O Desafio da Assistência de Enfermagem no Manejo de Infecções Fúngicas em Populações Específicas

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www.webbertraining.com

27 de junho de 2019

Declaro que não existem conflitos de interesse na apresentação.

Vamos pensar em fungos?

Os fungos estão presentes na natureza e existem milhões de diferentes na Terra, porém cerca de 300 espécies são patogênicas.

Garcia-Solache MA, et al. mBio 2010;1.
Tedersoo L, et al. Science. 2014

- Avanços terapêuticos e tecnológicos em saúde possibilitaram o aumento na sobrevida de pacientes, no entanto, a exposição aos procedimentos invasivos e medicamentosos aumentaram o risco de infecções fúngicas invasivas de origem hospitalar.

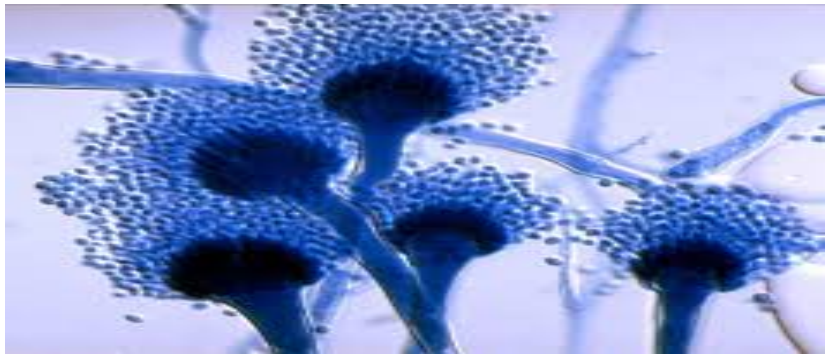
Benedict K, et al. The Lancet Infectious Diseases. 2017

- Zaoutis T, et al. Clinical Infectious Diseases. 2005
- . Blyth C, et al. Pediatrics. 2009.
- Moran M, et al. 2009;28(5):433-435

- Associam-se a altas taxas de morbidade e mortalidade, que, na maioria dos casos, ocorrem pela dificuldade de se realizar um diagnóstico precoce e iniciar uma terapia rápida e eficaz.

Colombo AL et al. J Clin Microbiol. 2006.

Klingspor L et al. Mycoses. 2015.



- Taxas de mortalidade chegando a 40 % em candidíase invasiva e até 90% em infecções sistêmicas por fungos filamentosos.

Klingspor L, et al. Mycoses. 2015.

Litvinov N, et al. Clin Microbiol Infect. 2015

Um importante problema de Saúde Pública

- **Infecções Oportunistas**: Criptococose e Aspergilose (oncologia,receptores de órgãos sólidos, doença autoimune, HIV / AIDS).

- **Infecções Relacionadas à Assistência à Saúde:** Leveduras e fungos filamentosos (Pneumonias, ITU, ISC, ICS).

- **Infecções Adquiridas na comunidade:** Coccidioidomicose micose sistêmica

(febre do vale, reumatismo do deserto), Histoplasmose (doença das cavernas)

Populações vulneráveis

Transplante de Células Tronco-Hematopoiéticas

Importância e Ações do Enfermeiro

- Identificação dos pacientes;
- Internação;
- Manejo;
- Prevenção;
- Educação.

Animais de estimação

Viajou?

Tipo de trabalho/ atividade

Hospitalização recente

PNM sem resposta ao ATB

Quimio/ radioterapia

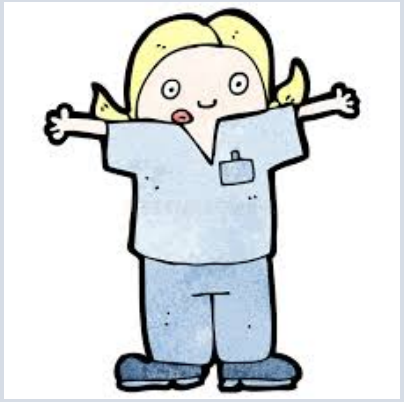
TX

Imunossupressor

HIV/aids

Uso recente de ATB

Prematuro



Benedict K et al. The Lancet Infectious Diseases. 2017
Lortholary O et al. Clinical Infectious Diseases 2013.
Miller R. American Journal of Transplantation 2013.
Alangaden GJ. Infectious Disease Clinics of North America 2011.

