Question 4b: What is the economic cost/benefit of screening?

Professor Barry Cookson

Division of Infection and Immunity,
Univ. College London

Dept. of Health Policy,
London School of Hygiene & Tropical Medicine

Canadian War Memorial 1994

"*In two world wars one million Canadians came to Britain and joined the fight for freedom. From danger shared, our friendship prospers.*"

Image from “Big Think Editors”

Theodore Roosevelt

Answering how long it took him to prepare one of his speeches. He answered that:

“It depends on the length of the speech required.

- for a half-an-hour speech, two to three days,
- for five minutes, a week
- and if I have to speak for two hours, then I can begin immediately”

Lecture Strategy!

- I have made several “resource” slides providing extra detail during the lecture and added slides thereafter
- Others are speaking on Laboratory Costings and Cultural differences between Societies/Countries
- Focus will be largely on MRSA as other AROs are thus far poorly examined regarding costings

Question 1 : Point of view of the individual patient?

- Little work in HAI: compared to other fields e.g. oncology
  e.g. Jenkins et al, R. Soc. Med. Sh. Rep. 2011;2:69. DOI 10.1258
- Various issues: Publication bias to well resourced countries; Surveyed pay for healthcare ? Over-estimate willingness to pay!
- Engagement with patient advocacy organisations:
  - How influential are they in healthcare, politically, scientifically? e.g. England NICE policy advisory working groups include healthcare and other professionals, patients, carers, the public, & technical experts. Hand Hygiene Liaison Group…
  - Can bring new competencies e.g. nuclear and aviation industry approaches to safety

Important Issues:
The patient experience

- Insufficient or incorrect understanding of the transmission, treatment and outcomes of Healthcare Associated Infections (HAI)
- Exaggerated sense of HAI risk (Gould et al, 2009)
- and of MRSA (Brady et al., 2009, Easton et al., 2007, MORI POLL, 2010).
- Common issue is that information ONLY provided verbally & patients cannot remember this (Burnett et al., 2010, MORI Pol, 2010).

Scottish Pathfinder 2011: Staff & Patient Views on Universal MRSA Screening

- ~700 individuals: few patients with MRSA!
- Highly acceptable to patients, visitor & wider community
- Staff : “significant minority” more negative attitudes
  - Unacceptable; isolation facilities lacking, increased workload, screening/decolonisation protocol variation
  - Uncertainty future funding
- Interesting views for further exploration:
  - All wanted staff screening & MRSA infected patients nursed in isolation not with other colonised patients.
- England has also studied this: see added slides.
- Neither study explored views on costings

Question 1 : Point of view of the individual patient?

- Consulting with patients/advocates/general population opens up additional possibilities e.g. what are implications of loss of effective antimicrobial chemotherapy?
- "Cultural" issues: see other lecture: note that there can differences within e.g. Quebec; see http://geert-hofstede.com/

  Recommendations

  Consider questionnaire surveys, engaging with patient advocates & policy makers after the conference to consider:
  - Scenario setting to inform their decision making?
  - "Policy Maker" software could also be considered?

Question 2: Point of view of Health care providers ? (& for Question 3: funders of the health care system)

Many contextual issues

- Payment of healthcare: Public &/or Private?
- How key an issue is patient safety e.g. hospital www sites declare what doing and how responding to issues?
- Economic drivers e.g. extended lengths of stay will reduce numbers of treated patients (and bank balance) & affect ability to meet government targets e.g. waiting-list times?
- Are hospitals fined if there are HAIs? This can result in "gaming"! (see additional slide)

Question 3: Point of view of funders of the health care system?

- Many policy issues have to be explored
  See Fineberg, JAMA. 2013;310(1):85-90
  (One slide included in extra slides).
  This is to be addressed by others after the conference.
- How do we evaluate/measure the economic value (cost/benefit) of screening? i.e. Question 4

Question 4: How do we evaluate/measure the economic value (cost/benefit) of screening?

Need to determine

1) The costs of spread of AROs and the burden of disease they cause

Note ~75% of ARO cases just colonised. Depending on case mix these can transmit as much as from infected cases.

2) The costs & effectiveness of screening and interventions it informs:

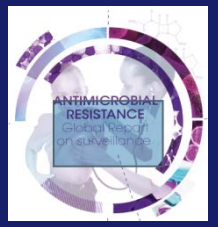
- Isolation measures: what, who & when: including enhanced hand hygiene, cohorting, side-rooms, isolation ward?
- Antiseptic use for MRSA decolonisation/suppression: what, who & when?

No Agreed Methodology to determine the burden/ costs of HAI (including ARO/MRSA)

Four studies all encountered this issue

- WHO AMR Global Surveillance 2014
- Global Burden study. Luoto et al, PLoS Med 2014;10(7): e1001469. doi:10.1371
- Review paper: Smith and Coast, BMJ 2013;346:f1493 doi: 10.1136/bmj.f1493
- Roberts & Cookson, National Audit Office Report, 2009. http://www.nao.org.uk/publications/0809/reducing_healthcare_associated.aspx

WHO; Antimicrobial Resistance Global Surveillance Systematic Costings Review 2014



	Antibacterial resistance	Studies included in SR (n)	Studies reporting cost data (n)	Excess cost (n=studies reporting costs)			
				Hospitalization[a]	Antibacterial therapy[b]	Medical care[c]	Additional cost variables[d]
Escherichia coli	3rd generation cephalosporin-resistant	25	2	Yes (n=2)	Yes (n=1)	Yes (n=1)	Yes (n=1)
	Fluoroquinolone-resistant	12	0	–	–	–	–
Klebsiella pneumoniae	3rd generation cephalosporin-resistant	24	0	–	–	–	–
	Carbapenem-resistant	13	0	–	–	–	–
Staphylococcus aureus	Methicillin-resistant	147	19	Yes (n=17)	Yes (n=6)	Yes (n=6)	Yes (n=9)

