The ORION Statement

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Agenda

• The ORION statement
  – Who made it?
  – Why?
  – What relevance does it have to you?

• Plotting the dots

What will YOU do on Monday?
Quality of infection control research must improve to provide robust evidence for policy & practice

Doing it right is easy if you know what to do

Designed especially for infection control interventions and outbreak reports
  - Checklist for consistent reporting of key data items
  - Plot the dots, infection is a time dependent variable

**Lancet Infect Dis 7 (4):282-288, 2007.**
Co-authors & Collaborating Institutions

- Ben Cooper  *Stats/Modelling*
- Chris Kibbler  *Microbiology*
- Barry Cookson  *Microbiology*
- Jenny Roberts  *Health Economics*
- Graham Medley  *Modelling*
- Georgia Duckworth  *Public Health*
- Rosalind Lai  *Library Sciences*
- Shah Ebrahim  *Epidemiology, EBM*
- Erwin Brown  *Microbiology*
- Phil Wiffen  *EBM*
- Peter Davey  *Infectious Diseases, Pharmaco-economics*

**Institutions:**
- Royal Free & University College Medical School
- Health Protection Agency, Colindale
- London School Hygiene & Tropical Medicine
- Warwick University
- Frenchay Hospital, Bristol
- UK Cochrane Centre, Oxford
- University of Dundee Medical School
Improving the evidence base


- HTA MRSA Review: guidelines for MRSA outbreak reports & intervention studies
- CONSORT to improve quality reporting RCTs: why & how designed, conducted & analysed..what the results mean
- TRENDS adapted CONSORT to meet non-RCT designs in Public Health Interventions
- STROBE adapted it for observational studies in epidemiology (cohort, case control, cross sectional)
- Transparency was key so that information critical to synthesis of research not missing
AIM OF ORION Statement

CONSORT equivalent for infection control

• Transparency of reporting
• Readers relate studies to their situation.
• Facilitate synthesis of evidence
• Framework for reviewers & editors
• Criteria research grant assessment panels

• Designed especially for Interrupted Time Series and outbreak reports.
Key issues addressed by ORION

Transparency:
- Why was the study done? (hypothesis)
- What sort of study? (design)
- Exactly what was done, to whom, when?

Analysis:
- Disaggregated data
- Account for dependencies
- Confounders

Inference:
- How do findings relate to hypothesis?
- What else influenced the findings?
- Do findings generalise?
Cholera deaths

Pump handle removed

Day

0-Aug 16-Aug 26-Aug 05-Sep 15-Sep 25-Sep 05-Oct

Cholera deaths

16-Aug 26-Aug 05-Sep 15-Sep 25-Sep 05-Oct
### Standard approach for analysing ITS data in hospital infection literature

<table>
<thead>
<tr>
<th></th>
<th>Infected</th>
<th>Not infected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase 1</td>
<td>23</td>
<td>172</td>
</tr>
<tr>
<td>Phase 2</td>
<td>7</td>
<td>185</td>
</tr>
</tbody>
</table>

Pearson's Chi-squared test with Yates' continuity correction

\[
X^2 = 7.8806, \text{ df } = 1, \text{ p-value } = 0.005
\]
This analysis has two fatal flaws.

1. It ignores the possibility of temporal trends.

2. It assumes outcomes are independent (that what happens to one person doesn’t affect what happens to another)

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Both flaws make the results of such analyses meaningless.
The first fatal flaw: trends

Before/after studies present only collapsed data and are vulnerable to maturation bias:

<table>
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Time
The first fatal flaw: trends
The first fatal flaw: trends
Components of ORION

• 22 item checklist
  Title
  Abstract
  Introduction
  Methods
  Results
  Discussion

• Summary table
  Population
  Clinical setting
  Precise nature & timing of all interventions

