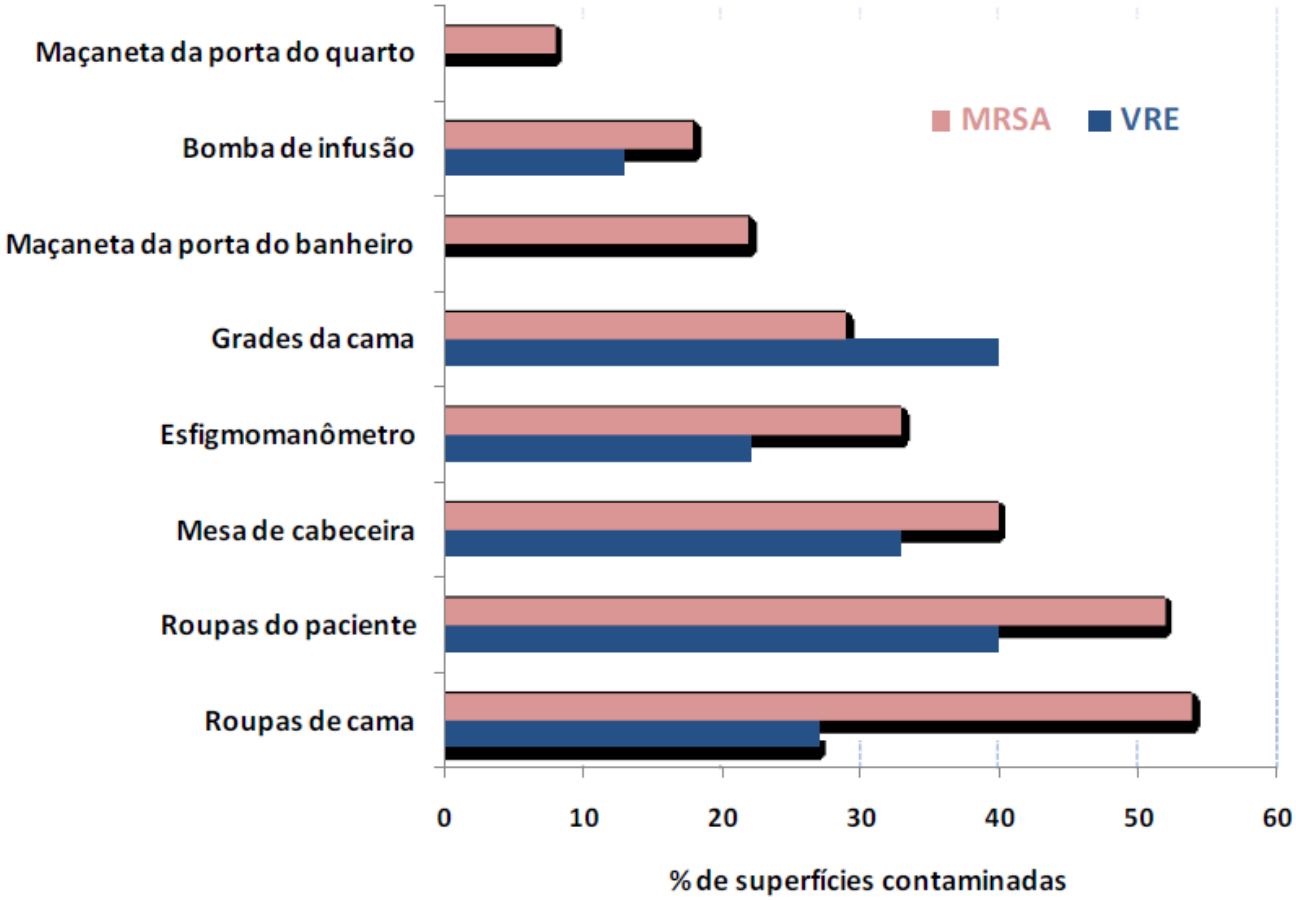
Superfícies de elevado contato com a mão



Hota B. Clin Infect Dis 2004;39(8):1182-9

Disponível em: http://www.apecih.org.br/arquivos/aulas/AmostrasAmbientais%20Dra.pdf

Estudos

Beyond the Hawthorne Effect: Reduction of *Clostridium difficile* Environmental Contamination through Active Intervention to Improve Cleaning Practices

Dubert M. Guerrero, MD;[1] Philip C. Carling, MD;[2] Lucy A. Jury, RN;[3] Suresh Ponnada, MD;[3] Michelle M. Nerandzic, BS;[3] Curtis J. Donskey, MD[3,4]

Education and passive observation resulted in a significant improvement in housekeeper disinfection of nontoxigenic *Clostridium difficile* spores artificially inoculated onto surfaces in *C. difficile* infection rooms. A further significant reduction occurred with direct supervision and real-time feedback, suggesting that optimal disinfection is achieved by working closely with housekeepers.