Some of the variations seen in WHO Systematic Costings Review 2014

a) Hospitalisation: Length of Stay & Medical care: definitions, reporting, some include readmissions.

b) Antibacterial Rx: All or just AMs or All medication costs incl, monitoring levels, dispensing & adverse event management, nursing administration.

c) Medical Care: generally exclude hospital admin. costs focus more on direct medical treatment costs.

d) Additional costings variables: for infection type, daily hospital or patient costs; costs <> infection; inpatient or outpatient treatment; costs specific time period vs. entire stay, or adjusted or modelled costs

Examining the Value and Quality of Health Economic Analyses: Implications of Utilizing the QHES

Ofman et al,J Managed Care Pharm. 2003(9)1: 53-61

TABLE 1 The QHES Instrument

	Questions	Points	Yes	No
1.	Was the study objective presented in a clear, specific, and measurable manner?	7		
2.	Were the perspective of the analysis (societal, third-party payer, etc.) and reasons for its selection stated?	4		
3.	Were variable estimates used in the analysis from the best available source (i.e., randomized control trial - best, expert opinion - worst)?	8		
4.	If estimates came from a subgroup analysis, were the groups prespecified at the beginning of the study?	1		
5.	Was uncertainty handled by (1) statistical analysis to address random events, (2) sensitivity analysis to cover a range of assumptions?	9		
6.	Was incremental analysis performed between alternatives for resources and costs?	6		
7.	Was the methodology for data abstraction (including the value of health states and other benefits) stated?	5		
8.	Did the analytic horizon allow time for all relevant and important outcomes? Were benefits and costs that went beyond 1 year discounted (3% to 5%) and justification given for the discount rate?	7		
9.	Was the measurement of costs appropriate and the methodology for the estimation of quantities and unit costs clearly described?	8		
10.	Were the primary outcome measure(s) for the economic evaluation clearly stated and did they include the major short-term was justification given for the measures/scales used?	6		
11.	Were the health outcomes measures/scales valid and reliable? If previously tested valid and reliable measures were not available, was justification given for the measures/scales used?	7		
12.	Were the economic model (including structure), study methods and analysis, and the components of the numerator and denominator displayed in a clear, transparent manner?	8		
13.	Were the choice of economic model, main assumptions, and limitations of the study stated and justified?	7		
14.	Did the author(s) explicitly discuss direction and magnitude of potential biases?	6		
15.	Were the conclusions/recommendations of the study justified and based on the study results?	8		
16.	Was there a statement disclosing the source of funding for the study?	3		
	TOTAL POINTS	100		

UK National Institute for Clinical Excellence's ("NICE") Approach

They aim to inform the decision makers regarding diagnosis/treatment/other interventions based on SEVERAL factors:

- Economic analysis*
- Clinical Effectiveness*
- Safety
- Equity
- Affordability

*See additional slides on terminology and OTHER cost effectiveness approaches

NICE's Health Outcome tool uses Incremental Cost Effectiveness Ratios (ICERs)

Defined as:

The Cost/Quality-Adjusted Life-Year (Cost/QALY)

- Common cost-effectiveness approach combining life expectancy with health related quality of life into a single index.
- Compare treatments/interventions which might only impact on quality of life versus treatments which might only impact on survival.
- NHS originally looked at £20K/ and now £30K/QALY
- Threshold will change over time with healthcare budgets!

Incremental Cost Effectiveness Ratio (ICER)
Other criteria see added slides

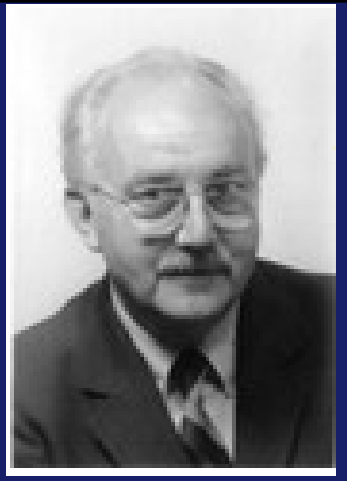
Higher value given to an intervention than analyses because of:

- Characteristics of the condition or population involved
- Intervention's innovative characteristics
- Socially desirable as there are other benefits to society
- Uncertainty in the cost effectiveness analyses (e.g. MRSA: open consultation: need for monitoring)

Modelling Increasingly Used

- Is the approach acceptable?
- How should it best be conducted?
- Half the audience at the 2012 ECCMID were sceptical about the use of modelling in general!
- Two excellent Canadian examples of modelling (of HAI and GRE) are amongst the extra slides tabled

Modelling



- George Box, 1979
  "Essentially all models are wrong but some are useful"
- Anderson and May 1991
  "mathematical models are no more and no less tools for thinking clearly about something."
- Robotham et al, 2011(in response to BMJ paper!)
  "*Models can help understand how different factors interact and affect success or failure of combinations of interventions & especially where it is not feasible to use clinical studies alone.*"

However, they do require good data for sensitivity analysis and therein lies the rub

Cost–benefit of infection control interventions targeting methicillin-resistant *Staphylococcus aureus* in hospitals: systematic review

Farbmanet al, Clin Microbiol Infect 2013; 19: E582–E593

Examined

- Cost benefit of MRSA infection control interventions
- Effects of MRSA endemnicity, intervention duration and hospital size on results
- Only 11/36 Studies 1987-2011satisfied ALL inclusion criteria

- Median savings/costs ratio was 7.16 (IQR 1.37–16).

