

Health care associated Waterborne infections

Paul R Hunter

The Norwich Medical School, University of East Anglia



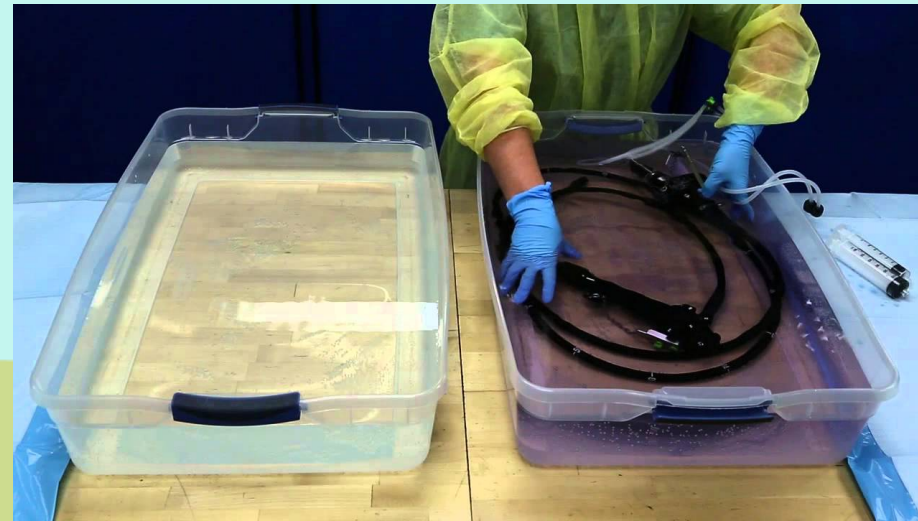
The uses of water in health care



The uses of water in health care



The uses of water in health care



Pseudomonas outbreak one year on: police begin investigation into babies' deaths



By Niall McCracken, 21 January 2013

The Western & Belfast Trust say hygiene standards have improved



By Niall McCracken

THE PSNI's Serious Crime Branch is investigating the circumstances surrounding the deaths of two babies at Northern Ireland hospitals, 12 months after a Pseudomonas outbreak.



The Wesley Hospital, Brisbane, in second Legionnaires disease outbreak

January 1, 2016 7:41pm
Jackie Sinnerton The Courier-Mail



The Wesley Hospital, Brisbane - following reports of a Legionnaires case. Pic Mark Cranitch.

LEGIONNAIRES disease is back at one of Queensland's leading hospitals, finding its way into an ice machine despite strict measures being put in place at the facility in

*for the first 12 weeks, conditions apply

Subscribe

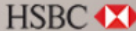
AdChoices

Explore our range of Stocks and Shares ISAs.

The value of investments can fall as well as rise; you may not get back what you invested.

Exclusive to HSBC current account customers.

Find Out More >>



ADVERTISEMENT

Most Viewed

- 10 symptoms of cancer you could be missing
- Six habits that will make you happier
- The invention every cyclist needs
- The 'thing' that takes over my body
- Banish the bloat: 10 diet tweaks for a flat stomach

More Illness



Easter appeal
Scarlett, a real little champion

Hospital waterborne outbreaks often occur in particularly vulnerable patients and involve unusual pathogens

RESEARCH

Waterborne *Elizabethkingia meningoseptica* in Adult Critical Care¹

Luke S.P. Moore, Daniel S. Owens, Annette Jepson, Jane F. Turton,
Simon Ashworth, Hugo Donaldson, Alison H. Holmes

MAJOR ARTICLE

Nosocomial Outbreak of *Exophiala jeanselmei*
Fungemia Associated with Contamination
of Hospital Water

Marcio Nucci,¹ Tiyomi Akiti,¹ Gloria Barreiros,¹ Fernanda Silveira,¹ Sanjay G. Revankar,^a Brian L. Wickes,²
Deanna A. Sutton,³ and Thomas F. Patterson^{4,5}



The Hospital Water Supply as a Source of Nosocomial Infections

A Plea for Action

Elias J. Anaissie, MD; Scott R. Penzak, PharmD; M. Cecilia Dignani, MD

- *Pseudomonas aeruginosa*
- *Stenotrophomonas maltophilia*
- *Serratia marcescens*
- *Acinetobacter baumannii*
- *Aeromonas hydrophila*
- *Chryseobacterium* sp.
- *Mycobacterium avium*
- *Mycobacterium fortuitum*
- *Mycobacterium xenopi*
- *Mycobacterium kansasii*
- *Mycobacterium chelonae*
- *Mycobacterium fortuitum*
- *Fusarium solani*
- *Exophiala jeanelmei*
- *Aspergillus fumigatus*



Human intoxication by microcystins during renal dialysis treatment in Caruaru—Brazil