Infect Control Hosp Epidemiol 2013;34(5):524-526

Combating the spread of carbapenemases in *Enterobacteriaceae*: a battle that infection prevention should not lose

P. Savard[1,2] and T. M. Perl[3,4]

1) Department of Microbiology, Infectiology and Immunology, Université de Montréal, 2) Medical Microbiology and Infectious Diseases Department, Centre Hospitalier Universitaire de Montréal, Hôpital St-Luc, Montréal, QC, Canada, 3) Division of Infectious Diseases, Department of Medicine, Johns Hopkins University School of Medicine and 4) Epidemiology and Infection Prevention, The Johns Hopkins Health System and Johns Hopkins Medicine, Baltimore, MD, USA

Required infection prevention measures

Implement a surveillance programme to identify potential carriers (screening)
Use contact isolation precautions for colonized and infected patients
Cohort colonized and infected patients
Enhance hand hygiene and support with audits
Increase the frequency of environmental cleaning
Limit the use of devices and remove unnecessary devices
Implement antimicrobial stewardship, including a programme
Educate healthcare workers about critical prevention measures

Suggested enhanced infection prevention measures

Limit patient transfers
One-to-one nursing
Decolonize patients with chlorhexidine gluconate baths

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY MAY 2013, VOL. 34, NO. 5

ORIGINAL ARTICLE

Copper Surfaces Reduce the Rate of Healthcare-Acquired Infections in the Intensive Care Unit

Cassandra D. Salgado, MD;[1] Kent A. Sepkowitz, MD;[2] Joseph F. John, MD;[3] J. Robert Cantey, MD;[1] Hubert H. Attaway, MS;[4] Katherine D. Freeman, DrPH;[5] Peter A. Sharpe, MBA;[6] Harold T. Michels, PhD;[7] Michael G. Schmidt, PhD[4]

Mais Estudos...

BMC Medicine

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Research article

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Measuring the effect of enhanced cleaning in a UK hospital: a prospective cross-over study

Stephanie J Dancer*[1,2], Liza F White[2], Jim Lamb[2], E Kirsty Girvan[3] and Chris Robertson[4]

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Email: Stephanie J Dancer* - stephanie.dancer@lanarkshire.scot.nhs.uk; Liza F White - liza_white@hotmail.com; Jim Lamb - james.lamb@sgh.scot.nhs.uk; E Kirsty Girvan - kirsty.girvan@ggc.scot.nhs.uk; Chris Robertson - chris@stams.strath.ac.uk

* Corresponding author

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JULY 2008, VOL. 29, NO. 7

ORIGINAL ARTICLE

Impact of an Environmental Cleaning Intervention on the Presence of Methicillin-Resistant *Staphylococcus aureus* and Vancomycin-Resistant Enterococci on Surfaces in Intensive Care Unit Rooms

Eric R. Goodman, BS; Richard Platt, MD, MS; Richard Bass, BS, CHESP; Andrew B. Onderdonk, PhD; Deborah S. Yokoe, MD, MPH; Susan S. Huang, MD MPH

INFECTION CONTROL AND HOSPITAL EPIDEMIOLOGY JUNE 2007, VOL. 28, NO. 6

CONCISE COMMUNICATION

Importation of *Acinetobacter baumannii* Into a Burn Unit: A Recurrent Outbreak of Infection Associated With Widespread Environmental Contamination

Giorgio Zanetti, MD, MS; Dominique S. Blanc, PhD; Isabelle Federli, RN, CIC; Wassim Raffoul, MD; Christiane Petignat, MD; Philippe Maravic, RN; Patrick Francioli, MD; Mette M. Berger, MD, PhD

A burn patient was infected with *Acinetobacter baumannii* on transfer to the hospital after a terrorist attack. Two patients experienced cross-infection. Environmental swab samples were negative for *A. baumannii*. Six months later, the bacteria reemerged in 6 patients. Environmental swab samples obtained at this time were inoculated into a minimal mineral broth, and culture results showed widespread contamination. No case of infection occurred after closure of the unit for disinfection.

Infect Control Hosp Epidemiol 2007; 28:723-725

Hospital Microbiome Project – University of Chicago

Jack Gilbert

Stand. Genomic Sci. 2013 8:1 doi:10.4056/sigs.3717348

The Hospital Microbiome Project: Meeting Report for the 1st Hospital Microbiome Project Workshop on sampling design and building science measurements, Chicago, USA, June 7th-8th 2012

Daniel Smith[1], John Alverdy[2], Gary An[2], Maureen Coleman[3], Sylvia Garcia-Houchins[4], Jessica Green[5], Kevin Keegan[1], Scott T. Kelley[6], Benjamin C. Kirkup[7,8], Larry Kociolek[9], Hal Levin[10], Emily Landon[11], Paula Olsiewski[12], Rob Knight[13], Jeffrey Siegel[14], Stephen Weber[4], Jack Gilbert[1,15]

Os pesquisadores acreditam que podem, potencialmente, reduzir infecções hospitalares através da compreensão da variedade de microorganismos que vivem em ambientes hospitalares, identificando as características operacionais de edifícios que influenciam este microbioma.

Métodos de coleta

Laminocultivo
(*Dip slide*)

Esponja

Pano

Métodos de coleta

Placa de contato (Rodac)

Vantagens

- > Recuperação de bactérias gram +
- Indicada para superfícies lisas
- Resultado quantitativo expresso em UFC

Desvantagens

- Custo elevado
- Amostra de pequena área

Swab de nylon

Vantagens

- Indicado para objetos irregulares e instrumentos
- Simples e baixo custo

Desvantagens

- Geralmente leva um tempo maior
- Resultados qualitativos

Experiência do HUCFF

- Os desinfetantes foram introduzidos na instituição no mesmo período, porém em locais diferentes;
- CTI geral – Cloridrato de polihexametileno biguanida
- CTI cardíaco e coronária – glucoprotamina
- Realizado treinamento das equipes responsáveis pela desinfecção da unidade do paciente (padronização do processo)