- Median SAVINGS 38,751 US$/month (IQR 14 206–75 842)
  Median COSTS 8,648 US$/month (IQR 2025–19 170)

Farbmanet al, *Clin. Microbiol. Infect.* 2013;19:E582-93

- Best data for pre-emptive isolation and decolonization WITH various intervention combinations.
- A few on antibiotic stewardship solely studies
  - Only intervention costs without examining global savings.
- Higher save/cost ratios in:
  - Intermediate/high endemic settings
  - Smaller (<500-beds) hospitals
  - Interventions which had lasted MORE than 6 months
- Many issues with the studies: see additional slides
- Unresolved economic issues:
  - rapid screening using molecular techniques
  - universal vs. targeted screening

“Horizontal Strategies”
Universal Patient Decolonisation/Suppression

See additional slides relating to “issues”

Too recent for the systematic review

Cost effectiveness not explored

Lord et al, HEALTH TECHNOLOGY ASSESSMENT 2013; 17: 58. ISSN 1366-5278

- Standard practice to use Systematic Reviews to identify and summarise published 'economic evidence' for decision-makers' meetings.
- Argued that this is a largely futile exercise, as estimates of cost or cost-effectiveness obtained in one context are rarely transferable to another.
- Modelling provides a more satisfactory method for synthesising clinical and economic evidence to provide a coherent aid to decision-making.
  BC: but there are still issues regarding the design and sensitivity analyses!

"NOW" Audit: English Universal MRSA Screening
Fuller et al, PLoS ONE 2013; 8: e74219

Very low (1.5%) MRSA admission prevalence in 2011
- ~6% when decision was made four years previously!

- Implementation of MANDATED universal admission screening was poor.
  - Emergency admissions 61% (median 67.3%)
  - Electives 81% (median 59.4%)

- About ½ new positives were isolated when result known

- A quarter did not receive decolonisation therapy (early discharge commonest issue)

"NOW" Modelling: English Universal MRSA Screening (see additional slides)

- Most "granular" model to date e.g. inter-ward transfers included
- **Sophisticated models** previously developed further refined Robotham et al, *BMJ* 2011;343:d5694 & Deeny et al, 2013 *J Hosp Infect* 2013; 85: 33-44
- **Audit survey** 167 study hospitals & S**entinel site audit** with more detailed retrospective data from 7 trusts for 2010-11
- 6 screening strategies in acute, teaching & specialty hospitals
- Intervention(s) : chromogenic agar screening followed by isolation & decolonisation and decolonisation plus contact precautions when isolation capacity exceeded.
- Sensitivity analysis: up to 4x current prevalence and twice the "baseline" modelling transmission rates

Now Modelling Study Conclusions
(**Implications undergoing consultation**)

At current admission rate (1.5%):

- Universal admission MRSA screening NOT cost-effective at NHS willingness to pay threshold (£30,000 /QALY)
- "No screening" the most cost-effective

At higher prevalence (>3%)

- **Admission Screening of patients to high-risk specialties** simplest & most cost effective of screening strategies
  - Did not best prevent transmissions
  - Generated most health benefits as prevented most infections and deaths

Now Modelling Study Conclusions

Admission Screening of patients to high-risk specialties

- Greatest chance of being cost effective
  - >3% MRSA: £24,009/QALY (£20,764 - £28,362)
  - >4% MRSA: £19,331/QALY (£17,295-£21,860)
- Robust to prevalence levels, transmission potential & mortality assumptions
- As unlikely hospitals would not risk abandoning screening entirely, we advised adopting this strategy and ensuring there is compliance (invest in e.g. audit) : out for consultation at present

NOW Study: Admission screen high-risk specialties

- BUT certainty not >30% largely due to uncertainty of effectiveness of isolation. So very important England continues to monitor/model effects including changing MRSA prevalence
- Abandoning universal screening would save NHS at least £250m/year
  BUT adds
- 2 infections/hosp./year & 1 colonisation/hosp./week

- Might reduce these if some of savings spent on improved infection control……e.g. process surveillance!

Conclusions/Policy Recommendations

- Few rigorous costings studies are available to us.
- MRSA are more studied than anything else
- Essential that cost assessments are performed to inform policy decisions but many other aspects also need to be considered.
- The USA and UK literature may be “culturally” relevant?
- “Estimates of cost or cost-effectiveness obtained in one context are rarely transferable to another”…reflect on this…
- Important to engage widely including patients/public
- Adopt the best approaches to costings based on the literature, “LOCAL” personal experiences and expertise: incremental cost effectiveness ratio acceptable to Alberta/Canada?

Conclusions/Policy Recommendations

- Develop e.g. MRSA models informed by appropriate national/local data and sensitivity analyses
- Monitor prospectively, especially where new interventions made e.g. for universal antiseptics monitor resistance & side effects & explore optimal regimens!
- Reflect on other priorities regarding multi-resistant organisms and continue to review the literature
- Consider costings research later in this conference

Acknowledgements

- Dedicate this lecture to Jennie Roberts Health Economist collaborator for over 20 years (died 2014)

"NOW" Collaborators

- Chris Fuller, Joanne Connolly : Research Nurses
- Julie Robotham, Modeller and Health Economist
- Sarah Deeny, Modeller
- Sheldon Stone, Elderly Care Physician (Co-PI)
- Susan Hopkins, Infectious Diseases Physician

Extra Slides for Information

Fineberg, JAMA. 2013;310(1):85-90.

The Paradox of Disease Prevention
Celebrated in Principle, Resisted in Practice

Fineberg, JAMA. 2013;310(1):85-90.

