

Contemporary Issues in Hospital Infection Prevention and Control – A Clinician's Perspective



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Disclosures

- I have attended educational events sponsored by Gilead, MSD, Abbvie and Merck
- I have received speaking fees from Gilead and Merck which I donated 100% to charity

Infection Prevention and Control

- Legionella
- Legionella
- Legionella
- CRE, VRE and a few other acronyms



History of Legionella Outbreaks

- 1973 – Benidorm, Spain
- 1976 – Philadelphia (34 deaths)
- 1979 – Melbourne
- 1985 – Stafford District Hospital, UK (28 deaths)
- 2000 – Melbourne Aquarium (125 cases, 4 deaths)
- 2016 – Sydney, Australia ?CBD water tower



LEGIONNAIRES' OUTBREAK

**WESLEY HOSPITAL CONTACTING PATIENTS
MORE THAN A DOZEN COULD BE INFECTED**



IGATE DRIVE-BY SHOOTING ON A HOME IN SYDNEY'S SOUTH-WEST  **PHOTOS RE**

2013 Legionella Outbreak

- 66-year old patient RIP
- Water towers – no positive results
- Patient had not left his room
 - Shower
 - First catch water 200 cfu/ml (40 cfu/ml after allowing the shower water to run) (<10 cfu/mL acceptable)
 - Hand basin
 - 600 cfu/ml, then 100 cfu/ml

2013 Legionella Outbreak

- 46-year-old female patient survived
- Retrospective identification of a legionellosis death in October 2011
- Extensive organisational and surveillance response

Palliative care patient tests positive for legionnaires

DEADLY DISEASE IN ICE

EXCLUSIVE
JACKIE SINNERTON

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 the wake of a deadly 2013 outbreak.

A palliative care patient has tested positive for legionella pneumophila at The Wesley Hospital and an ice machine has also returned a positive result. Queensland Health has confirmed an investigation is underway.

Seriously ill patients in hospitals are often offered pieces of ice to refresh their mouths.

In 2013 legionella bacteria brought the Brisbane Uniting-

CHILLING REMINDER OF EARLIER PANIC

- The Wesley Hospital was the site of a deadly legionnaires outbreak in 2013
- The hospital delayed reporting the positive legionnaires test to authorities by a week; infection must be reported within 24 hours
- A man, 60, died after contracting the disease; a woman, 46, was put in intensive care
- Admissions and surgeries were cancelled
- Discharged patients were contacted
- Legionnaires bacteria was found in the hot water system
- Chief Health Officer carried out a review
- Health Minister then announced mandatory periodic water testing



has significant complex medi-

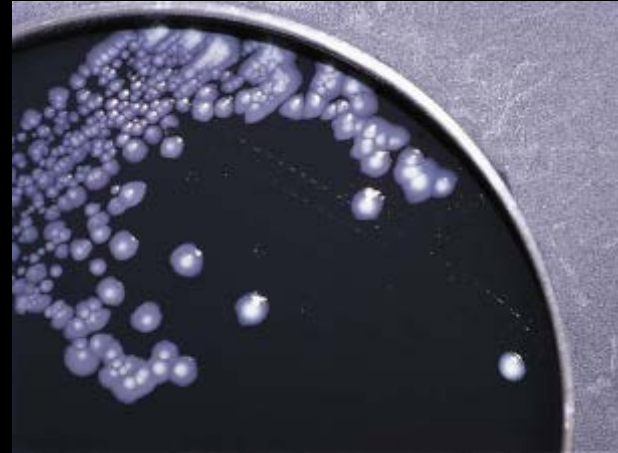
Mr Seymour said the hospital's ice machines are serviced regularly and filters are replaced every three months

Legionella 2016

- Several other healthcare facilities in Queensland have returned low-level positive results in water sampling

Legionellosis

- Family Legionellaceae = 50 species, 70 serogroups
- Main human pathogens
 - *Legionella pneumophila*, esp serotype 1
 - *Legionella longbeachae*