- Coleta realizada pela residente sob supervisão da Staff da microbiologia

- Dias e horários fixos para coleta

- Pontos coletados foram previamente discutidos

- ✓ Grade superior da cabeceira;
- ✓ Colchão
- ✓ Mesa auxiliar
- ✓ Mesa de apoio
- ✓ Monitor
- ✓ Válvula de aspiração
- ✓ Painel de ajustes da cama
- ✓ Painel da bomba infusora
- ✓ Divisória dos leitos
- ✓ Bancada de medicação
- ✓ Torneira da bancada

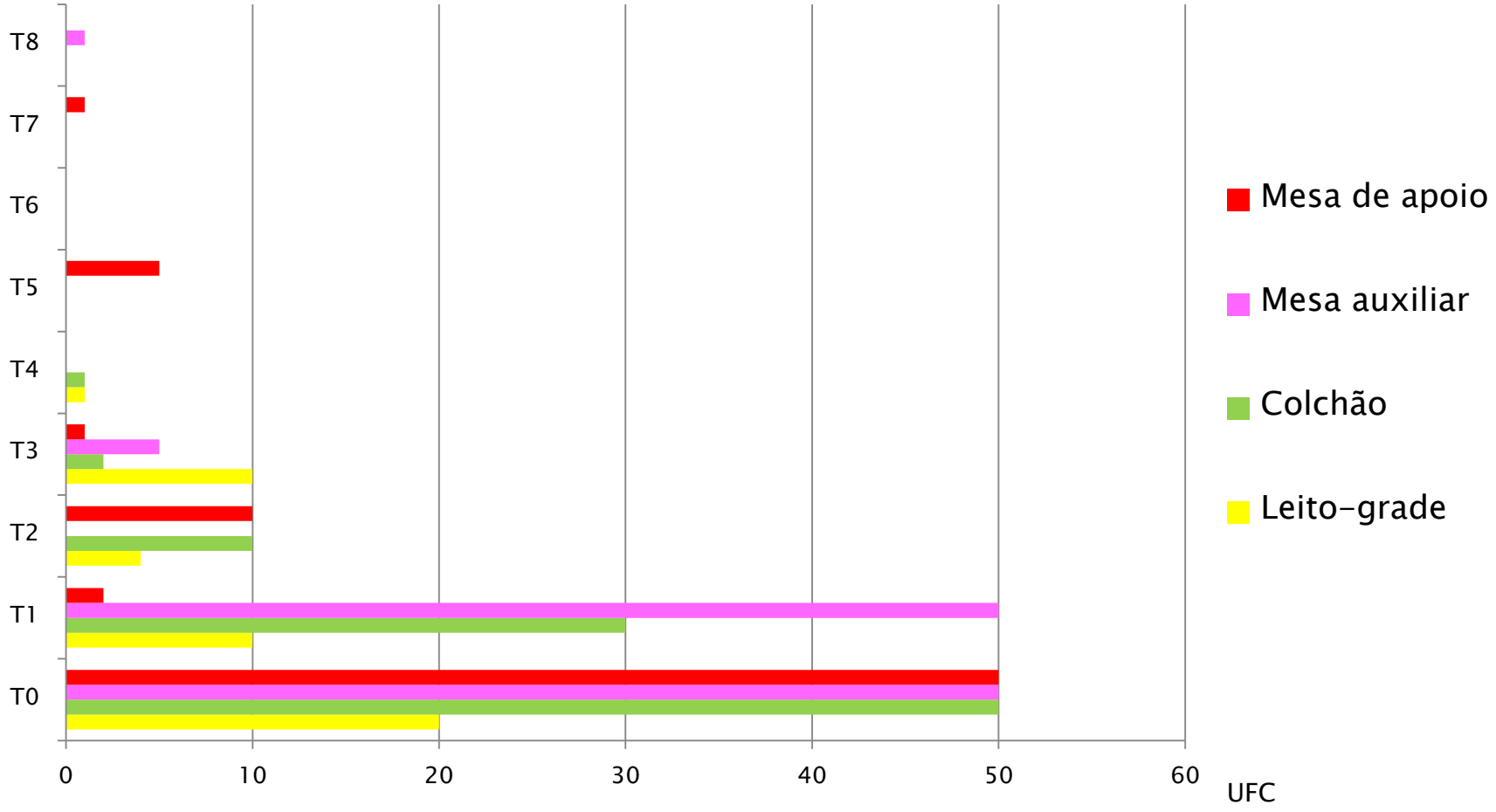
- Após 48 horas de incubação em estufa a 35°C, realizou-se a leitura

- Realizado a contagem (método quantitativo)