Internação

Pensar a estrutura hospitalar tem importante papel para o desenvolvimento das infecções fúngicas.

Obras e reformas em serviços de saúde são fatores de risco para o desenvolvimento de infecções fúngicas por dispersar grandes quantidades de fungos no ar e água.

- Centers for Disease Control and Prevention. Guidelines for environmental infection control in health-care facilities: recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC). MMWR Recomm Rep 2003.
- Facility Guidelines Institute. Guidelines for design and construction of hospitals and outpatient facilities. Chicago, IL: 2014.
- French Society for Medical Mycology and the French Society for Hospital Hygiene. Risk of fungal infections, and construction work in hospitals, 2011.
- Berger J, et al. Am J Infect Control 2011.

Recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)

U.S. Department of Health and Human Services
Centers for Disease Control and Prevention (CDC)
Atlanta, GA 30329

2003

⚠ **Ebola Virus Disease Update [August 2014]:** The recommendations in this guideline for Ebola has been superseded by these CDC documents:

- Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in U.S. Hospitals (https://www.cdc.gov/vhf/ebola/healthcare-us/hospitals/infection-control.html)
- Interim Guidance for Environmental Infection Control in Hospitals for Ebola Virus (https://www.cdc.gov/vhf/ebola/healthcare-us/cleaning/hospitals.html)

See CDC's Ebola Virus Disease website (https://www.cdc.gov/vhf/ebola/index.html) for current information on how Ebola virus is transmitted.

Available from:
https://www.cdc.gov/infectioncontrol/guidelines/environmental/

ARQUITETURA NA PREVENÇÃO DE INFECÇÃO HOSPITALAR

Domingos Marcos Flávio Fiorentini
Vera Helena de Almeida Lima
Jarbas B. Karman

BRASÍLIA - 1995

INVITED ARTICLE HEALTHCARE EPIDEMIOLOGY
Robert A. Weinstein, Section Editor

Review of Fungal Outbreaks and Infection Prevention in Healthcare Settings During Construction and Renovation

Hajime Kanamori,[1,2] William A. Rutala,[1,2] Emily E. Sickbert-Bennett,[1,2] and David J. Weber[1,2]
[1]Hospital Epidemiology, University of North Carolina Health Care, and [2]Division of Infectious Diseases, University of North Carolina School of Medicine, Chapel Hill

Author, Year	Patient Population	No. of Patient Infected	No. of Patient Deaths	Type of Infection (Site)	Type of Fungi	Reservoir or Source	Airborne Fungal Level(s)	Molecular Typing	Control Measures
Oren, 2001 [38]	Acute leukemia	31	8	Invasive *Aspergillus* infection (lung)	*Aspergillus* sp.	Extensive hospital construction and indoor renovation	15 *Aspergillus*/m^3 at construction site	Unknown	Amphotericin B prophylaxis, and HEPA system
Raad, 2002 [39]	Neutropenic patients with hematologic malignancy	113	Unknown	Nosocomial invasive *Aspergillus* infection (lung)	*A. fumigatus*, *A. terreus*, *A. flavus*	Hospital construction (low-intensity construction and high-intensity construction)	5–29 fungi/m^3 in outdoor air during low-intensity construction, 1–71 fungi/m^3 in outdoor air during high-intensity construction and 1–2 fungi/m^3 in indoor air	Unknown	Physical barriers using floor-to-ceiling dry wall or plastic barriers, protected environment with laminar air-flow rooms, HEPA filter, use of high-efficiency filtration masks for patients when leaving rooms
Yonemori, 2002 [40]	Acute leukemia	4	0	Invasive fungal infection (lung)	Unknown	Demolition and excavation near new building	65 fungi/m^3 at construction area; 10 fungi/m^3 in patient rooms	Unknown	Windows sealed, use of portable open horizontal laminar-air-flow apparatuses placed at bedside of neutropenic patients, itraconazole prophylaxis
Panackal, 2003 [42]	Renal transplant recipients	4	4	Invasive *Aspergillus* infection (unknown)	*A. fumigatus*	Inappropriate barriers between construction site and ward, frequent trafficking of staff between the construction and patient care areas, few respiratory protection	Unknown	Restriction fragment length polymorphism (genotype matched between 2 patients and 2 environmental isolates, but no match between environmental and clinical isolate)	Recommend application of CDC guideline such as: appropriate placement of impermeable barriers, the use of HEPA filters in HVAC, N95 respirator use for patients in contaminated areas, preventing traffic between construction and patient care areas, and elevator for exclusive use of construction workers and debris removal
Ahmad Sarji, 2006 [44]	Child patients with leukemia and other malignancies undergoing	14	9	Fungal infection (lung, blood, sinus, liver, spleen, kidney,	*Candida* sp., *Aspergillus* sp., *Fusarium* sp., *Chrysosporium*	Soil disturbance at adjacent building construction work	659 fungi /m^3 at treatment room	Unknown	Identifying high-risk patients, anti-fungal prophylaxis

