Cultural determinants of infection control behaviour: understanding drivers and implementing effective change

Dr. Michael A. Borg
Infection Control Dept
Mater Dei Hospital
Malta
My work...

Behaviour change

- Patient safety
- Correct sharps use
- Safe management of devices
- Standard precautions
- Decontamination
- Antibiotic stewardship
- Hand hygiene

My work at Mater Dei Hospital

2
Behavioural influences

Human nature
Behavioural influences

- Appease personal conflict by generating a justification (*cognitive dissonance*)
- Attempt to gain maximum output for minimum effort (*cognitive economy*)
- *Unrealistic optimism* of risk behaviour
- Making judgements based upon minimal and dubious evidence (*Attribution*)
- *Egocentric* and self-oriented behaviour
Behavioural influences

- Personality
- Human nature
Influence of personality on potential IPC non-compliance

Adapted from - Elliot P: Infection Control: a psychosocial approach
Use of antibiotics for cold, flu and sore throat in EU countries

% Cold  Sore throat  Flu

Antimicrobial Resistance

Fieldwork: November - December 2009
Publication: April 2010
Behavourial influences

- Culture
- Personality
- Human nature
Hofstede national dimensions

The collective programming of the mind that distinguishes the members of one group or category of people from others

Cited in >10,000 sociology and psychology publications
BMC Health Services Research

Research article

Are cultural dimensions relevant for explaining cross-national differences in antibiotic use in Europe?

Reginald Deschepper¹, Larissa Grigoryan², Malin Stålsby Lundborg³, Geert Hofstede⁴, Joachim Cohen¹, Ger Van Der Kelen¹, Luc Deliens¹ and Flora M Haaijer-Ruskamp*²

Address: ¹Department of Medical Sociology, Health Sciences, Vrije Universiteit Brussel, Brussels, Belgium, ²Department of Clinical Pharmacology, University Medical Centre Groningen, University of Groningen, The Netherlands, ³Division of International Health (IHCAR), Department of Public Health and Social Medicine, Karolinska Institutet, Stockholm, Sweden, ⁴School of Public Health and Apoteket AB, Göteborg, Sweden

BMC Health Services Research 2008, 8:123
Uncertainty Avoidance

Antibiotic prescribing used to reduce uncertainty on the part of the clinician:

- Antibiotics given even in dubious clinical presentations
  - “I started antibiotics... just in case”
- Excessive use of wide spectrum formulations
  - “We need the widest possible cover”
- Unnecessarily long treatment duration

and of the patient:

- Doctors who do not prescribe seen as less competent
- High levels of self-medication
Power distance

Expert Power

• Power holders are the doctors
  • conviction of possessing superior skills / knowledge.

• Individuals with less power (patients)
  • do not need to be involved in decision making
  • will not challenge decisions even if they do not agree with them
Figure 69. Surgical prophylaxis given for more than one day as a percentage of the total antimicrobials prescribed for surgical prophylaxis, by country, ECDC PPS 2011–2012

Point prevalence survey of healthcare-associated infections and antimicrobial use in European acute care hospitals 2011–2012
Surgical prophylaxis > 24 hours

Pearson coefficient (r) of correlation: 0.50 (95%CI: 0.16 to 0.74); p = 0.007

Borg MA: J. Antimicrob Chemother - in press
MRSA prevalence in Europe

* Proportions of S. aureus in blood cultures showing methicillin resistance in 2009/10
Understanding the epidemiology of MRSA in Europe: do we need to think outside the box?

M.A. Borg\textsuperscript{a,}\textsuperscript{,*}, L. Camilleri\textsuperscript{b}, B. Waisfisz\textsuperscript{c}

\textbf{Aim:} To investigate the possible impact of national cultural dimensions on the epidemiology of MRSA in Europe.