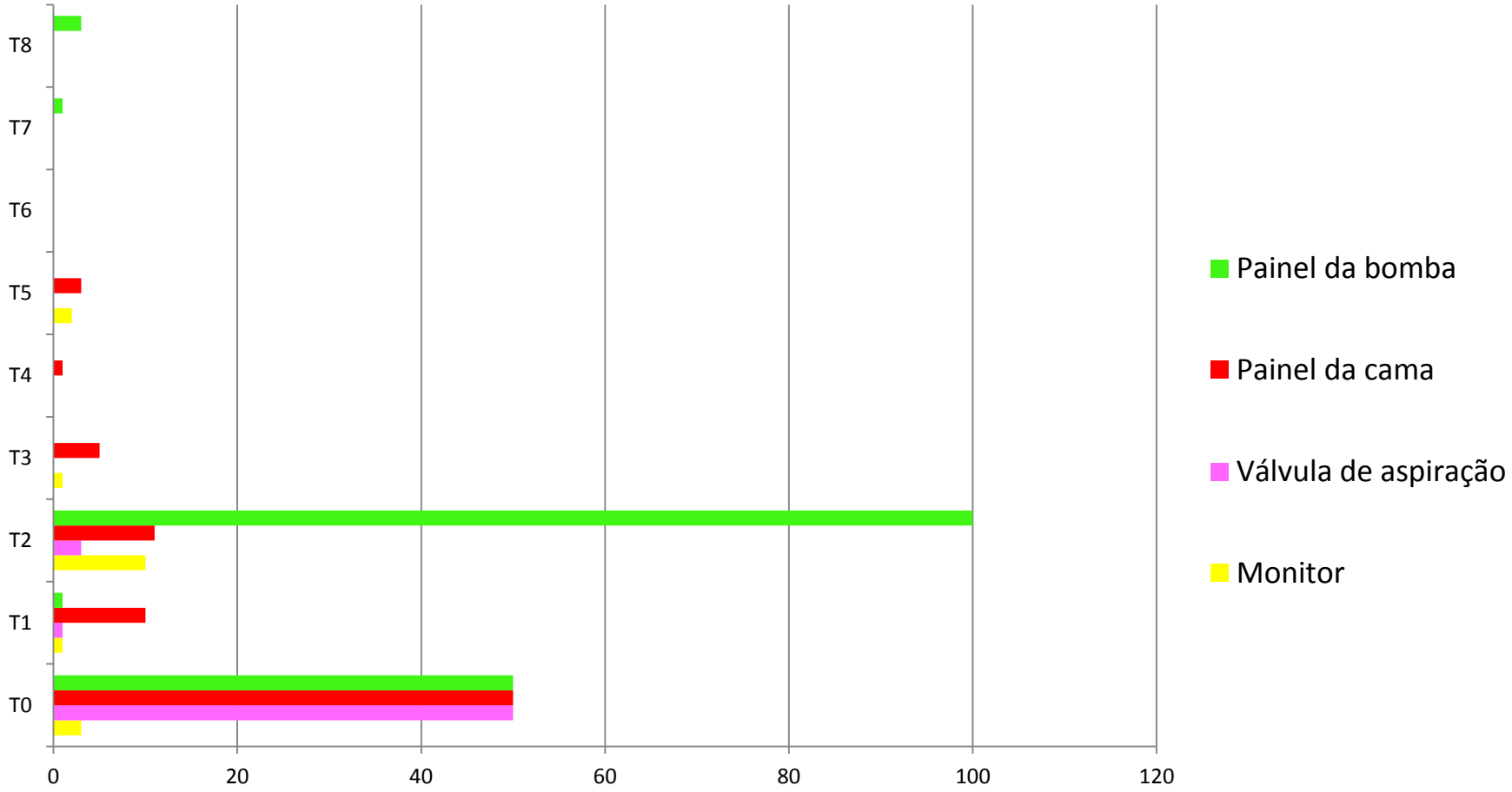
- Identificação pelo sistema automatizado ViteK2® (método qualitativo)

- Cultura negativa foi concluída após 5 (cinco) dias de incubação

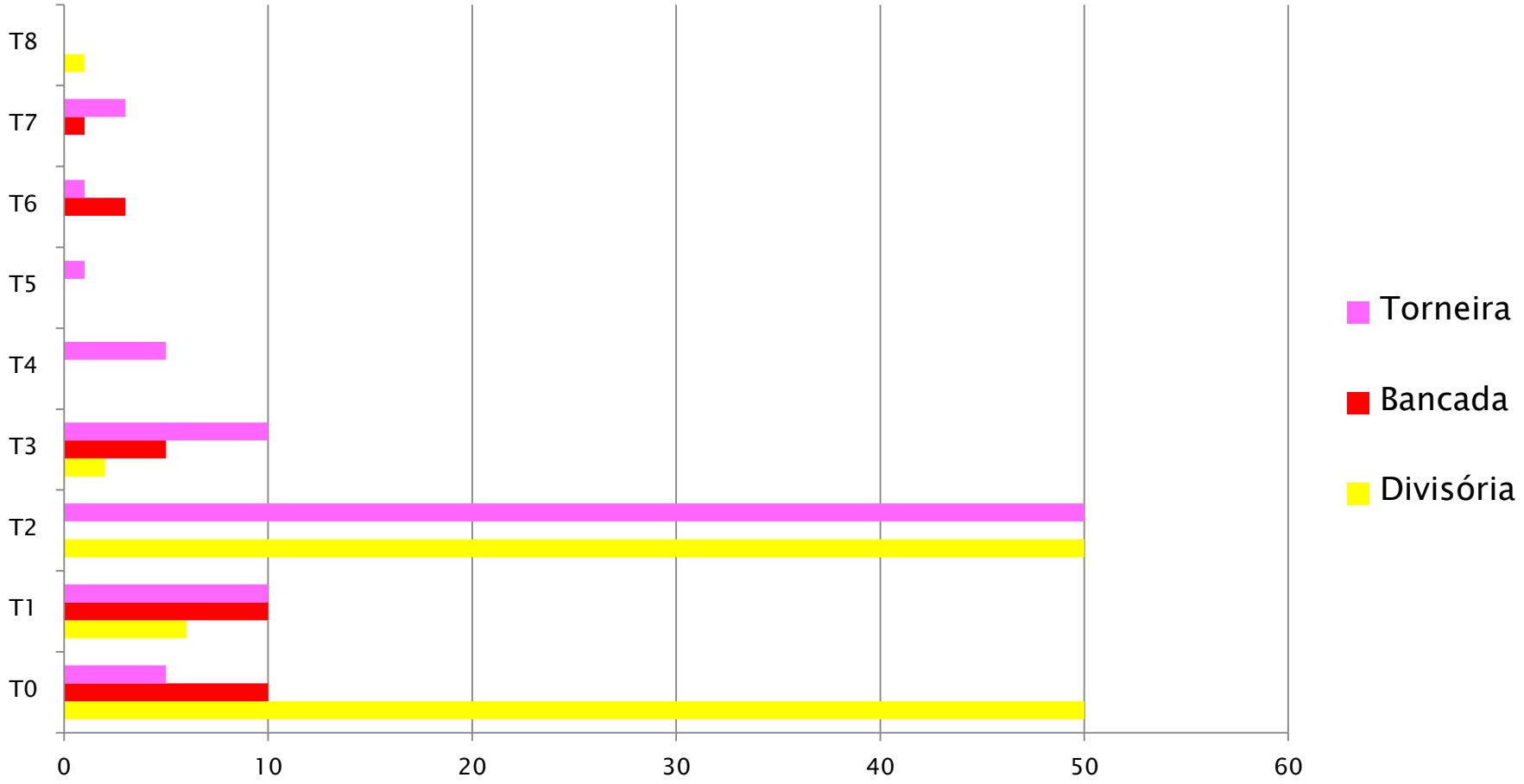
Resultados – CTI geral – Cloridrato de polihexametileno biguanida