Legionella biology

- Ubiquitous water-based organism
- Very low volumes in natural water bodies
- Amplified if
 - Temperature 25 to 42°C
 - Stagnation
 - Scale and sediment
 - Commensal algae, amoebae, protozoa and bacteria
- Human infection primarily by microaspiration

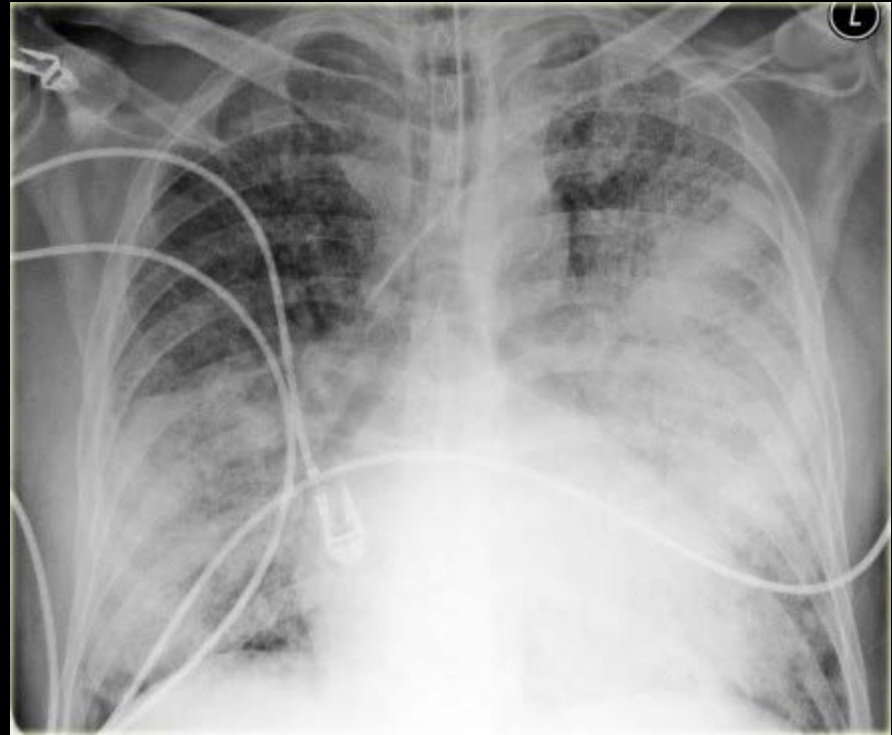
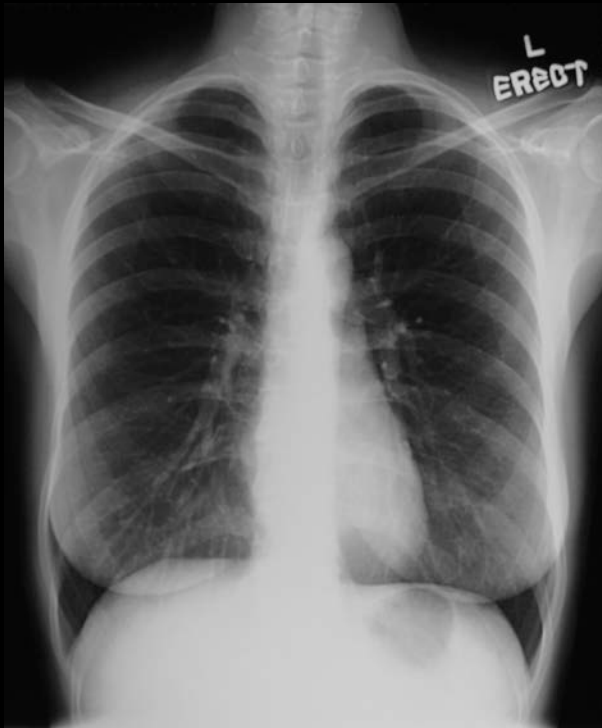