Reasons Prevention Is Difficult

- Success is invisible.
- A lack of drama makes prevention less interesting.
- Statistical lives have little emotional effect.
- There is usually a long delay before rewards appear.
- Benefits often do not accrue to the payer.
- Advice is inconsistent or changes.
- Persistent behavior change may be required.
- Bias against errors of commission may deter action.
- Avoidable harm is accepted as normal.
- Prevention is expected to produce a net financial return, whereas treatment is expected only to be worth its cost.
- Commercial interests may conflict with disease prevention.
- Advice might conflict with personal, religious, or cultural beliefs.

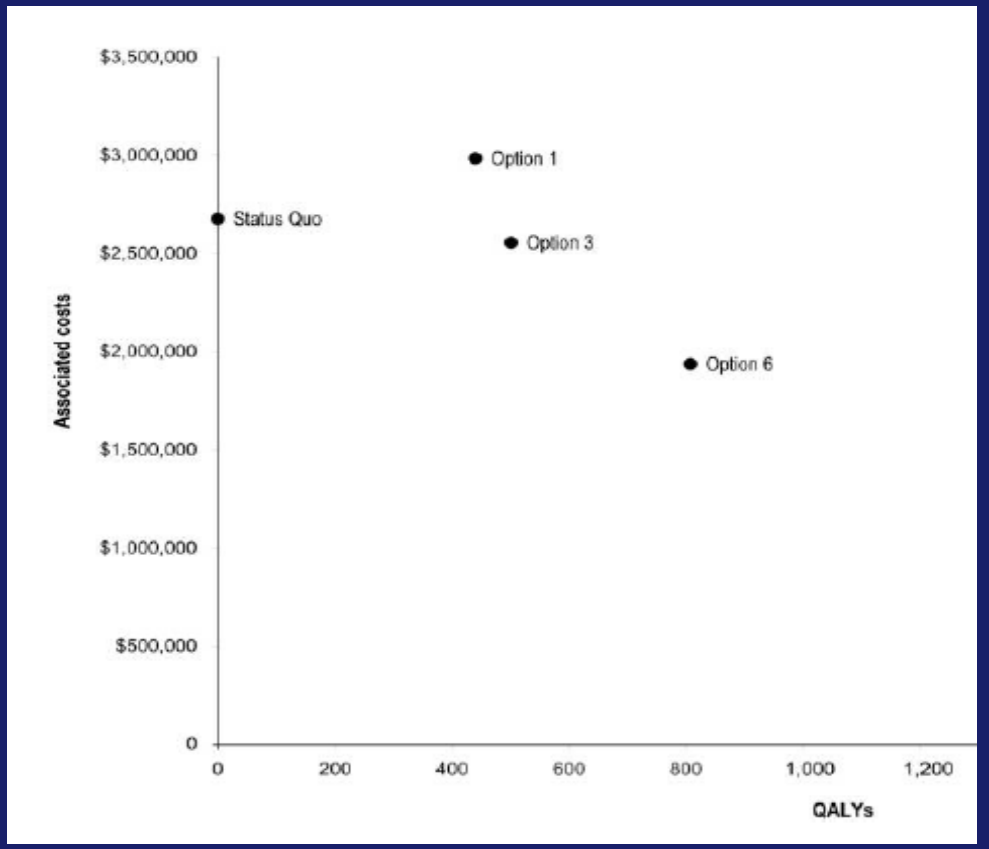
Costings Terminology/Explanatory Slides

Cost-effectiveness of infection control measures

- Measure change in costs and health benefits
- Use to determine efficacy of infection control measures (benefit greater than cost)

Incremental Cost-effectiveness Ratio

$$\frac{\text{Change in cost}}{\text{Change in health benefit (QALYs)}} = \text{ICER}$$



Graves *et al* 2007 (ICHE 28: 184)

NICE Costing Terminology

- Opportunity cost – expressed in terms of the next best alternative foregone or sacrificed e.g. lost bed days
- Cost-**effectiveness** analysis takes into account the differences in the size of an intervention. Issue is there are many dimensions e.g. other aspects of health
- A cost **utility** analysis seeks to capture all dimensions of health in a single index (utility) such that different healthcare interventions may be compared regardless of the disease being managed e.g. Cost/ QALY
- A cost **benefit** analysis assigns monetary value to benefits. Complex theoretically, technically, and practically so rarely used.

NICE: How should the value of a "QALY" be determined?

- Establishing society's willingness to pay for health gain.
  - Issues with populations surveyed?
  - Use Parliament to inform decision?
- Setting the threshold equal to Gross Domestic Product per Head of Population.
  - Not reality: also need to fund education, defence ….
  - Less flexibility for adopting new interventions
- Equate to other public sector decision processes. Department of Transport's valuations for saving a life was ~£30,000.

NICE: Other Criteria to ICER

(a) whether the characteristics of the condition or population receiving the treatment would lead them to value the health gain produced by the intervention more highly than the estimate made in the analysis;

(b) whether innovative characteristics of the

"intervention" are such that the appropriate weighing of the Secretary of State's instruction to consider innovation would lead to positive recommendation, despite the excess opportunity cost from a pure efficiency perspective;

NICE: Other Criteria to ICER

(c) whether other benefits to society, outside of those considered by the cost effectiveness analysis, are such that it is ‘socially desirable’ for the treatment to be made available

(d) whether the uncertainty in the cost effectiveness estimate is such that the risk of a false negative decision suggests the wisdom of treating the estimate as not significantly different from the threshold value.

Farbmanet al, *Clin. Microbiol. Infect.* 2013;19:E582-93

Issues

Farbmanet al, *Clin. Microbiol. Infect.* 2013; 19: E582-93 Issues

- Publication bias
- Compliance with study policy in just 8 studies
- Highly variable clinical effectiveness ‘units’: MRSA colonisations, infections, bloodstream, specific infections
- Rarely formal analysis of cost–benefit/effectiveness
- Often no precision measures (e.g. CIs), no sensitivity of different interventions aspects,
- No time-series analysis: impossible to say if reductions were related to interventions performed.

