From Unconscious Incompetence to Conscious competence – Learnings from a Legionella outbreak

Kathy Taylor – Infection Control Manager
The Wesley Hospital
In the beginning……

St Helens Hospital at South Brisbane was to be replaced by a new facility at Auchenflower. Planning began in 1972.

The cost of construction was recorded as $11 million.

Water hygiene would not have been a high priority.
Soon additional buildings were added:

- Theatre
- Cardiac extension
- Western Annex
- Kirkup Wing
Ahhhhhh...

- Certifications
- Compliant
- Water Efficiency Management Plan in place
- Accredited

What can possibly go wrong??
Unconscious incompetence: 5\textsuperscript{th} June 2013

**OMG** — Legionella in the drinking water

Outbreak: 2\textsuperscript{nd} patient confirmed with healthcare associated Legionella 😞
Conscious incompetence

Second case of legionnaires' disease at Brisbane's Wesley Hospital
Updated 6 Jun 2013, 8:26am

UnitingCare executive director Richard Royle says the Wesley Hospital has cancelled all admissions and surgery after the death of a patient from legionnaires' disease.
Conscious incompetence

OK, So what is legionella?
What about other Queensland healthcare facilities – could they also have Legionella in their pipes?

Queensland chief health officer Jeannette Young said it would be unlikely that legionella would grow independently. “It would be unusual to have two incidents happening at the same time without an original single source, so that's what we're working through at the moment,” Dr Young said.

Health Minister Lawrence Springborg ordered all state hospitals to test their hot water systems for legionella, and Dr Young said Queensland Health was now investigating whether it should be mandatory. “At the moment it is a requirement, but not a particularly specific requirement – it doesn't have a protocol attached to it saying how often to test, how much testing to do,” she said.

“That's what we're looking at, whether we should be introducing that in Queensland.”

Brisbane Times 7 June 2013
Conscious incompetence

What do we need to do?

What guidelines do we follow?
Conscious incompetence

How do we make our hospital safe?
Conscious incompetence

**Scalding**

The definition of idiocy is to do the same thing again & again ...

and expect a different outcome!
Conscious incompetence – Code yellow control group in action

We need help to fix this....
Bring on the experts
## Why is Rehab special?

<table>
<thead>
<tr>
<th>Building</th>
<th>Ward</th>
<th>Outlet Code</th>
<th>Area Sampled</th>
<th>Date Sampled</th>
<th>Date Reported</th>
<th>TWH Sample No.</th>
<th>Result Legionella serogroup 1</th>
<th>Legionella other Serogroups</th>
<th>Total Plate count</th>
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<td>O1K4b</td>
<td>Basin - room 4</td>
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</table>
Moving towards - Conscious Competence

- By the end of June 2013 – Warm Water Party
  (AKA Infrastructure Safety Committee) weekly meetings commence

- Chlorine dosing of Wesley water commences

- 2nd July All buildings re-opened to admissions, Code yellow ceased & control team disbanded.
Moving towards - Conscious Competence

Deadlegs, low flow in pipework became a focus

The need for accurate “as constructed” site wide drawings
Moving towards - Conscious Competence

The Wesley “Crack” plumbing team in action
Moving towards - Conscious Competence

Make friends with the laboratory staff
Moving towards - Conscious Competence

We’re Back....
Moving towards - Conscious Competence

Disaster – more legionella in the water!

- 26th May 2014 - Heartcare partners sink
- 29th Sep 2014 - Day surgery sink
Moving towards - Conscious Competence

Make friends with the experts

Dr Susanne Lee conducted an external review of the Wesley’s water systems management in September 2014.

Recommendations included..

• Moving to a water safety plan as a holistic approach to managing water safety
• Building maintenance system (BMS) be monitored 24/7 & alarms in place so early notification should parameters fall outside of expected, e.g. chlorine level low, hot water temp drops below 50 degrees.
• Education in water safety is provided to the infrastructure safety team
• Ensuring the process around flushing low use outlets is robust & monitored for compliance
• Identifying a laboratory that can provide more sensitive legionella detection to 1cfu/litre (ISO 17025)
• Installing a multi-barrier point of entry treatment plant
• Test ice for Legionella
• Test for Pseudomonas in the water
Brisbane hospital ice machine tests positive for legionella pneumophila following patient diagnosis

“The state's chief health officer Dr Jeannette Young said Metro North Public Health Unit was working closely with Wesley Hospital staff to carry out the investigation and necessary testing”

Courier Mail 2 Jan 2016, 10:17am
Conscious competence? False sense of security

- Low level detection (1cfu/100mls)!
- New technology – qPCR for 24 hour turn around of results (WA), 1 hour detection test
- Genome sequencing
- ? What is next

<table>
<thead>
<tr>
<th>Year</th>
<th>No. samples</th>
<th>Negative Legionella</th>
<th>Legionella sero-group 1</th>
<th>Legionella other sero-groups</th>
<th>% Positive</th>
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<tr>
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<td>4234</td>
<td>4069</td>
<td>115</td>
<td>52</td>
<td>3.94%</td>
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<td>2877</td>
<td>2873</td>
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<td>1839</td>
<td>1831</td>
<td>1</td>
<td>7</td>
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<tr>
<td>2016</td>
<td>858</td>
<td>856</td>
<td>0</td>
<td>2</td>
<td>0.23%</td>
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</table>
Is Qld moving towards conscious competence?

What’s new?

💡 The national enhealth Legionella guidelines were published on 15\textsuperscript{th} January 2016

💡 Amendments to the Queensland Public health Bill & Establishment of Qld Water Safety Unit to oversee compliance with water management in 2016
Are we there yet?
Unconscious competence?

- WRMP is in place & is a living document
- Detection level at similar level to the exposure level necessary for infection, e.g. 1 cfu/100mls or 1cfu/1 L
- Incoming water filtered to prevent “biofilm food” down stream
- Water sufficiently disinfected (but does not smell like a swimming pool)
- Outlet Flushing regime in place & monitored
- Sampling regime is routine, but is alterable in reaction to results
- POU filters for patient outlets if legionella detected & only until remedial action has removed the bacteria
- Ice and water for ingestion is made from non-carbon filtered, ultra filtered (0.2 micron) water
Points to ponder????

- Legionella isn’t going to go away & stay away – it will not be “cured” and needs to be constantly managed!

- Aussie cold water isn’t cold enough – what are you gonna do about the cold water when it is at 32 degrees?

- What about multi-resistant pseudomonas? Is that a potential problem when splashed from a drain onto tap fittings and onto HCW hands?
Wesley is moving in the direction of Unconscious Competence?