Legionella Epidemiology

- Healthcare-associated/hospital acquired
 - Generally *L. pneumophila* serotype 1
 - Associated with the potable water supply
 - Can be missed
- Community acquired
 - Most often *L. longbeachae* in Queensland
 - Association with potting mix

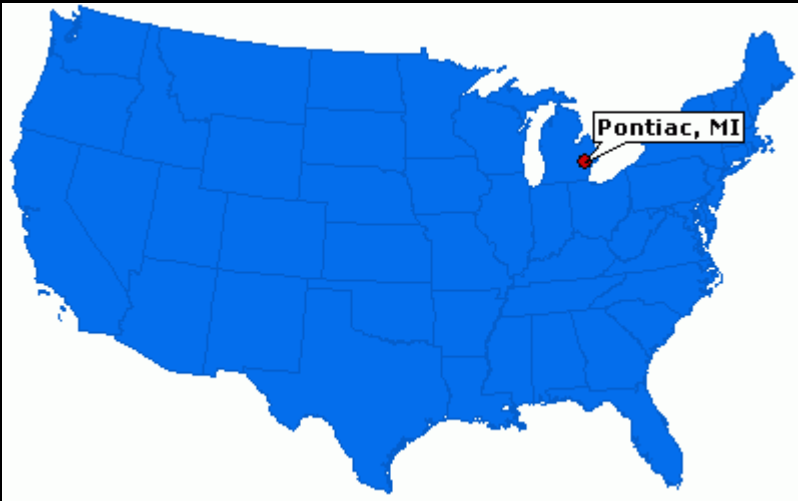
Hospital-acquired Legionellosis

- Pneumonia



Pontiac Fever

- Legionella infection without pneumonia (generally mild)



Vulnerable Patients

- Cigarette smoking and chronic lung disease
- ↑ Age
- Immune compromise
 - Transplants
 - Blood-cancers
 - HIV
 - Immune-suppressing medications
- Swallowing difficulty, impaired airway defences, impaired cough
- Can infect entirely well, young people, children and babies



Diagnosis

- Needs clinical suspicion
- Standard diagnostic tests for pneumonia may not diagnose
- Specific culture
- Legionella urinary antigen
 - *L. pneumophila* serogroup 1 only
- Polymerase chain reaction



Treatment and Prognosis

- Requires specific antibiotics
- Azithromycin generally used for severe community acquired pneumonia
 - Risk of non-administration in hospital acquired pneumonia
- Prognosis
 - Often managed in intensive care
 - Mortality
 - 15-30%
 - 50% in highly vulnerable patients



Organisational Responses to *Legionella*

- Patient safety alert
- Health Service Directive
- *Public Health (Water Risk Management) Amendment Act 2016*
 - Water risk management plan + compliance
 - To notify the chief executive, within one business day, when *Legionella* is detected
 - Periodic reports summarising the results of tests for *Legionella*
- Likely implementation February 2017



Other Current Infection Control Priorities

The Rise and Rise of “Superbugs”

India 'Has Lost' Superbug War

ARTICLE COMMENTS (10)

NEW DELHI METALLO 1 SUPERBUG

Email Print Facebook Twitter Google+ LinkedIn

By Joanna Sugden



— Daniel Berehulak/Getty Images India has lost the war against the toughest forms of antibiotic resistance because of poor sanitation, unregulated use of antibiotics and an absence of drug resistance monitoring.

