Health care associated Waterborne infections

Paul R Hunter
The Norwich Medical School, University of East Anglia
The uses of water in health care
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Hospital waterborne outbreaks still occur in even in high income settings.
Hospital waterborne outbreaks often occur in particularly vulnerable patients and involve unusual pathogens.

**Waterborne**

*Elizabethkingia meningoseptica* in Adult Critical Care


**Nosocomial Outbreak of Exophiala jeaneselmei**

Fungemia Associated with Contamination of Hospital Water

Marcio Nucci, Tryoni Akiti, Gloria Barreiros, Fernanda Silveira, Sanjay G. Revankar, Brian L. Wickes, Deanna A. Sutton, and Thomas F. Patterson
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 Biologia Carlos Chagas Filho, Universidade Federal do Rio de Janeiro, 21949-900 Rio de Janeiro, RJ, Brazil
b Department of Biological Science, Wright State University, Dayton, OH, USA
c Hospital Infection 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 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

CHOLERA TRANSMISSION NEAR A CHOLERA HOSPITAL

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

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

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

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

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

Masato Akiba a,h,*, Hironobu Senba c, Haruna Otagiri d, Valipparambil P. Prabhaskar e, Sachi Taniyasu f, Nobuyoshi Yamashita f, Ken-ichi Lee a, Takehisa Yamamoto g, Toshiyuki Tsutsui g, Derrick Ian Joshua a, Keshava Balakrishna a, Indira Bairy 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