\textbf{Methods:} Median proportions of MRSA bacteraemia were sourced for countries participating in the EARS-Net surveillance network in 2010, and correlated with the national cultural dimension scores of Hofstede \textit{et al.}

\textbf{Conclusion:} Implementation of ICAS programmes often requires behavioural change. Cultural dimensions appear to be key factors affecting perceptions and values among healthcare workers, which in turn are critical for compliance and uptake. Customizing ICAS initiatives to reflect the local cultural background may improve their chances of success.
Individual correlation and multiple regression analysis between national Hofstede cultural dimension scores and 2010 meticillin-resistant *Staphylococcus aureus* (MRSA) proportions reported by countries participating in EARS-Net

<table>
<thead>
<tr>
<th>Cultural dimension</th>
<th>Correlation coefficient</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Univariate analysis</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PDI</td>
<td>0.515</td>
<td>0.007</td>
</tr>
<tr>
<td>UAI</td>
<td>0.603</td>
<td>0.001</td>
</tr>
<tr>
<td>MAS</td>
<td>0.461</td>
<td>0.018</td>
</tr>
<tr>
<td>IND</td>
<td>-0.314</td>
<td>0.119</td>
</tr>
<tr>
<td>LTO</td>
<td>-0.237</td>
<td>0.243</td>
</tr>
<tr>
<td>IVR</td>
<td>-0.078</td>
<td>0.703</td>
</tr>
<tr>
<td><strong>Multiple regression</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>-1.551</td>
<td></td>
</tr>
<tr>
<td>UAI</td>
<td>0.365</td>
<td>0.002</td>
</tr>
<tr>
<td>MAS</td>
<td>0.214</td>
<td>0.05</td>
</tr>
<tr>
<td>LTO</td>
<td>-0.281</td>
<td>0.05</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.475</td>
<td></td>
</tr>
<tr>
<td>F ratio</td>
<td>8.53</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>0.001</td>
<td></td>
</tr>
</tbody>
</table>

PDI, power distance; UAI, uncertainty avoidance; IND, individualism; MAS, masculinity; LTO, long-term vs short-term orientation; IVR, indulgence vs restraint.
Uncertainty Avoidance

Ability to handle daily uncertainties of life and adapt to ambiguous situations

• Respond best to situations of certainty
  – Reactive not pro-active;
  – Crisis management as opposed to business planning

• Bureaucracy and dogmas common
  – Used to obtain certainty even though often counter-productive

• Risk-tolerance
  – Risk situations will not be addressed unless they create uncertainty
  – Uncertainty avoidance is not the same as risk avoidance
    • Uncertainty = anxiety; risk = fear
Speed limits in EU countries

![Box plot showing uncertainty avoidance score for speed limits ≤ 120 km/hr and > 120 km/hr](image)
Power distance

• Formal hierarchy
  • each tier wields more power than the rank below
  • subordinates are unlikely to be consulted
  • ownership difficult to instil

• Rules apply differently to according to power status
  • Personal discretion in the observation of rules
  • Accountability perceived as being “enforced” only on the less powerful
    • Justification to excuse non-conformance
    • Strong resentment of accountability instruments

• Going against a power holder may come at a price

All animals are equal but some animals are more equal than others (George Orwell: Animal Farm)
Masculinity

Level of assertiveness, ambition and competitiveness within a society.

- Masculine societies tend to be ego and result oriented
- Feminine cultures value teamwork, good working relationships and cooperation.
Focus groups: Maltese nurses

- **Audits**
  - “incriminate the particular individual”

- **Documentation**
  - “this is not an integral part of our work”
  - “nurses should focus on patient care rather than filling extra documentation”

- **Short-cuts**
  - “there is nothing wrong in taking short cuts as long as nothing bad happens”

- **Teamwork**
  - “(nurses) will politely point out (mistakes) with junior doctors (but) they would not dream to do so with senior consultants; once bitten, twice shy ”

- **Accountability**
  - “when doctors start to follow infection control policies, then come to talk to us about accountability”
Culture is a group phenomenon

Prevalence in country

Cultural dimension score
National MRSA rates run along with fair play of national football teams: a cross-national data analysis of the European Football Championship, 2008

E. Meyer · P. Gastmeier · F. Schwab
Euro Health Consumer index

Ranks:

• Patient rights & information
  – Incl patient rights, involvement of pt organisations, access to own records

• Accessibility & waiting times

• Outcomes
  – Incl undiagnosed diabetes, caesarean section rates, MI fatality rate, IMR

• Preventative services
  – Incl infant vaccination, kidney transplant rates, long term elderly care

• Pharmaceuticals

across European countries using published stats.
Correlation: ECI and MRSA

Table I

Rank correlation analysis between healthcare quality parameters reported in the Eurohealth Consumer Index and 2010 meticillin-resistant *Staphylococcus aureus* (MRSA) proportions reported by EARS-Net²,³