Locais identificados:

- Acabamento do teto;
- Extintores;
- Ductos de ar;
- Filtros de ar;
- Escadas;
- Corredores;
- Elevadores....

Table 2. Fungal Infections and Associated Mortality by Each Underlying Disease During Construction, Renovation, or Demolition

Underlying Diseases	No. of Articles Published	No. of Patients Infected	No. of Patients Died	Mortality, No.[a] (%)
Hematologic malignancies or bone marrow transplant	26	414	148	131/288 (45.5)
Other malignancies, transplant, and/or immunosuppressed patients	13	105	38	38/60 (63.3)
Patients in intensive care unit	3	8	2	2/4 (50)
Rheumatology patients	2	6	4	4/6 (66.7)
After surgery	2	8	1	1/8 (12.5)
Premature infant	2	3	2	2/3 (66.7)
Nephrology and dialysis patients	1	3	2	2/3 (66.7)
Total	49	547	197	180/372 (48.4)

[a] Articles in which the number of patients infected or died was unknown were excluded for mortality calculation.

Table 3. Bundle of Key Methods for Preventing Filamentous Fungal Infections Associated With Renovation/Construction Activities

1. Hospital epidemiology (infection control) should be notified by plant engineering prior to any renovation/construction activities in the healthcare facility.
2. Conduct an ICRA for all renovation/construction activities: implement recommended prevention strategies as guided by the ICRA.
3. Focus prevention efforts on control of airborne dissemination of fungal spores (eg, barriers, containment, air handling, portable HEPA filters).
4. Consider impact of renovation/construction on the involved hospital unit plus adjacent units on the same floor, and hospital units on floors above and below the renovation/construction activities.
5. Maintain surveillance for healthcare-associated filamentous fungal infections during renovation/construction. Investigate any cases to see if they are related to renovation/construction and determine if prevention efforts need to be revised.
6. Visit renovation/construction sites regularly to assure compliance with recommended prevention activities.

Source: Adapted from the Centers for Disease Control and Prevention. Guidelines for Environmental Infection Control in Health-Care Facilities.

- O SCIH deve ser notificado e envolvido no planejamento das obras e reformas;
- Planejamento de risco, remanejamento de pacientes e planos de contingencia;
- Foco em áreas de grande potencial de contaminação, ar e água.
- Vigilância para infecções fúngicas;
- Vigilância constante das obras;
- Vigilância pós obra para liberação (análise do ar, água, limpeza terminal, checar vedações.

Supervisão do enfermeiro

Outros desafios

- Destaque para *Fusarium (+50 espécies descritas)* considerado um patógeno emergente, especialmente em pacientes neutropênicos, uso prévio e prolongado de antimicrobianos, uso de quimioterápicos e/ ou corticoides.