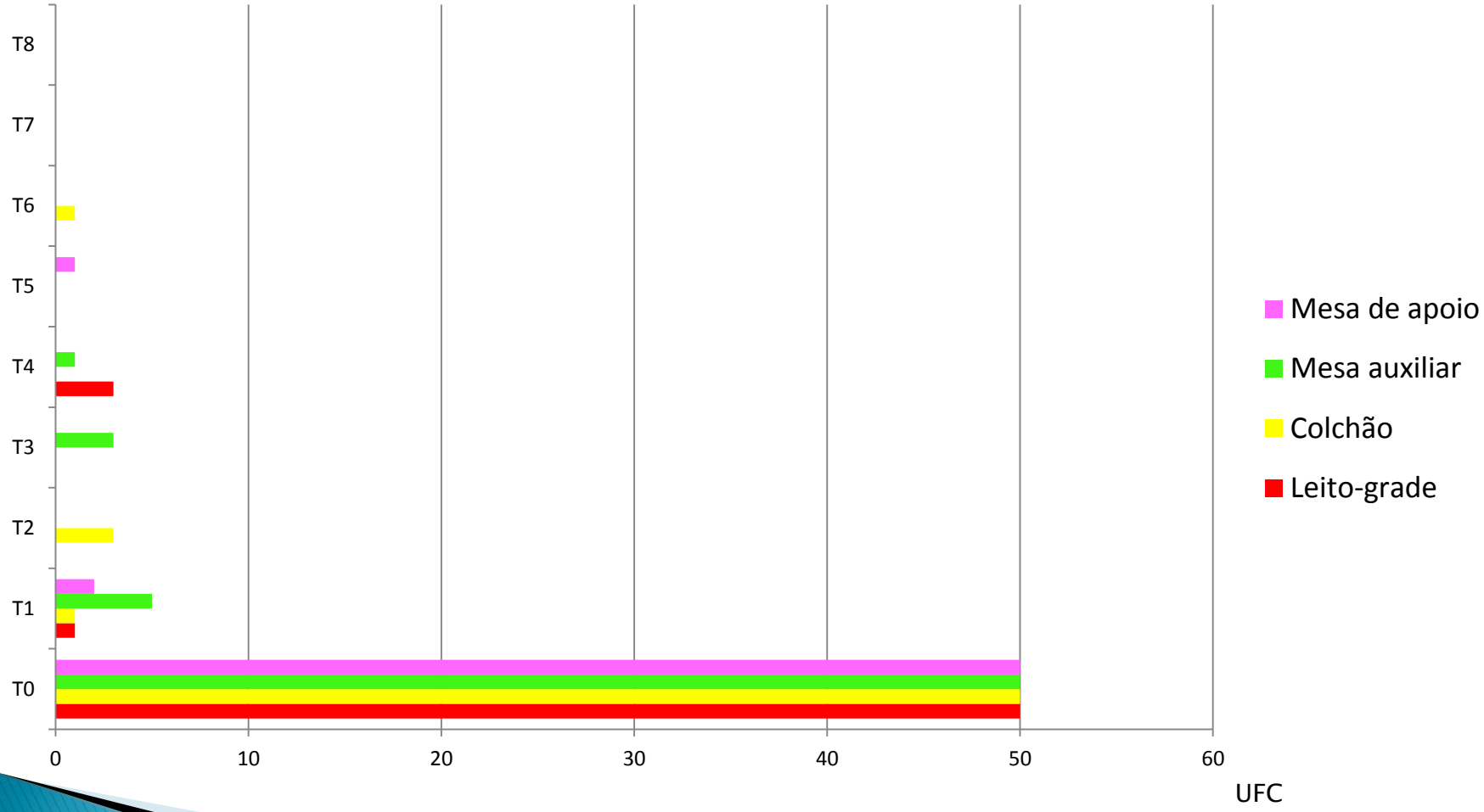
Resultados – CTI geral – Cloridrato de polihexametileno biguanida