Farbmanet al, *Clin. Microbiol. Infect.* 2013; 19: E582-93 Issues

- Solely hospital, nothing >patients' discharge
- No indirect costs e.g. productivity losses.
- Hospital resourcing not fully described e.g.
  - general infection control infrastructure,
  - infection control, clinical microbiology and infectious diseases staffing,
  - microbiology laboratory characteristics
  - facility or relevant ward design,
  - nurse to patient ratios.

Modeling Slides

Lord et al, HEALTH TECHNOLOGY ASSESSMENT 2013; 17: 58. ISSN 1366-5278

- Economists consider modelling ‘unavoidable fact of life’
- Clear advantage of providing an explicit

  and reproducible summary of the balance of benefits, harms and cost.
- One can minimise the potential for inappropriate use of data, transparency and validity issues
- Excellent recent reviews on modelling emphasise the use of multi-disciplinary approaches and engaging with decision makers (deproblematisation): see added slides

‘‘Wrong, but Useful’’: Negotiating Uncertainty in Infectious Disease Modelling

Robert M. Christley[1,2*], Maggie Mort[3], Brian Wynne[4], Jonathan M. Wastling[1], A. Louise Heathwaite[5], Roger Pickup[6], Zoë Austin[5¤], Sophia M. Latham[1,2]

PLoS ONE 8(10): e76277.
doi:10.1371/journal.pone.0076277

“We argue that usability & stability of a model is an outcome of the negotiation that occurs within the networks & discourses surrounding it.”

Complexity in Mathematical Models of Public Health Policies: A Guide for Consumers of Models

Sanjay Basu[1,2,3,4*], Jason Andrews[5]

PLoS Med 10(10): e1001540.
doi:10.1371/journal.pmed.1001540

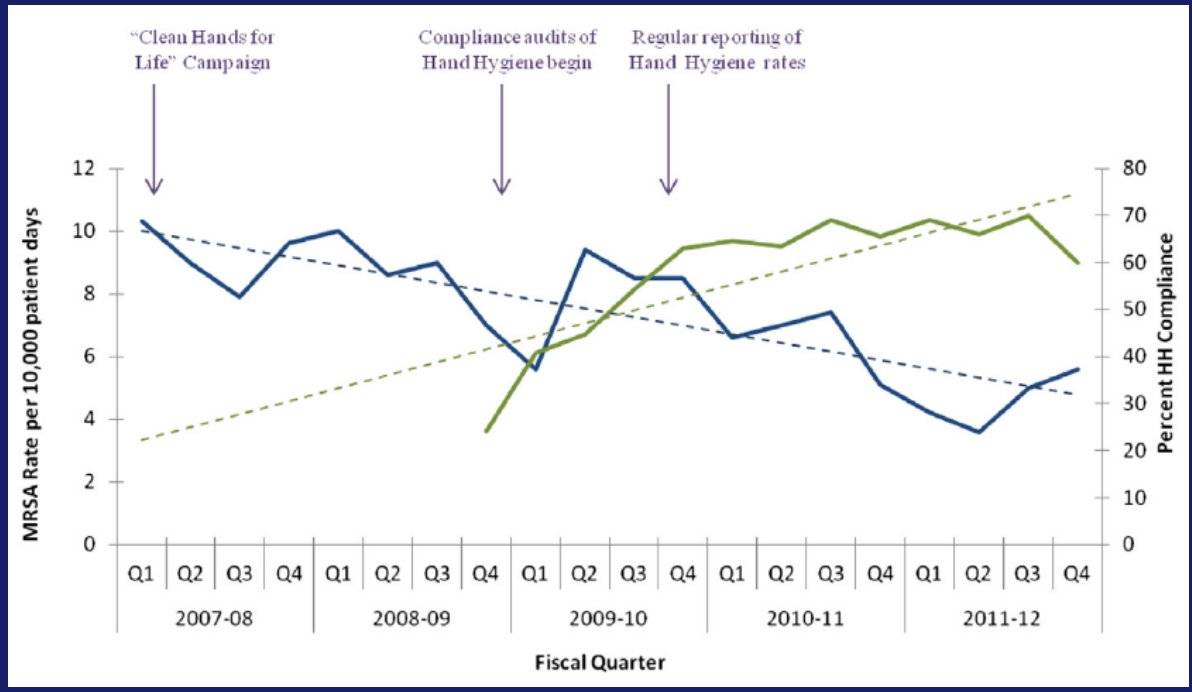
“We have found evidence to suggest that identification of uncertainties, combined with their ‘deproblematisation’ can act to stabilise the role of scientific modelling in decision-making”

Two Canadian Modelling Studies

- The expertise and perhaps culture are already established in Canada unlike some other countries

Health economic evaluation of an infection prevention and control program: Are quality and patient safety programs worth the investment?