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Correlation coefficient (rho)</th>
<th>95% CI</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accessibility to medical care</td>
<td>0.068</td>
<td>−0.313 to 0.430</td>
<td>0.733</td>
</tr>
<tr>
<td>Outcomes (excluding MRSA)</td>
<td>−0.309</td>
<td>−0.666 to −0.02</td>
<td>0.040</td>
</tr>
<tr>
<td>Patient rights and information</td>
<td>−0.618</td>
<td>−0.805 to −0.318</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Prevention services</td>
<td>−0.465</td>
<td>−0.714 to −0.111</td>
<td>0.013</td>
</tr>
<tr>
<td>Availability of pharmaceuticals</td>
<td>−0.406</td>
<td>−0.506 to 0.223</td>
<td>0.243</td>
</tr>
</tbody>
</table>
You Can’t Change Culture, But You Can Change Behavior.

...especially within organisations
REVIEW

The Lowbury lecture: behaviour in infection control

D. Pittet\textsuperscript{a, b, *}

Education

Motivation

System change
Educational tools

• Personal experiences more important than evidence based science.

• Guidelines:
  – Not transferable to patient/clinical situation
  – Externally imposed cost containment exercise
  – Threatened clinical freedom (i.e. Expert Power)
  – No enthusiasm for multi-disciplinary involvement
## Motivational drivers

### Power

<table>
<thead>
<tr>
<th></th>
<th>Hong Kong nurses</th>
<th>Hong Kong cleaners</th>
<th>U.S. nurses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Legitimate</td>
<td>7.0%</td>
<td>30%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Accept obligation to comply with request</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expert</td>
<td>28.2%</td>
<td>21.4%</td>
<td>56.1%</td>
</tr>
<tr>
<td>Attribution of superior knowledge / ability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Informational</td>
<td>55.6%</td>
<td>23.6%</td>
<td>36.9%</td>
</tr>
<tr>
<td>Persuasiveness of communication</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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**Social power and motivation for the compliance of nurses and housekeeping staff with infection control policies**

W. H. Seto, MD  
T. Y. Ching, RN  
Y. B. Chu, BSc  
W. L. Seto, MA  
Hong Kong and Champaign, Illinois
Time-Series Analysis of the Impact of Bed Occupancy Rates on the Incidence of Methicillin-Resistant *Staphylococcus aureus* Infection in Overcrowded General Wards

Michael A. Borg, MD; David Suda, MSc; El

Antibiotic consumption as a driver for resistance in *Staphylococcus aureus* and *Escherichia coli* within a developing region

Michael A. Borg, MD, PhD,a Peter Zarb, MPhil,a Elizabeth A. Siciluna, MSc,a Ossama Rasslan, PhD,b Deniz Gür, PhD,c Saida Ben Redjel, PhD,a Ziad Bresser, MD,d and Ziad Daoud, PhDd

National cultural dimensions as drivers of inappropriate ambulatory care consumption of antibiotics in Europe and their relevance to awareness campaigns

Michael A. Borg*no

Implementing strategic bundles for infection prevention and management

K. Kaier · C. Wilson · M. Hulscher · H. Wollersheim · A. Huis · M. Borg · E. Siciluna · M.-L. Lambert · M. Palomar · E. Tacconelli · G. De Angelis · M. Schumacher · M. Wolkevitz · E.-M. Kleissle · U. Frank

Understanding the epidemiology of MRSA in Europe: do we need to think outside the box?

M.A. Borga,*, L. Camillerib, B. Waisfischc

a Infection Control Unit, Mater Del Hospital, Malta, Malta
b Department of Statistics and Operations Research, University of Malta, Malta, Malta
c ITM Focus, The Hague, The Netherlands
System change
The United States approach to strategies in the battle against healthcare-associated infections, 2006: transitioning from benchmarking to zero tolerance and clinician accountability

William R. Jarvis*

Jason and Jarvis Associates, Hilton Head Island, SC, USA
In theory...