CRE

VRE

MRSA

Overwhelming of Single-Room Stock

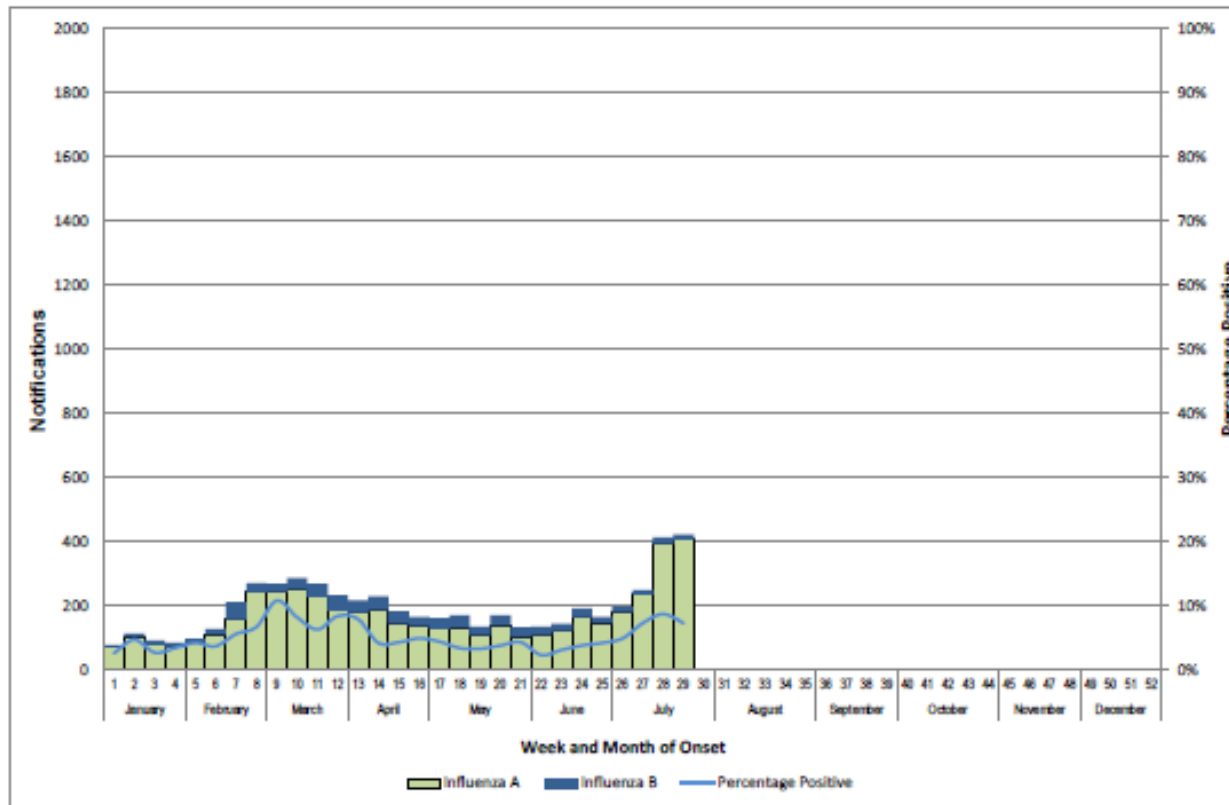
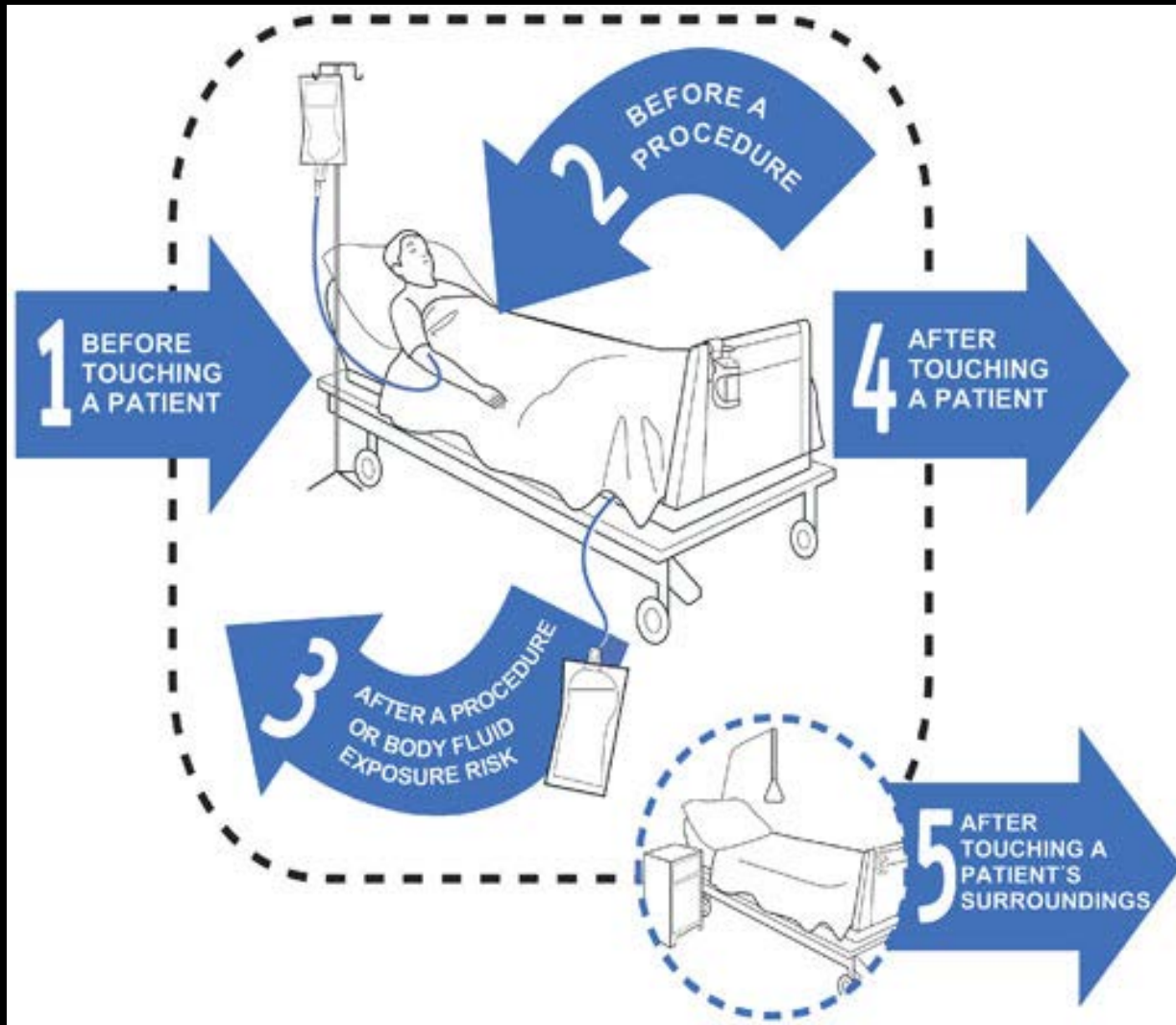


Figure 1 Weekly influenza notifications in Queensland by type and percentage of positive tests (public laboratory system only) by week and month of testing, 1 January 2016 to 24 July 2016. Data extracted from NOCS and AUSLAB 25 July 2016.

Ongoing Pandemic Nervousness



Hand Hygiene



All single-room hospitals

- Infection control and patient preference
- GCUH 70% single rooms
- Fiona Stanley Hospital 83% single rooms
- New Royal Adelaide planned 100%



BMJ



BMJ 2013;347:f5695 doi: 10.1136/bmj.f5695 (Published 24 September 2013)

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HEAD TO HEAD

Should hospitals provide all patients with single rooms?

Hugh Pennington argues that having all private rooms would reduce hospital acquired infection and provide privacy, but Chris Isles says many patients seem more worried about being lonely in hospital and should be given the choice of shared rooms

Hugh Pennington *emeritus professor of bacteriology*¹, Chris Isles *consultant physician*²

Thank you!

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