Raschka et al, AJIC 2013;41: 773-7



- Interesting methodology
- Vancouver regional Canadian Inf. control programme
- Standardized policies, procedures, and initiatives (including hand hygiene campaign)
  - 19% less selected HAIs over 4 years
  - Cost avoidance of at least $9 million
  - 80% in last two years!
    (so enormous potential: useful to quote internationally)

Economic analysis of vancomycin-resistant enterococci at a Canadian hospital: assessing attributable cost and length of stay

Lloyd-Smith P. J.Hosp.Infect. 2013; 85: 54-59

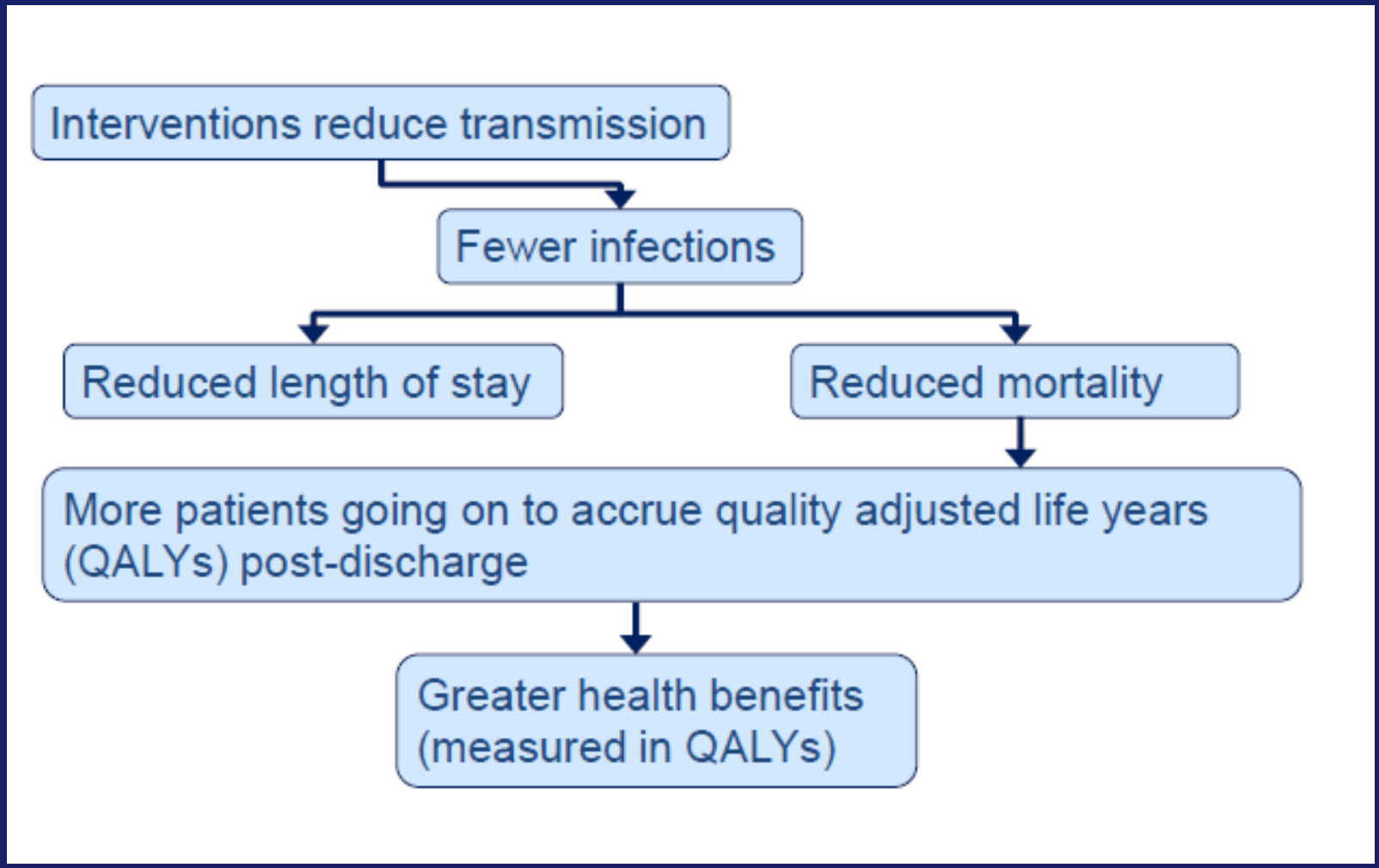
- A (small) prospective surveillance & financial hospital-based databases one year study in a Vancouver acute hospital
- Attributable costs and LOS with generalized linear model.
- 217 VRE & 1075 random non VRE patients
- VRE increased mean costs per patient by 61.9% (CA$17,949) & LOS by 68.0% (extra13.8 days)
- VRE infection did not increase costs perhaps as mainly urinary infections which are “cheap”
- BC note: ~1/2 bloodstream infections are mixed, many BSIs resolve when IV catheters are removed…….

Additional NOW Slides

NOW Consultation Document in Public Domain

- http://www.britishinfection.org/drupal/sites/default/files/files/MRSA%20screening%20guidance%20for%20NHS%20for%20consultation%20(3).pdf

Representation of how a transmission dynamic model can evaluate the impact of an intervention policy on health benefits (measured in QALY).



NOW **National prevalence audit**

9-15th May 2011 Data collected on:

(1) number of emergency, elective & day-case patients admitted & screened in one week, numbers of those previously known or newly identified as MRSA positive, (2) local screening, isolation, decolonisation & laboratory practices, (3) point prevalence of MRSA, (4) clinical details, pre-/post-result management & presence of known risk factors for MRSA (on an itemised checklist) for all new admission screen positive patients that week and for a random sample of 5-10 patients screening negative.

NOW Sentinel Site Audit Data

Detailed retrospective data from 7 trusts for 2010-11 on 30-day readmission rates of MRSA positive & negative patients and discharge/inter-ward transfers.

Definition of NHS High risk specialties

Vascular, renal/dialysis, neurosurgery, cardiothoracic surgery, haematology/oncology/bone marrow transplant, orthopaedics/trauma,

and

all intensive care units
(i.e. adult/paediatric ICUs, Neonatal Intensive Care Units, High dependency units, Coronary Care Units).

NOW Modelling detail

- Populated by audit data & by cost data (NHS reference costs for bed-days (DH, 2008)
- Scottish Pathfinder for infection control costs (Health Protection Scotland 2011)
- Scenarios of twice, three and four times the current (Baseline) admission prevalence (1.5%) and twice the estimated MRSA transmission rate were modelled.

