The Year in Infection Control
ECCMID, 2015

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Ebola
HIV
Clostridium difficile
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Ebola: a 21st century plague

BBC News

Shears & O’Dempsey, JHI 2015
Fighting the fear and stigmatisation surrounding Ebola is one of the greatest challenges health workers face.

Schwedhelm et al, J Emerg Nurs 2015
Healthcare workers are among those most at risk of catching Ebola

Edmond MB, Diekema DJ, Perencevich EN, JAMA 2014
Among hospital inpatients, ward-level antibiotic prescribing is associated with a statistically significant and clinically relevant increase in *C. difficile* risk.

Figure 1. Association of Ward-Level Exposures With Ward *Clostridium difficile*

Brown et al, JAMA Intern Med 2015
No HAI?
How did statistics favour CHX in a prominent vascular catheter trial?

Maki DG et al, Lancet 1991

<table>
<thead>
<tr>
<th></th>
<th>Outcomes (catheter colonisation)</th>
<th>Individual Statistics</th>
<th>Grouping done (by Maki et al.)</th>
<th>Statistics by Maki et al.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHX 2%</td>
<td>5 / 214</td>
<td>CHX vs. PVI p=0.002</td>
<td>CHX</td>
<td>CHX vs. Rest p=0.01</td>
</tr>
<tr>
<td>ALC 70%</td>
<td>11 / 227</td>
<td>N.S.</td>
<td>ALC</td>
<td>So...... CHX appears to be better?</td>
</tr>
<tr>
<td>PVI 10%</td>
<td>21 / 227</td>
<td>N.S.</td>
<td>PVI</td>
<td></td>
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</tbody>
</table>

“... use of 2% CHX, rather than 10% PVI or 70% ALC ... can substantially reduce ... infection.” And “... each [i.e. ALC and PVI] was much less effective than CHX.”

Article cited >400 times; basis of catheter guidelines worldwide; are we certain that CHX is better than either IPA or PVI; this has gone unnoticed for >20 years

Maiwald et al, Lancet 2014
Viewpoint: a response to “Screening and isolation to control methicillin-resistant *Staphylococcus aureus*: sense, nonsense, and evidence”.

‘..there is sufficient evidence to support surveillance and isolation to prevent the spread of MRSA rather than bathe everyone in chlorhexidine...’

*Kavanagh KT et al, Antimicrob Resist Infect Control 2015*
What about resistance? Does MRSA tolerate chlorhexidine?

Ghasemzadeh-Moghaddam et al, Microb Drug Resist 2014; Macias et al, JHI 2015
Using dipslides to screen bioburden on surfaces

5 cfu/cm²

45 cfu/cm²

Pitfalls in microbiological sampling of the healthcare environment

Dancer SJ, ICHE 2015
Detergent vs disinfectant-based cleaning on total aerobic colony counts (ACC) recovered from near-patient sites over 48 hours

Stewart et al, ICHE 2014
Detergent vs disinfectant-based cleaning on total MSSA/MRSA recovered from near-patient sites on one ward over 48 hours

Stewart et al, ICHE 2014
Incidence of hospital-acquired multiple drug resistant organisms plus *Clostridium difficile* from January 2009 until April 2013

Haas J et al, AmJIC 2014
Disinfect everything.....

Dancer SJ, Clin Micro Rev 2014;
Po & Carling, ICHE 2010
Cold plasma consists of ionised gas molecules at room temperature.

‘Treating surfaces with a combination of bleach and cold plasma may eventually become the gold standard of norovirus decontamination.’

Ahlfeld et al, mBio 2015
Lower infection rates after using a photocatalytic surface coating

Pulliam JR, AmJIC 2014
Nanotechnology solutions to combat infection

Diagnostic technologies

Antimicrobial coatings: surfaces and equipment

Treatment strategies; drug carriers; target-specific; additional antimicrobial activity

http://www.nanowerk.com/spotlight/spotid=32188.php
Arrows indicate bacterial cells attached to metal surface. Presence of a foreign body (e.g. implant) decreases the minimal infecting dose of *S. aureus* >100,000-fold. *Trampuz & Zimmerli, SWISS MED WKLY 2005*

**Could nanotechnology protect orthopaedic implants from infection?**
Demons in White Coats!

Dancer SJ, Duerden BI. ‘Current controversy: Changes to clinician attire have done more harm than good.’

J Royal Coll Phys Edin 2014
'Regenerating interest in hygiene in the 21st century needs a cataclysmic shift in societal opinion, which will happen only when untreatable infections threaten to overwhelm our communities..

....there is currently a horrifying example of this in the global village.'
‘...improving PPE (for Ebola) will also assist with better control of MDROs, which is especially needed given the lack of therapeutic options for highly resistant gram-negative infections.’

*Edmond et al, JAMA 2014*

‘The recent Ebola epidemic has caused a reevaluation of US standards for control of all MDROs.’

*Kavanagh et al, ARIC 2015*
Farewell antibiotics....

Hello Hygiene

MacIntyre & Chughtai, BMJ 2015
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