- Chakrabarti A, et al. Intensive Care Med. 2015.
- Nucci M, et al. Clin Microbiol Ver. 2007.
- Guarra J. Eur J Clin Microbiol Infect Dis. 2013.
- Nucci M, et al. Emerg Infect. 2013

ORIGINAL ARTICLE MYCOLOGY

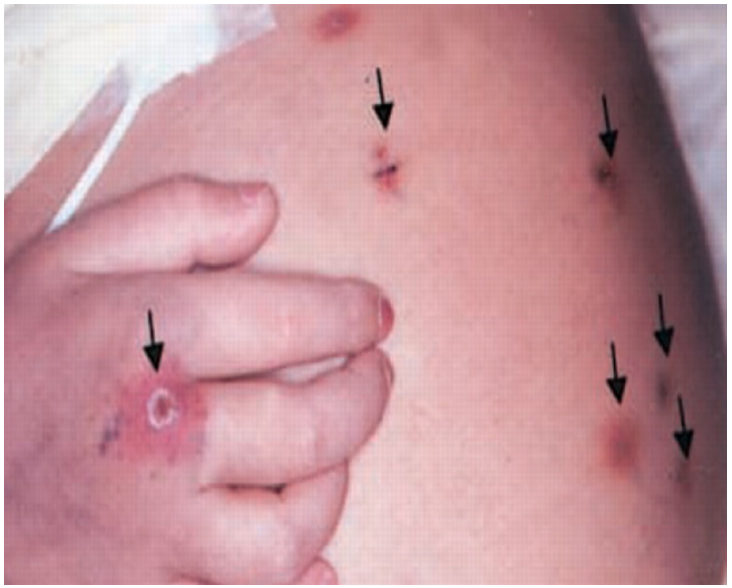
An outbreak of invasive fusariosis in a children's cancer hospital

Nadia Litvinov[1,2], Mariama Tomaz N. da Silva[3,4], Inneke M. van der Heijden[3,4], Mariana G. Graça[3,5], Larissa Marques de Oliveira[3,5], Liang Fu[3,5], Mauro Giudice[3,4], Maria Zilda de Aquino[1], Vicente Odone-Filho[1,2], Heloisa Helena Marques[2], Silvia F. Costa[3,5] and Anna S. Levin[3,4,5]

1) *Instituto de Tratamento de Cancer Infantil (ITACI), Children's Institute, Hospital das Clinicas,* 2) *Department of Pediatrics,* 3) *Infection Control Department and LIM -54, Hospital das Clinicas,* 4) *Institute of Tropical Medicine and* 5) *Department of Infectious Diseases, University of São Paulo, Brazil*

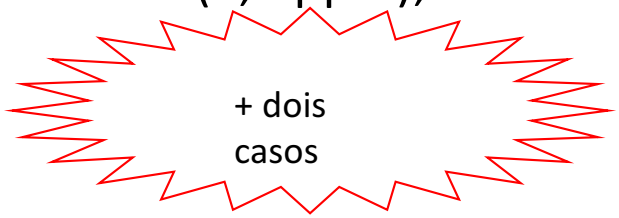
<u>Fev 2009 a Junho 2011</u>

- ✓ 10 casos confirmados (não houve casos entre 2004 e 2009);
- ✓ Todos com neutropenia prolongada;
- ✓ 9 dos 10 pacientes apresentaram lesões de pele;
- ✓ Mortalidade geral : 70%.



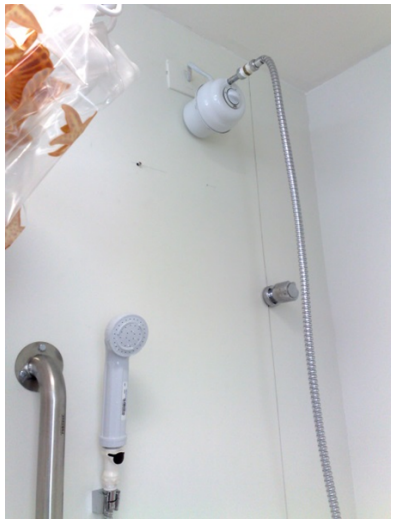
Medidas de contenção: Iniciais

- Coleta de amostras ambientais: Ar e Água;
- Avaliação de profissionais de saúde e pacientes quanto à presença de micoses superficiais / onicomicoses.
- Transferência dos pacientes Reforma dos quartos (troca de forro, pintura antifúngica);
- Desconexão do aquecimento central / Instalação de chuveiros e torneiras elétricas;
- Hipercloração de caixas d´água, instalação de dosador de cloro (1,5 ppm);
- Pré filtração da água da rede (10 micra).