Parameterisation of Model

- Our approach improves on the “Pathfinder” study by using an individual-based approach with stochastic modelling calculating each patient’s probability of colonisation or infection on a daily basis, which depended on how many such patients they were surrounded by, and what screening, isolation and decolonisation interventions these were receiving (which might also change on a daily basis).
- We also included extensive parameterisation of transmission which could change daily, the modelling of uncertainty, and incorporation of real patient movement data and patient level differences in probabilities of discharge and mortality.

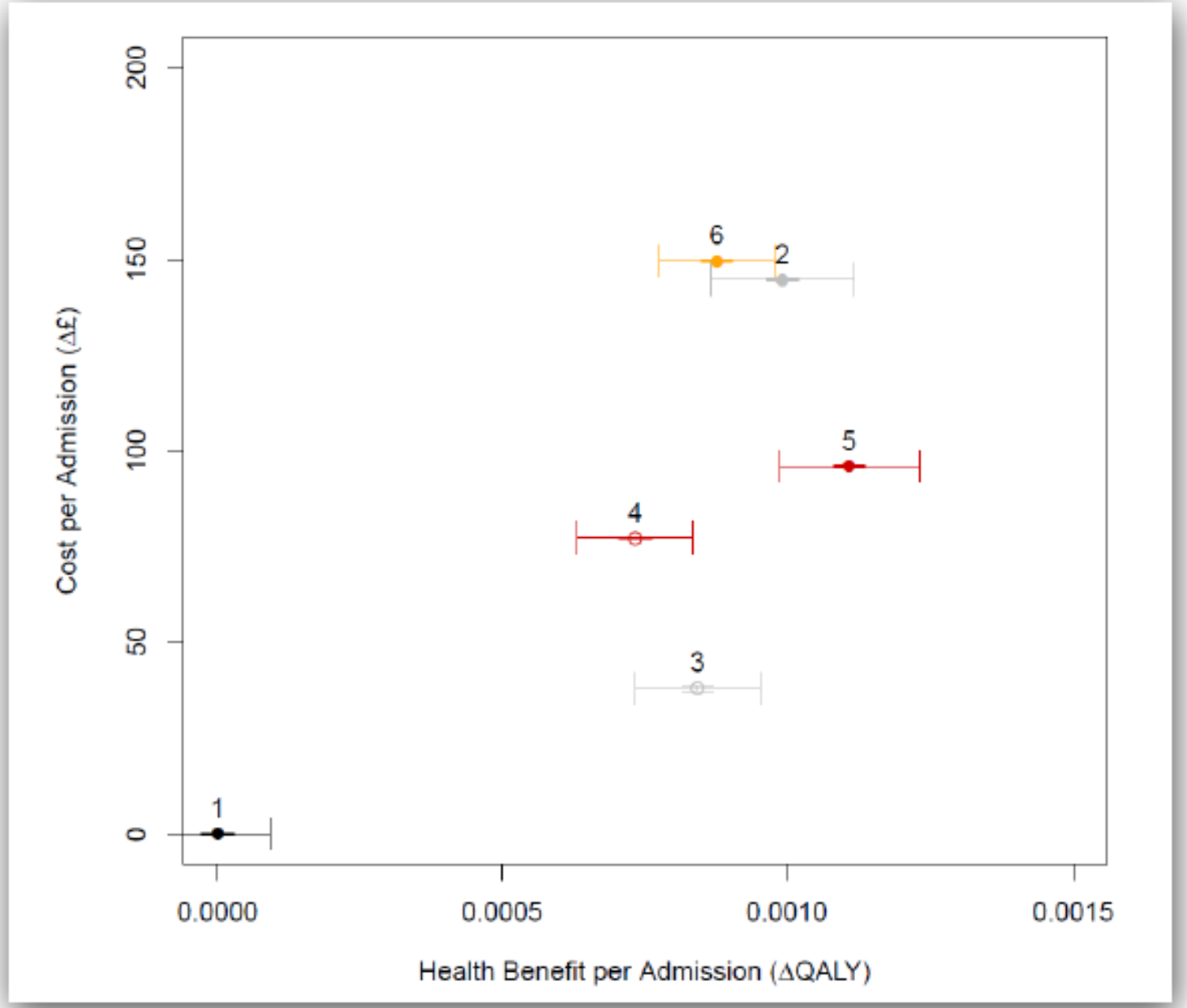
Table 6. Transmission parameters by trust and specialty type.

Trust type	Specialty type	Transmission Parameter (Values are means unless states otherwise. Values in square brackets represent those used in sensitivity analyses).			
		Daily probability of colonisation per source	Daily probability of infection (through transmission)per source	Daily probability of progression (from colonisation to infection)	Infectiousness
Acute	High risk	0.0004 [0.00025]	0.00007 [0.000035]	0.047 [0.0315]	1 [1]
	Low risk	0.0001	0	0.016	1
Teaching	High risk	0.00014	0.00002	0.047	1
	Low risk	0.00005	0	0.016	1
Specialist	High risk	0.00055	0.0001	0.047	1
	Low risk	0.0005	0	0.016	1

NOW: Types of Screening Analysed

Six Evaluated MRSA Screening Strategies

1. no screening
2. screening all admissions (Emergency and Elective)
3. screening admissions to “high-risk” specialties only
4. checklist activated screening of all admissions
5. strategy 3 plus checklist activated screening all other admissions
6. strategy 2 (screening all admissions) plus pre-emptive isolation of those known to be previously MRSA positive.