• Graphical summary results
<table>
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<td><strong>Major infection control changes during the study:</strong> Carer hand-hygiene education and feedback; patient isolation; screening; MRSA eradication; antibiotic use; automatic readmission alerts, disinfection, sterilization, air control &amp; building construction.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Phase 1**  
48 months (Jan 1989 - Dec 1992) |  
None |  
None |  
None |  
No MRSA control measures |
| **Phase 2**  
24 months (Jan 1993 - Dec 1994) |  
1.Single room.  
2. Cohorting on closed and open bays in special circumstance (e.g. unit specific outbreaks). |  
1.Admission screens for previous MRSA patients.  
2. Contacts screened.  
3. Treated MRSA patients: weekly for 4 weeks, then monthly. |  
Mupirocin and chlorhexidine.  
Mupirocin used for almost all patients, irrespective of MRSA carriage*. |  
As phase 2 until September 1997.  
1.CDC guidelines 1983  
2. Computer alerts for readmitted MRSA patients (July 1994 on).  
As phase 2 + staff hand-hygiene education & feedback programme |
| **Phase 3**  
36 months (Jan 1995 - Dec 1997) |  
As phase 2 |  
As phase 2 |  
As phase 2 until September 1997. |

**Isolation details:** From 1993 single rooms may not have been used when there was nasal carriage only and lack of available rooms. Contact for overflow with nasal carriage only. 60 single rooms available for acute services patients (without negative pressure).

**Screening details:** Screening sites: nose, lesion, groin, infected sites. Patients in "septic" orthopaedic ward screened on admission from July 1994.

**Eradication Details:** From phase 2 most patients received ≥1 nasal mupirocin courses, irrespective of MRSA carriage*. After September 1997 mupirocin was limited to those with known nasal carriage and without chronic skin lesions and indwelling devices. Criteria for eradication: 2 negative sets of cultures ≥24 hrs apart.
ORION: Where next? CONSORT model
Altman BMJ 2006; Moher et al. JAMA 2001; Altman & Moher Med Clinica 2005

Dissemination

- **Publication** - JAC, Lancet ID;
- **Editorials** - JHI, BJIC, CMI
- **Website** - www.idrn.org/orion.php
- Meetings and **Workshops**
- **CPD** --- 3 MSc courses

Feedback & Revision

- **Website**
- **CPD**
- **Revision meeting** in 2-3 years including editors, research councils

Enforcement

- **Instructions to authors** & reviewers - JHI, JAC, BJIC, ICHE, AJIC
- **NEJM** is "willing to take ORION statement into consideration in our review process"
- **Research councils** & grant awarding bodies: part of SOPs for British Society for Antimicrobial Chemotherapy grants

Evaluation

- Adoption by funders and journals?
- Controlled before & after study comparing adopters & non-adopters?
MRC Framework for Evaluating Complex Interventions

Continuum of increasing evidence
Phase III: Impact of Care Bundle Implementation on Catheter-Related Blood Stream Infections, 103 ICUs

Phase IV: Does It Work in my ICU?
Relation between context, problem definition, intervention, and evaluation for complex interventions

- How to implement changes in practice, sustain and spread them in the complex healthcare environment
- The psychology of the participants and the sociology of the organizational contexts as well as the effectiveness of the technology

Campbell, N. C et al. BMJ 2007;334:455-459
Improving patient safety: making changes and holding the gains

NHS Tayside ID Unit Hand Hygiene Compliance (% of patient contacts)

- "We don't do 70%", Gerry Marr, Chief Operating Officer
- High % staff on leave or unwell
- End of Safer Patients Initiative Phase 1
- Reduce to twice monthly audits

Start of technique audits in Oct 2006

- Opportunities taken
- Technique
Health Interventions by Region

The majority of regions have now agreed on what measures/interventions they plan to test in advance of the workshops.

You can access details of all mer (updated: 9/7/2007)

Welcome

Welcome to the Clostridium difficile Workshop 2007 extranet site.

Regional teams participating in the 2007 workshop series will test measures and mer (updated: 6/7/2007)

More Project News

Newest Discussions

There are currently no new messages.

All Teams

Search for a Person on this Project

Belfast
Birmingham
Cardiff
Chester
Example Team
Leeds
London - 12 November
London - 13th November
Salisbury
Stirling
Sunderland

My Teams