OPERATIONAL RESEARCH

What, Why and How?

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“What” is operational research

Search for knowledge on interventions, strategies or tools that can enhance the quality, or coverage of health systems and services.

*Lancet ID* 2009, 9:711-717
Historical roots:

Military & industrial modelling

defined as “the application of analytic methods to help make better decisions”

Example: Military sector: anti-aircraft artillery efficiency
Examples: Commercial sector:

- Englands « Penny Post » – 1840
- Improved scheduling of airline crews
- Better designing of waiting lines at Disney theme parks
Guiding principles in setting operational research agendas

- Define program / health system objectives
- Identify constraints to meeting objectives
- Ask research questions around constraints
RESEARCH QUESTIONS

Three themes:

• Lack of knowledge?

• Lack of a tool or intervention?

• Inefficient use of a tool or intervention?
Theme – “lack of knowledge” about patients lost to follow up

- **Objective** = Achieve an 85% treatment completion (TB) or excellent retention on therapy (ART, asthma, smoking cessation tool)

- **Constraint** = high loss to follow up rates (30%) from therapy
  \( \Rightarrow \) Treatment completion = 70%

- **Research question** = why are people lost? (payment? side effects? transport costs to clinic? unreported death?)

- **Answer the question and find solutions** to decreasing losses from therapy
Theme – “inefficient use of a tool”

sputum smears for diagnosing PTB

- **Objective** of NTP = high quality sputum smear diagnosis using three sputum smears per patient

- **Constraint** = three smears per patient are demanding for the laboratory technicians (Shortages, high caseload)

- **Research question** = are *two smears* as efficient as three smears for diagnosing smear-positive pulmonary TB

- **Answer the question in a number of different ways**
Research methodology

- Descriptive or cross-sectional studies
- Case-control studies
- Cohort studies (prospective, retrospective)

Research is conducted within the routine system
What is not operational research:

• Basic science research

• Randomised controlled trials [RCT] – where research is conducted in a strictly controlled environment, with inclusion and exclusion criteria – efficacy is the end point
The need for RCT and operational research: a necessary continuum

RCT

Operational research

Patients and communities

Generates knowledge (Trial conditions)

‘How to’ apply that knowledge? (Real world conditions)

Benefits +
Routine data monitoring system

SYNERGY

Data used for operational research
Why is operational research relevant?
Three broad reasons:

- Improve programme outcomes in relation to medical care or prevention

- Assess feasibility of new strategies or interventions in specific settings or populations

- Advocate for policy change
Improving program outcomes:
Voluntary counselling, HIV testing and adjunctive cotrimoxazole reduces mortality in TB patients in Thyolo, Malawi

*AIDS* 2003, 17:1053-1061

⇒ Country-wide, expansion of HIV testing and cotrimoxazole for TB patients
## HIV Testing and CPT in TB patients in Malawi: progress

<table>
<thead>
<tr>
<th></th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>TB patients</td>
<td>26836</td>
<td>26136</td>
<td>26019</td>
<td>26659</td>
<td>25767</td>
<td>25688</td>
<td>24356</td>
<td>22536</td>
</tr>
<tr>
<td>HIV tested</td>
<td>15%</td>
<td>26%</td>
<td>47%</td>
<td>66%</td>
<td>83%</td>
<td>84%</td>
<td>86%</td>
<td>88%</td>
</tr>
<tr>
<td>HIV positive</td>
<td>69%</td>
<td>72%</td>
<td>69%</td>
<td>66%</td>
<td>69%</td>
<td>63%</td>
<td>64%</td>
<td>64%</td>
</tr>
<tr>
<td>Start CPT</td>
<td>87%</td>
<td>97%</td>
<td>92%</td>
<td>98%</td>
<td>97%</td>
<td>96%</td>
<td>94%</td>
<td>94%</td>
</tr>
<tr>
<td>Start ART</td>
<td>0%</td>
<td>&lt;10%</td>
<td>29%</td>
<td>38%</td>
<td>32%</td>
<td>38%</td>
<td>45%</td>
<td>54%</td>
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</tbody>
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**National TB treatment outcomes in new smear-positive PTB**