Sandra M.F.O. Azevedo^{a,*}, Wayne W. Carmichael^b, Elise M. Jochimsen^c,
Kenneth L. Rinehart^d, Sharon Lau^d, Glen R. Shaw^e, Geoff K. Eaglesham^f

^a Instituto de Biofísica Carlos Chagas Filho, Universidade Federal do Rio de Janeiro, 21949-900 Rio de Janeiro, RJ, Brazil

^b Department of Biological Sciences, Wright State University, Dayton, OH, USA

^c Hospital Infections Program, CDC, Atlanta, GA, USA

^d Roger Adams Laboratory, University of Illinois, Urbana, IL, USA

^e National Research Center for Environmental Toxicology, Queensland, Australia

^f Queensland Health Scientific Services, Queensland, Australia

Abstract

In February 1996, an outbreak of illness occurred at a hemodialysis clinic in Caruaru, Pernambuco State—Brazil. At this clinic 116 (89%) of 131 patients experienced visual disturbances, nausea, vomiting, and muscle weakness, following routine haemodialysis treatment. Subsequently, 100 patients developed acute liver failure. As of December 1996, 52 of the deaths could be attributed to a common syndrome now called ‘Caruaru Syndrome’. Examination of previous years’ phytoplankton counts showed that cyanobacteria were dominant in the water supply reservoir since 1990. Analyses of carbon and other resins from the clinic’s water treatment system plus serum and liver tissue of patients led to the identification of two groups of hepatotoxic cyanotoxins: microcystins (cyclic heptapeptides) in all of these samples and cylindrospermopsin (alkaloid hepatotoxic) in the carbon and resins. Comparison of victims symptoms and pathology with animal studies on these two cyanotoxins, leads us to conclude that the major contributing factor to death of the dialysis patients was intravenous exposure to microcystins, specifically microcystin-YR, -LR and -AR. In 2000, a review of the Brazilian regulation for drinking water quality, promoted by Brazilian Health Ministry with collaboration of PAHO, incorporated cyanobacteria and cyanotoxins into this new regulation as parameters that must to be monitored for water quality control.



But what about the situation in low income countries?



Hospital wastewater can pose a risk to their surrounding communities

THE LANCET

[Online First](#) [Current Issue](#) [All Issues](#) [Special Issues](#) [Multimedia](#) [Information for Authors](#)

[All Content](#) [Advanced Search](#)

[< Previous Article](#)

Volume 308, No. 7976, p84–86, 10 July 1976

[Next Article >](#)

CHOLERA TRANSMISSION NEAR A CHOLERA HOSPITAL

Richard J. Levine¹, Stanislaus D'Souza, Motiur R. Khan, David R. Nalin

¹ Present address: Epidemiology Bureau, Center for Disease Control, Atlanta, Georgia 30333, U.S.A.

Altmetric

DOI: [http://dx.doi.org/10.1016/S0140-6736\(76\)92298-4](http://dx.doi.org/10.1016/S0140-6736(76)92298-4)

Please go to [ScienceDirect](#) to view the PDF



[Article Info](#)



Article

Antibiotic Susceptibilities of *Enterococcus* Species Isolated from Hospital and Domestic Wastewater Effluents in Alice, Eastern Cape Province of South Africa

Benson Chuks Iweriebor ^{1,2,*}, Sisipho Gaqavu ^{1,2}, Larry Chikwelu Obi ³,
Uchechukwu U. Nwodo ^{1,2} and Anthony I. Okoh ^{1,2}

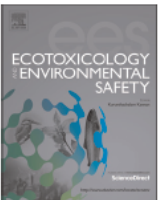
Ecotoxicology and Environmental Safety 115 (2015) 203–208



Contents lists available at ScienceDirect

Ecotoxicology and Environmental Safety

journal homepage: www.elsevier.com/locate/ecoenv



Impact of wastewater from different sources on the prevalence of antimicrobial-resistant *Escherichia coli* in sewage treatment plants in South India



Masato Akiba ^{a,b,*}, Hironobu Senba ^c, Haruna Otagiri ^d, Valipparambil P. Prabhasankar ^e, Sachi Taniyasu ^f, Nobuyoshi Yamashita ^f, Ken-ichi Lee ^a, Takehisa Yamamoto ^g, Toshiyuki Tsutsui ^g, Derrick Ian Joshua ^e, Keshava Balakrishna ^e, Indira Baiyy ^h, Taketoshi Iwata ^a, Masahiro Kusumoto ^a, Kurunthachalam Kannan ⁱ, Keerthi S. Guruge ^{j,**}

Conclusions

- What do we know
 - Contaminated water is an important cause of hospital associated infections
 - Waterborne infections can be spread by many different pathways
 - Disease risk is exacerbated by presence of particularly vulnerable patients
 - Nosocomial waterborne pathogens are more diverse than community waterborne pathogens
- What are the gaps
 - The vast majority of the evidence comes from high income countries and relatively little from low income countries