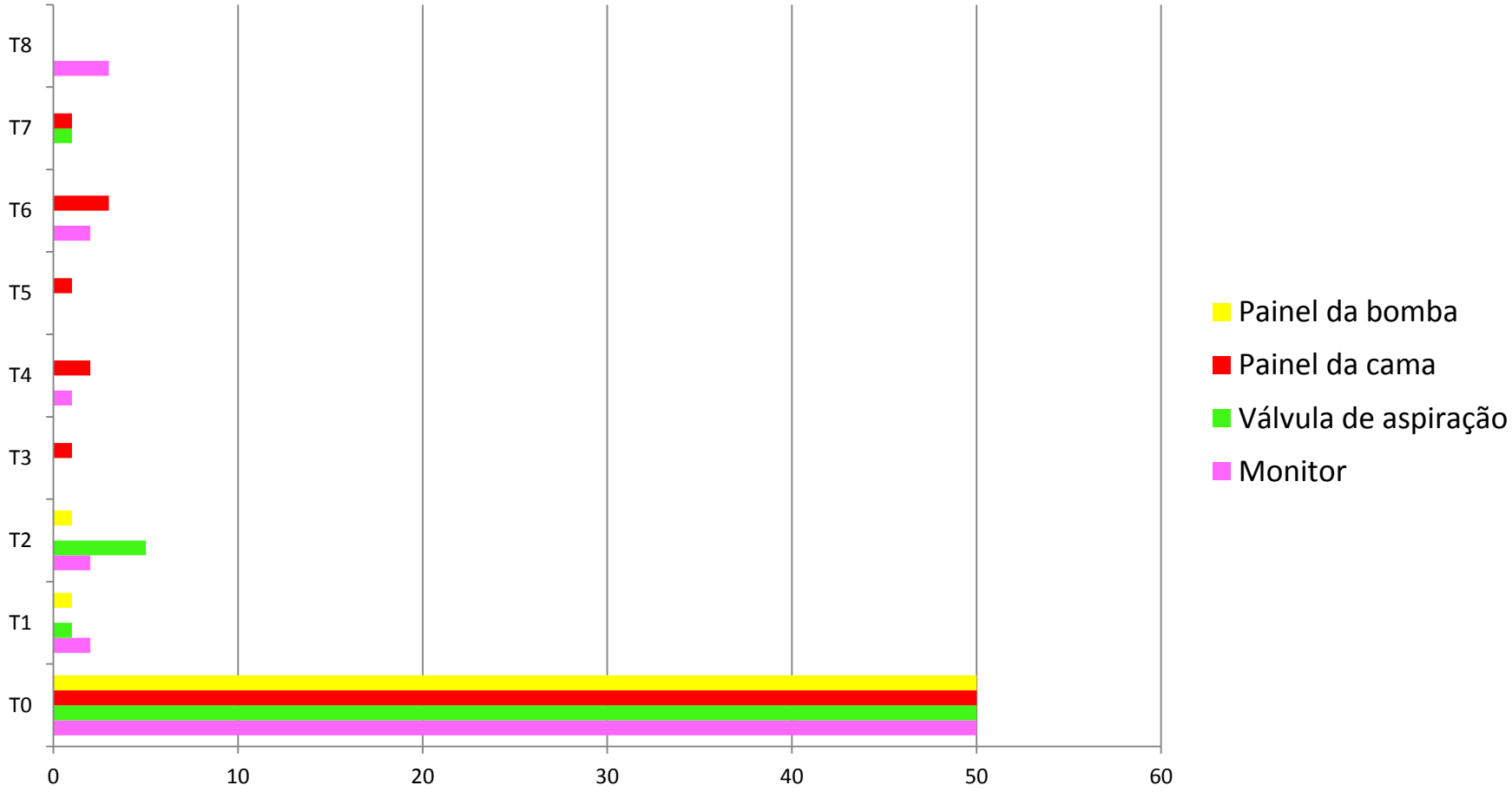
Resultados – CTI geral – Cloridrato de polihexametileno biguanida