<table>
<thead>
<tr>
<th>Year</th>
<th>Treatment Success</th>
<th>Death</th>
<th>Other</th>
</tr>
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<tbody>
<tr>
<td>2002</td>
<td>71%</td>
<td>19%</td>
<td>10%</td>
</tr>
<tr>
<td>2004</td>
<td>71%</td>
<td>16%</td>
<td>13%</td>
</tr>
<tr>
<td>2006</td>
<td>79%</td>
<td>13%</td>
<td>8%</td>
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<tr>
<td>2008</td>
<td>85%</td>
<td>8%</td>
<td>7%</td>
</tr>
<tr>
<td>2010</td>
<td>88%</td>
<td>8%</td>
<td>4%</td>
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Harries *et al*. BMC Public Health 2011, 11:593
Assessing feasibility: HIV treatment in a conflict setting: Experience from Bukavu, RDC


⇒ Knowledge on offering HIV/AIDS care and ART in chronic conflict settings
Policy change (wider level): Antimalarial effectiveness in a time of change to artemisinin-based combination therapies: MSF studies in 18 countries


⇒ Contributed to shift in national & international policies for more effective antimalarial treatment
• Research questions are generated by identifying constraints/challenges of implementation

• The answers to these questions should have direct, practical relevance to solving these problems and improving health care delivery.
Operational research – How?

Enabling factors?
1. Direct Programme relevance

- Programme staff and general health staff are busy

- Research question must be relevant to programme implementation & connected to health service delivery

- Coordination mechanism to provide clear strategy about setting of research priorities
Malawi TB Programme: 1999-2004
Six principal objectives

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<tr>
<td>1.</td>
<td>Positively influence health seeking behaviour of suspects</td>
</tr>
<tr>
<td>2.</td>
<td>Improve and sustain equity in process of TB care</td>
</tr>
<tr>
<td>3.</td>
<td>Improve diagnostic practices</td>
</tr>
<tr>
<td>4.</td>
<td>Improve capacity of NTP to deliver effective treatment</td>
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<td>5.</td>
<td>Increase collaboration – e.g., with HIV/AIDS; private sector</td>
</tr>
<tr>
<td>6.</td>
<td>Strengthen supervisory and monitoring systems</td>
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**Identify constraints for each objective and ask research questions around these constraints**
2. Partnerships with local programmes

⇒ Tendency to outsource research to academic institutions (annexed sites)
⇒ Research findings dumped on busy programme managers (implementation not a mandate)

• Paradigm shift: a “partnership model” that promotes better involvement, co-ownership and responsibility of programme staff with researchers

• Thus, build funding and resources for operational research into a national programme
  – Foreign institutions have funding, time and mandate for research and the associated power of decisions
Implementation of research by the various groups
International
World Diabetes Foundation
The Union
WHO

(Oct 2011)
Stakeholders

National
NTP (RNTCP) / MOH
National program - Cancer, Diabetes, CVD & Stroke
National experts

(Jan 2012)
Screening for Diabetes in TB
(8 tertiary & 60 peripheral centers)

(Sept 2012)
Results presented to stakeholders
Screening of patients with tuberculosis for diabetes mellitus in India

India TB-Diabetes Study Group*
3. Build research capacity / Time

Research Question

Protocol development, including ethics approval

Secure funding

Implementation, collection of data, cleaning of data

Data analysis and interpretation

Paper writing, submission, peer review, re-writing

“The Hard Work” to translate findings into policy and practice
4. Develop trained researchers

• Are existing models working?

• Much investment in training [MSF, JATA, Union, CDC, WHO], but what about the products from the field?

• What happens to researchers who have completed Masters or PhD? Where are they?
  » Appointed to senior management
  » No budgets or infrastructure
  » No opportunity
Programs: Need for a critical mass!

• Build a “critical mass” of research staff
  • Competent Research Officer working with Programs
    ⇒ Coordinates and sets research priorities
    ⇒ Builds a “critical mass” of research staff

• “Practical skills” to conduct and publish research

• Dissemination
  • Annual meetings (field and partners)
  • Presentation at conferences
Scientific Publications-Trend (MSF-OCB)

Introduction of a "critical mass" of support staff: a research coordinator, a data manager and a medical editor

Start of MSF-Union operational research courses
5. Role of non-governmental organizations (NGOs- MSF)

• Work in conflict settings and with vulnerable groups (e.g. prisoners, commercial sex workers)

• By mandate, NGOs (e.g. MSF) are implementers and engage in translating research into policy and practice