Zero tolerance & clinical accountability strategies appear most compatible with cultures possessing:

• High masculinity
• High individualism
• Low power distance
• Low uncertainty avoidance
Hofstede cultural scores

- U.K.
- U.S.A.
- Canada

- Greece
- Slovenia
- Portugal
**Table 1**

Patient willingness to be empowered, to ask about hand hygiene, and whether they were given permission by their healthcare workers to ask if they have performed hand hygiene. Updated from WHO Guidelines on Hand Hygiene in Health Care (p. 256)

<table>
<thead>
<tr>
<th>Study origin</th>
<th>Patient believes he/she should be involved</th>
<th>Patient would ask about hand hygiene</th>
<th>Healthcare worker gave permission to patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>England and Wales NPSA (2004)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>71%</td>
<td>26%</td>
<td>-</td>
</tr>
<tr>
<td>Ontario (Canada)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>32%</td>
<td>42%</td>
<td>-</td>
</tr>
<tr>
<td>USA consumer survey&lt;sup&gt;c&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USA web survey&lt;sup&gt;d&lt;/sup&gt;</td>
<td>-</td>
<td>60%</td>
<td>80%</td>
</tr>
<tr>
<td>World Health Organization survey&lt;sup&gt;e&lt;/sup&gt;</td>
<td>-</td>
<td>52%</td>
<td>86%</td>
</tr>
<tr>
<td>UK&lt;sup&gt;f&lt;/sup&gt;</td>
<td>79%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USA&lt;sup&gt;g&lt;/sup&gt;</td>
<td>91%</td>
<td>45%</td>
<td>-</td>
</tr>
<tr>
<td>UK&lt;sup&gt;h&lt;/sup&gt;</td>
<td>-</td>
<td>-</td>
<td>Significant increase</td>
</tr>
<tr>
<td>Switzerland&lt;sup&gt;i&lt;/sup&gt;</td>
<td>-</td>
<td>33%</td>
<td>81%</td>
</tr>
<tr>
<td>Australia&lt;sup&gt;j&lt;/sup&gt;</td>
<td>90%</td>
<td>40%</td>
<td>-</td>
</tr>
</tbody>
</table>
Appendix 6.
WHO global survey of patient experiences in hand hygiene improvement

Table 1.
Respondents by WHO region

<table>
<thead>
<tr>
<th>WHO region</th>
<th>No. of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Americas (AMR)</td>
<td>237</td>
<td>52%</td>
</tr>
<tr>
<td>Europe (EUR)</td>
<td>161</td>
<td>35%</td>
</tr>
<tr>
<td>South East-Asia (SEAR) and the Western Pacific (WPR)*</td>
<td>42</td>
<td>9%</td>
</tr>
<tr>
<td>Africa (AFR) and the Eastern Mediterranean (EMR)*</td>
<td>17</td>
<td>4%</td>
</tr>
</tbody>
</table>

Table 2.
Patient experiences of patient participation by WHO region

<table>
<thead>
<tr>
<th>Have you ever asked your health-care worker to wash or sanitize his/her hands (Q5)</th>
<th>AMR</th>
<th>EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>85 (36%)</td>
<td>28 (17%)</td>
</tr>
<tr>
<td>No</td>
<td>151 (64%)</td>
<td>132 (82%)</td>
</tr>
<tr>
<td>No response</td>
<td>1 (0.3%)</td>
<td>1 (1%)</td>
</tr>
</tbody>
</table>
WHO global survey of patient experiences in hand hygiene improvement

If the doctor said, please remind me, I would find it quite easy to say, you asked me to remind you to wash your hands...it would be similar to my saying why I was there, or giving the doctor an update on medication, etc...that is, just part of the routine (survey respondent, USA).

First it is necessary to change the cultural barriers: patients have no right to tell the physicians what to do (survey respondent, Slovenia).
• Most of the current “evidence” for effective infection control interventions and strategies originate from Anglo-Saxon countries.
• Invariably utilise methods compatible with the prevalent cultural set-up.
14 behaviour change exploratory studies:

- UK (4 studies)
- Canada (2 studies)
- Ireland (1 study)
- USA (3 studies)
- Australia (2 studies)
- Sweden (1 study)

All countries characterised by low power distance & low uncertainty avoidance

- Only other paper came from Hong Kong (1997)
Organisational systems differ

Adapted from Mintzberg’s organisational framework and Hofstede’s organisational culture dimensions