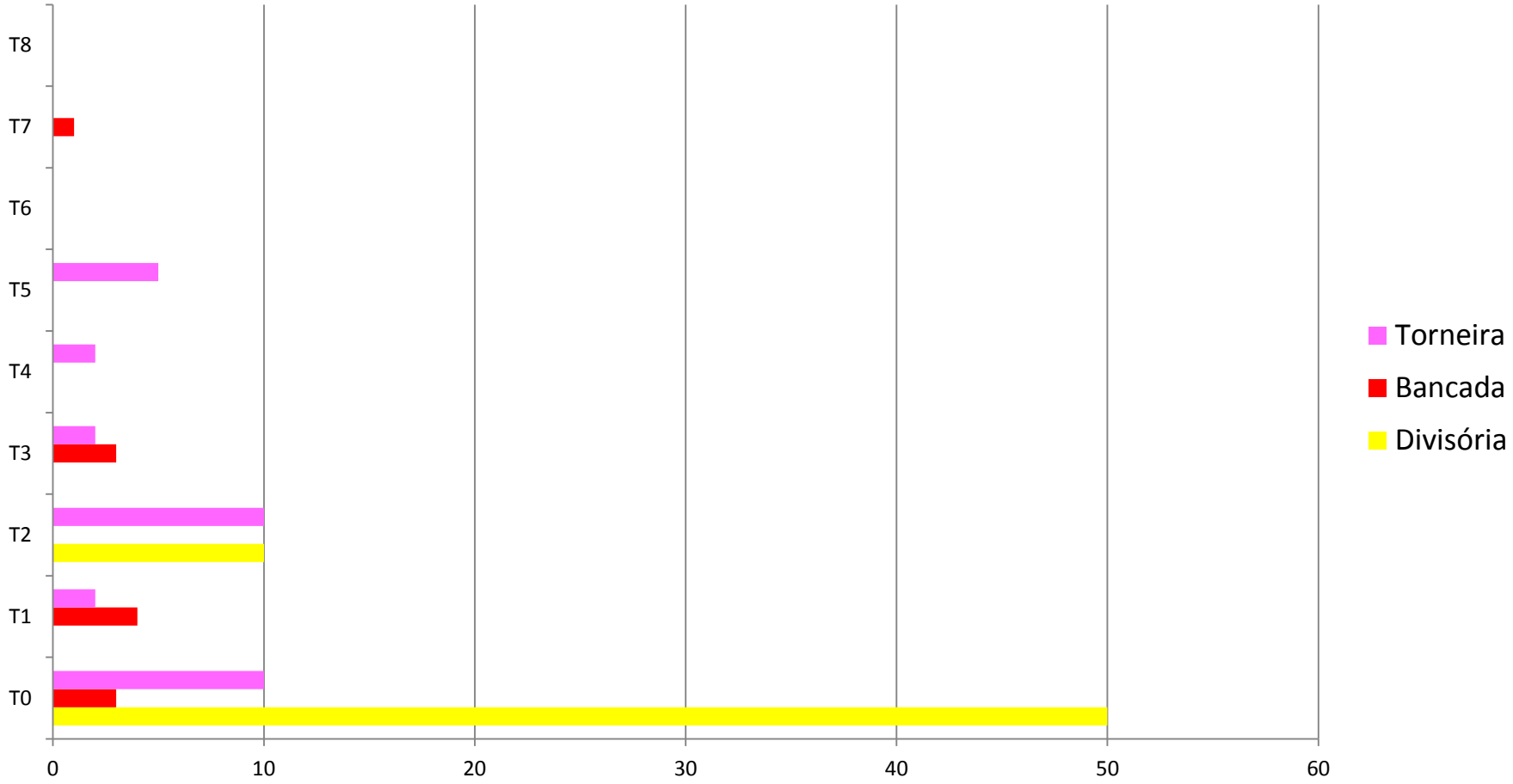
Resultados – CTI cardíaco e coronária – glucoprotamina



Resultados – CTI cardíaco e coronária – glucoprotamina



Resultados – CTI cardíaco e coronária – glucoprotamina



Resultados – CTI geral – Cloridrato de polihexametileno biguanida

	Leito-grade	Colchão	Mesa auxiliar	Mesa de apoio
T0	*Sphingomonas paucimobilis,* *Pasteurella sp.* *Staphylococcus coagulase negativa* *Micrococcus luteus*	*Aeromonas sp.* *Pasteurella sp.* *Staphylococcus coagulase negativa*	*Aeromonas sp.* *Pasteurella sp.* *Staphylococcus coagulase negativa*	*Aeromonas sp.* *Staphylococcus coagulase negativa*
T1	*Klebsiella pneumoniae* *Micrococcus luteus*	*Aeromonas sp.* *Pasteurella sp.* *Staphylococcus aureus*	*Pseudomonas aeruginosas*	*Aeromonas sp.*
T2	*Staphylococcus coagulase negativa*	*Aeromonas sp.* *Staphylococcus aureus*	-----	*Staphylococcus coagulase negativa*
T3	*Aeromonas sp.*	*Klebsiella pneumoniae*	*Staphylococcus coagulase negativa*	*Acinetobacter baumannii*
T4	*Pseudomonas aeruginosas*	*Staphylococcus epidermidis*	-----	------
T5	-----	-----	-----	*Aeromonas sp.*
T6	-----	-----	-----	
T7	-----	-----	-----	*Staphylococcus coagulase negativa*
T8	-----	-----	*Staphylococcus aureus*	-----

Resultados – CTI geral – Cloridrato de polihexametileno biguanida

	Monitor	Válvula aspiração	Painel cama	Painel Bomba
T0	*Staphylococcus coagulase negativa*	*Aeromonas sp.* *Staphylococcus coagulase negativa* *Pseudomonas aeruginosas*	*Acinetobacter baumannii* *Micrococcus luteus*	*Aeromonas sp.* *Micrococcus luteus* *Staphylococcus epidermidis* *Shingomonas paucimobilis*
T1	*Staphylococcus coagulase negativa*	*Aeromonas sp.*	*Pseudomonas aeruginosas*	*Micrococcus luteus*
T2	*Burkholderia cepacia*	*Pseudomonas aeruginosas*	*Acinetobacter baumannii* *Micrococcus luteus*	*Staphylococcus coagulase negativa*
T3	*Pasteurella sp*	-----	*Pseudomonas aeruginosas*	------
T4	-----	-----	*Staphylococcus coagulase negativa*	------
T5	*Staphylococcus coagulase negativa*	-----	*Pseudomonas aeruginosas*	------
T6	-----	-----	-----	------
T7	-----	-----	-----	*Staphylococcus aureus*
T8	-----	-----	------	*Bacilos Gram positivo aeróbio*