• NGOs well resourced
Payment for antiretroviral drugs is associated with a higher rate of patients lost to follow-up than those offered free-of-charge therapy in Nairobi, Kenya

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Professor of International Health, University of Amsterdam and Executive Director KNCV Tuberculosis Foundation, The Hague, The Netherlands

Received 23 May 2007; received in revised form 13 December 2007; accepted 13 December 2007

Summary: This retrospective analysis of routine programme data from Mbagathi District Hospital, Nairobi, Kenya shows the difference in rates of loss to follow-up between a cohort that paid 500 shillings/month (approximately US$7) for antiretroviral drugs (ART) and one that received medication free of charge. A total of 435 individuals (mean age 31.5 years, 65% female) were followed-up for 146 person-years; 265 were in the ‘payment’ cohort and 170 in the ‘free’ cohort. The incidence rate for loss to follow-up per 100 person-years was 42.2 and 20.5, respectively (adjusted hazard ratio 2.27, 95% CI 1.21–4.24, P = 0.01). Overall risk reduction attributed to offering ART free of charge was 56.6% (95% CI 26.0–76.5). Five patients diluted their ART regimen to one tablet (instead of two tablets) twice daily in order to reduce the monthly cost of medication by half. All these patients were from the payment cohort. Payment for ART is associated with a significantly higher rate of loss to follow-up, as some patients might be unable to sustain payment over time. In resource-limited settings, ART should be offered free of charge in order to promote treatment compliance and prevent the emergence of drug resistance.

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Welcome

MSF is known for its humanitarian medical work, but it has also produced important research based on its field experience. It has published articles in over 100 peer-reviewed journals and they have often changed clinical practice and been used for humanitarian advocacy. These articles are available for free, in full text - no login required. We sincerely thank the publishers for their permission to archive on this site.

Contents

- Published Research and Commentary
- Conference Abstracts
- Research Resources
- Programme Descriptions
- Partners

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   - Mluu, Jomo; Wawumka, Monica; Balikagga, Martin; Massawe, Simon; Njeri, Simon; Njogu, King;
   - George; Runga, Mark; de la Torre, Roberto; van Peteghem, Joke; Omollo, Raymond; Chappuis, Francois

2. The power of data: using routinely collected data to improve public health programmes and patient outcomes in low- and middle-income countries
   - Harnois, Anthony D; Zachariah, Rony; Mahor, Dermot

3. Task-Sharing of HIV Care and ART Initiation: Evaluation of a Mixed-Care Non-Physician Provider Model for ART Delivery in Rural Malawi
   - McGuire, Megan; Ben Farhat, Jabari; Fedroto, Geelke; Szumilin, Elizabeth; Neuzil, Annelle; Chinyemba, Yemikeni
   - Malwana; Geossens, Sylvie; Makombe, Simon; Pulido-Rodrigues, Mar

4. Counselling in humanitarian settings: a retrospective analysis of 18 individual-focused non-specialised counselling programmes
   - Shankis, Lesley; Arthi, Cona; Siddiqui, Ruby; Pintaldi, Giovanni; Venia, Sarah; de Jong, Kaz; Denault, Martine

5. Effect of a serogroup A meningococcal conjugate vaccine (PsA-TC) on serogroup A meningococcal meningitis and carriage in Chad: a community trial
   - Daugherty, D; Gamy, JP; Camougaard, K; Nafail, NJ; Megamud, L; Nkor, MJ; Torajita, J; Koditsche, BJ; Ndjambu, CJ; Cofére, MS;
   - Hamman, F; Page, A; L. Djomand, M; Njogu, Simon; Wharton, DJ; Rebbett, L; Tekleab, Y; Wessels, B; Hill, DJ; Caulfield,
Publication Downloads: 2010-2013
http://fieldresearch.msf.org/msf/

Average downloads/month-2013 = 8900

Total downloads = 209,774
6. Regularly evaluate success (or not) of research

- Have research activities completed and published?
- Has it influenced policy/practice?
- Provide feedback and disseminate
Further Information

• **Leaflet**: Operational research in MSF

• (Lancet)— Operational research in low income countries: What, Why and How?

• (International health): Operational research in an NGO: The experience of MSF

• The published paper – an indicator of operational research

• (Lancet) Assessing success of operational research

• The MSF- OCB operational research policy -2013