<table>
<thead>
<tr>
<th>POWER DISTANCE</th>
<th>Uncertainty Avoidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Market</td>
</tr>
<tr>
<td></td>
<td>Anglo-Saxon</td>
</tr>
<tr>
<td></td>
<td>Adhocracy</td>
</tr>
<tr>
<td></td>
<td>Mutual adjustment</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Family</td>
</tr>
<tr>
<td></td>
<td>Far East</td>
</tr>
<tr>
<td></td>
<td>Simple structure</td>
</tr>
<tr>
<td></td>
<td>Direct supervision</td>
</tr>
<tr>
<td>Low</td>
<td>Machine</td>
</tr>
<tr>
<td></td>
<td>Tuetonic</td>
</tr>
<tr>
<td></td>
<td>Professional bureaucracy</td>
</tr>
<tr>
<td></td>
<td>Standardisation of skills</td>
</tr>
<tr>
<td>High</td>
<td>Pyramid</td>
</tr>
<tr>
<td></td>
<td>Latin</td>
</tr>
<tr>
<td></td>
<td>Full bureaucracy</td>
</tr>
<tr>
<td></td>
<td>Standardisation of processes</td>
</tr>
</tbody>
</table>

Adapted from Mintzberg’s organisational framework and Hofstede’s organisational culture dimensions.
Mater Dei Hospital
My change philosophy 1

Don’t reinvent the wheel, just realign it.

(Anthony J. D'Angelo)
My change philosophy 2

CHANGE HAPPENS IF

(preferably both)

CHANGING OFFERS AN ADVANTAGE OR BENEFIT

STATUS QUO OFFERS A DISADVANTAGE OR LOSS
• Culture is a strategic phenomenon; strategy is a culture phenomenon”

Paul Bate
Our approach

• Learn from successful experiences elsewhere
• Understand that our cultural values will never be those of a US, UK or Scandinavian hospital.
• Choose interventions that are compatible with our national (and organisational) culture.
  – or adapt implementation methods so that they synchronise with - rather than go against - our local values.
Is this achievable for us?

- Infection just happens → Infection is intolerable
- Reducing infections is the role of the infection control team → Preventing infection is everyone’s responsibility
- We need to set specific infection control targets → Infection prevention is integral to patient safety
- We can take one-off actions on HCAIs → Infection prevention is integral to delivery of safe care
- Action plans are tick lists → Action plans are live, owned and outcome focused and have evidence of compliance
Our approach

- Heavily centralised initiatives directly led by DIPC
- Hands-on involvement of Infection Control staff
- Consult with stakeholders as much as possible and feasible
- Emphasis on process audits rather than outcome targets
MRSA bacteraemia campaign

- Root cause analysis driven directly by Infection Control
  - Attempts to get doctors and nurses to take the lead failed.
  - Used primarily to identify problem areas and practices

- An infection control nurse drove each initiative
  - Constant visits to review progress
- Exhaustive programme of auditing
  - All undertaken centrally by infection control personnel
  - Results individually discussed with head nurse of ward in the presence of senior management
  - Publically reported throughout the hospital
Mater Dei hospital - Malta
MRSA bacteraemia per 10,000 BD

Strategy modification

Yearly Median
Hand hygiene compliance

The graph shows the compliance rates for hand hygiene among nurses and doctors from Qtr1 in 2010 to Qtr1 in 2013. The compliance rates are represented in percentages from 0% to 100%. The data indicates an overall increase in compliance rates over the years, with nurses showing a steady rise, and doctors experiencing fluctuations.
Carbapenem use 2009 - 2012

DDD /100BD

Root cause analysis

Intervention
My conclusions

• Infection control is ultimately a behavioural science incorporating biomedical principles
• Behaviour science suggests that it is logical that national and organisational culture should be one important driver influencing IPC practices.
  – IPC behaviour is a microcosm of overall behaviour
  – There are no good or bad cultures
• Evidence is admittedly circumstantial but...
• Essential that we appreciate and understand these drivers better to inform more effective interventions
• Culture change is anything but easy...
A parting thought...

• “Acknowledging the role of culture (should) not become an excuse for fatalism.”

• “I do believe you can change things.”

• “But I think you can change them more effectively if you know the culture you are against.”
Thank you

Conference theme:
Understanding behaviour
Implementing change

FOURTEENTH CONGRESS
OF THE INTERNATIONAL
FEDERATION OF
INFECTION CONTROL

12-15 March 2014, Malta

www.ific2014.com