Cost per Admission (Δ£)
200
150
100
50
0
6
2
5
4
3
1
0.0000
0.0005
0.0010
0.0015
Health Benefit per Admission (ΔQALY)

Qualitative English Patient MRSA Experience Survey

See NOW Consultation Document
in Public Domain

Following are essential to securing and sustaining patients' satisfaction and confidence in the care they receive in relation to preventing MRSA infection:

- patients need to be informed of the result of their screen, even if negative;
- information needs to be provided in an individualised way (both written and verbal);
- staff need to be sufficiently knowledgeable and confident to invite patients' and carers' questions and communicate information in a sensitive way;

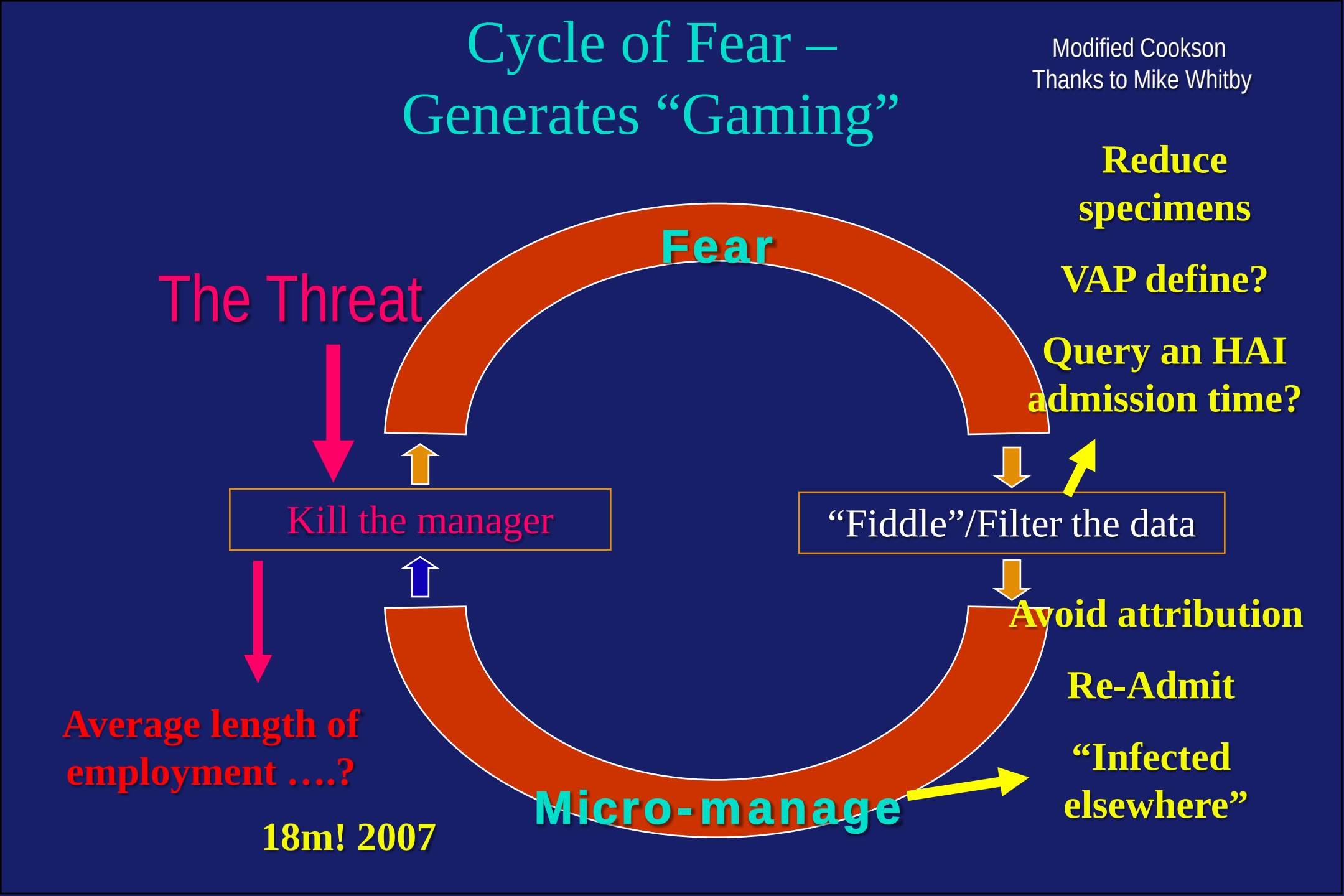
Qualitative English Patient MRSA Experience Survey

- specific and comprehensive guidelines for home-based decolonisation are required;
- patients expect to see that standards of cleanliness and infection prevention, such as hand hygiene, are practised; and
- measuring and acting on feedback from the patient experience is necessary.

GAMING SLIDE

Cycle of Fear – Generates "Gaming"

Modified Cookson
Thanks to Mike Whitby



Horizontal Strategies
My “issues”

Universal Antiseptic Use Risks ("Horizontal Strategies")

- At what rates of resistant organisms is it "cost effective"?
- Mupirocin needed: how effective is it in reducing infections?
- Increasing side effects?
- How and how often used, rotate them?
- What is best antiseptic to use e.g. octenidine?
- Inactive chlorhexidine/soap formulations?
- Increasing disinfectant/antiseptic resistance
  - Increased quantities used
  - "Sumps" of bacteria e.g. leaking abscesses, suppurating tracheostomies

Universal Antiseptic Use Risks ("Horizontal Strategies")

- Surveillance issues
  - Locally: short lengths of stay, not detect antiseptic damaged organisms, need special methods
  - Nationally: no surveillance
  - Resistance cut-off agreements review?
    - ✓Maillard et al, *Microb. Drug Res.*, 2013 doi:10.1089/mdr.2013.0039
    - ✓Morissey et al, PLoS One. 2014; 9: e86669. doi:10.1371/journal.pone.0086669