Resultados – CTI geral – Cloridrato de polihexametileno biguanida

	Divisória do leito	Bancada de medicação	Torneira
T0	*Staphylococcus coagulase negativa*	*Staphylococcus coagulase negativa*	*Burkholderia cepacia* *Sphingomonas paucimobilis* *Aeromonas sp.*
T1	*Micrococcus luteus* *Pasteurella sp*	*Pseudomonas aeruginosas*	*Pasteurella sp* *Aeromonas sp.*
T2	*Staphylococcus coagulase negativa*	_____	*Sphingomonas paucimobilis*
T3	*Staphylococcus coagulase negativa*	_____	*Micrococcus luteus* *Pasteurella sp*
T4	_____	_____	*Micrococcus luteus* *Pasteurella sp*
T5	--------	_____	*Klebsiella pneumoniae*
T6	_____	*Staphylococcus coagulase negativa*	*Pseudomonas aeruginosas*
T7	_____	*Bacilos Gram positivo aeróbio*	*Pseudomonas aeruginosas* *Pasteurella sp*
T8	*Pseudomonas aeruginosas*	_____	______

Resultados – CTI cardíaco e coronária – glucoprotamina

	Leito-grade	Colchão	Mesa auxiliar	Mesa de apoio
T0	*Sphingomonas paucimobilis,* *Pasteurella sp.* *Staphylococcus coagulase negativa* *Micrococcus luteus* *Staphylococcus aureus* *Aeromonas sp.*	*Aeromonas sp.* *Pasteurella sp.* *Staphylococcus aureus* *Staphylococcus haemolyticus*	*Aeromonas sp.* *Pasteurella sp.* *Staphylococcus epidermidis*	*Aeromonas sp.* *Micrococcus luteus*
T1	*Aeromonas sp.* *Staphylococcus haemolyticus*	*Pasteurella sp.* *Staphylococcus coagulase negativa*	*Pasteurella sp.*	*Burkholderia cepacia*
T2	_____	*Micrococcus luteus*	_____	_____
T3	_____	_____	*Pasteurella sp.*	_____
T4	*Staphylococcus coagulase negativa*	_____	*Pseudomonas aeruginosas*	_____
T5	_____	_____	_____	*Klebsiella pneumoniae*
T6	_____	*Pasteurella pneumotropica*	_____	_____
T7	_____	_____	_____	_____
T8	_____	_____	_____	_____

Resultados – CTI cardíaco e coronária – glucoprotamina

	Monitor	Válvula aspiração	Painel cama	Painel Bomba
T0	*Pasteurella sp.* *Micrococcus luteus* *Staphylococcus aureus*	*Aeromonas sp.* *Staphylococcus coagulase negativa*	*Burkholderia cepacia* *Aeromonas sp.* *Micrococcus luteus* *Staphylococcus aureus*	*Aeromonas sp.* *Micrococcus luteus* *Staphylococcus epidermidis* *Shingomonas paucimobilis*
T1	*Aeromonas sp.*	*Aeromonas sp.*	____	*Micrococcus luteus*
T2	*Staphylococcus haemolyticus*	*Pasteurella sp.*	____	*Micrococcus luteus*
T3	____	____	*Staphylococcus coagulase negativa*	____
T4	*Staphylococcus coagulase negativa*	_____	*Acinetobacter baumannii*	______
T5	____	_____	*Micrococcus luteus*	______
T6	*Micrococcus luteus*	_____	*Staphylococcus coagulase negativa*	______
T7	_____	*Staphylococcus coagulase negativa*	*Bacilos Gram positivo aeróbio*	*Staphylococcus aureus*
T8	*Bacilos Gram positivo aeróbio*	_____	______	*Bacilos Gram positivo aeróbio*

Resultados – CTI cardíaco e coronária – glucoprotamina

	Divisória do leito	Bancada de medicação	Torneira
T0	*Aeromonas sp.* *Staphylococcus coagulase negativa*	*Staphylococcus coagulase negativa*	*Burkholderia cepacia* *Sphingomonas paucimobilis* *Aeromonas sp.*
T1	_____	*Pseudomonas aeruginosas*	*Pasteurella sp*
T2	*Acinetobacter baumannii*	_____	*Aeromonas sp.* *Pasteurella sp*
T3	_____	*Sphingomonas paucimobilis*	*Pasteurella sp*
T4	_____	_____	*Micrococcus luteus* *Sphingomonas paucimobilis*
T5	_____	_____	*Acinetobacter baumannii*
T6	_____	_____	_____
T7	_____	*Micrococcus luteus*	_____
T8	_____	_____	_____

Conclusão

- No T0 foi identificado crescimento de diversas colônias
- O Uso contínuo dos desinfetantes envolvidos no trabalho, favoreceu a redução do número de colônias em alguns pontos coletados
- Nenhum patógeno MDR foi identificado nas coletas

- Como dificuldade do estudo:

1. Não houve interrupção da assistência durante a coleta
2. Não há critério claro que defina se uma superfície esta limpa ou não (ponto de corte)
3. O Nível de contaminação ambiental que mais se correlaciona com a transmissão é desconhecido

Agradecimento

- Equipe do Laboratório de Microbiologia do HUCFF/UFRJ
- Equipe de Enfermagem do CTI geral e CTI cardíaco e coronária do HUCFF/UFRJ
- A residente da Residencia Integrada Multiprofissional em Saúde de microbiologia com concentração em controle de infecção: Patrícia Barbur Côrtes
- A chefe da Microbiologia do HUCFF/UFRJ Adriana Lucia

Obrigada!

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