Medida adicional

- Instalação de filtros de 0,2 micra em torneiras e chuveiros
- Mantidas as demais medidas e a vigilância.



- Em 2015 2 casos novos!!!

Ações permanentes

- ✓ Analise da qualidade de ar e água rotineira;
- ✓ Hipercloração da água;
- ✓ Inspeção dos quartos;
- ✓ Vedação das janelas;
- ✓ Educação dos profissionais e acompanhantes;
- ✓ Limpeza terminal com hipoclorito de sódio de 0,5 a 1%.
- ✓ Evitar a exposição a ambientes com dispersão aérea de poeira (áreas de construções e reformas);
- ✓ Utilizar filtro de ar de alta eficiência (>90%) com filtração de 12 trocas por hora – filtro (HEPA);
- ✓ Pressão positiva dentro das unidades de internação (neutropenia);
- ✓ Evitar contato com plantas;
- ✓ Uso de máscara com filtro para o paciente ao deixar o ambiente protetor (neuropênicos).

Novos Desafios!

A levedura patogênica emergente multirresistente *Candida auris* representa uma séria ameaça global. Ao contrário da maioria das leveduras, este organismo parece ser comumente transmitido dentro de instalações de cuidados de saúde e provoca surtos associados a cuidados de saúde.

Science News *from research organizatior*

Large Candida auris outbreak linked to multi-use thermometers in UK ICU

Date: April 21, 2018

Source: European Society of Clinical Microbiology and Infectious Diseases

Summary: Outbreaks of the fungal pathogen Candida auris in healthcare settings, particularly in intensive care units (ICUs), may be linked to multi-use patient equipment, such as thermometers, according to new research.

Share:

NYC outbreak of *Candida auris* linked to 45% mortality

Publish date: September 12, 2018

By Mark S. Lesney; ID Practitioner

FROM EMERGING INFECTIOUS DISEASES

Mortality within 90 days of infection was 45% among 51 patients diagnosed with antibiotic-resistant *Candida auris* infections in a multihospital outbreak in New York City from 2012 to 2017.

News

Candida auris outbreak was linked to reusable axillary temperature probes, study finds

BMJ 2018 ; 363 doi: https://doi.org/10.1136/bmj.k4133 (Published 05 October 2018)
Cite this as: *BMJ* 2018;363:k4133

Article | Related content | Metrics | Responses

Susan Mayor

Author affiliations

Transmission of *Candida auris*, an emerging multidrug resistant pathogen, in a cluster of infections at the intensive care unit of a UK hospital was linked to reusable axillary temperature probes, a study has reported.[1]

EMERGING INFECTIOUS DISEASES®

CDC > EID journal > Volume 24 > Number 10—October 2018

Volume 24, Number 10—October 2018

Research

Candida auris in Healthcare Facilities, New York, USA, 2013–2017

Eleanor Adams, Monica Quinn, Sharon Tsay, Eugenie Poirot, Sudha Chaturvedi, Karen Southwick, Jane Greenko, Rafael Fernandez, Alex Kallen, Snigdha Vallabhaneni, Valerie Haley, Brad Hutton, Debra Blog, Emily Lutterloh✉, Howard Zucker, and Candida auris Investigation Workgroup[1]

Author affiliations: New York State Department of Health, New Rochelle, New York, USA (E. Adams, K. Southwick); New York State Department of Health, Albany, New York, USA (M. Quinn, S. Chaturvedi, V. Haley, B. Hutton, D. Blog, E. Lutterloh, H. Zucker); Centers for Disease Control and Prevention, Atlanta, Georgia, USA (S. Tsay, E. Poirot, A. Kallen, S. Vallabhaneni); New York City Department of Health and Mental Hygiene, New York, New York, USA (E. Poirot); New York State Department of Health, Central Islip, New York, USA (J. Greenko); New York State Department of Health, New York (R. Fernandez); State University at Albany School of Public Health, Albany, New York, USA (V. Haley, D. Blog, E. Lutterloh)

Table 1. Selected concurrent medical conditions and medical interventions for 51 persons with *Candida auris* infection, New York, USA, 2013–2017

Characteristic	No. (%) persons
Concurrent condition	
Respiratory insufficiency requiring support	33 (65)
Mechanical ventilation at time of diagnosis	17 (33)
Neurologic disease*	24 (47)
Diabetes	18 (35)
Malignancies	11 (22)
Colon cancer	5 (10)
End-stage renal disease	8 (16)
Hemodialysis	7 (14)
Kidney transplant	1 (2)
Decubitus ulcers	10 (20)
Otitis with complications	2 (4)
Medical interventions	
Hemodialysis	7 (14)
Central venous catheter within 7 d before first positive culture for *C. auris*	31 (61)
Gastrostomy tube at time of diagnosis	27 (53)
Receipt of systemic antifungal medication within 90 d before first culture positive for *C. auris*	25 (49)
Receipt of systemic antibiotics within 14 d before first culture positive for *C. auris*	42 (82)

*Includes seizure disorder (n = 8), cerebrovascular accident (n = 7), dementia (n = 4), anoxic brain injury (n = 3), spinal cord injury (n = 2), and 1 case each of Parkinson's disease, multiple sclerosis, Huntington's disease, Guillain-Barré syndrome, traumatic brain injury, pituitary tumor, and neuropathy.

Agência Nacional de Vigilância Sanitária

COMUNICADO DE RISCO Nº 01/2017 – GVIMS/GGTES/ANVISA

Relatos de surtos de *Candida auris* em serviços de saúde da América Latina.

Table 2. Environmental contamination with *Candida auris* in healthcare facilities, New York, USA, 2013–2017*

Category, object or surface	No. samples	Positive by culture, no. (%)	Positive by PCR and negative by culture, no. (%)	Negative by culture and PCR, no. (%)
Near-patient surfaces and objects in rooms				
Bedside/over bed table	44	2 (5)	2 (5)	40 (91)
Bed rail	49	7 (14)	5 (10)	37 (76)
TV remote/call button	36	2 (6)	2 (6)	32 (89)
IV poles	21	5 (24)	1 (5)	15 (71)
Bed	17	4 (24)	0	13 (77)
Privacy curtain	6	2 (33)	0	4 (67)
Miscellaneous other†	5	0	1 (20)	4 (80)
Total	178	22 (12)	11 (6)	145 (82)
Other surfaces and objects in rooms				
Door knob/handle	36	1 (3)	1 (3)	34 (94)
Sink	27	1 (4)	2 (7)	24 (89)
Window	22	3 (14)	1 (5)	18 (82)
Floor	17	4 (24)	0	13 (77)
Furniture	27	3 (11)	0	24 (89)
Window curtain	11	3 (27)	0	8 (73)
Light switch	9	0	0	9 (100)
Closet	6	0	0	6 (100)
Wall	4	1 (25)	0	3 (75)
Bathroom	4	1 (25)	0	3 (75)
Countertop	4	1 (25)	0	3 (75)
Toilet	4	0	0	4 (100)
Miscellaneous other‡	16	2 (13)	0	14 (88)
Total	187	20 (21)	4 (2)	163 (87)

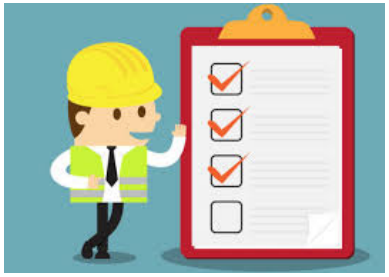
Foram realizadas culturas ambientais de 20 unidades de assistência à saúde, hospitais, ambulatório e instituições de longa permanência

Estudos apontam que a *C auris* pode sobreviver no ambiente hospitalar por até 4 semanas especialmente em superfícies plásticas.

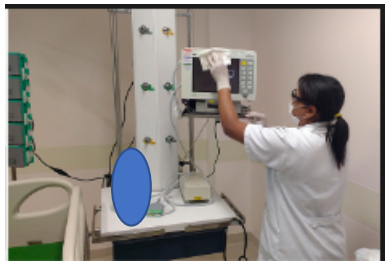
Welsh RM et al. J Clin Microbiol, 2017

O que está ao nosso alcance?

antisséptico



Indicado para C. auris



Produtos adequados

Obrigada!
taminatomonica@gmail.com