

Questionnaire Appendix: Question 10 responses

Question 10 was free text. The first part asked respondents to name and briefly describe any current or recent initiatives they are engaged in, which are intended to promote healthcare OR, modelling or advanced analytics more widely. Responses:

- Development & application of option appraisal models in support of the design of maternity services.
- Evaluation of IHO methods to enhance patient flow in Scotland
- ABCi, Aneurin Bevan University Health Board
- Use of decision analytical modelling to inform funding/commissioning decisions. Ran a workshop aimed at improving the use of such modelling in the NHS. Also involved in online teaching (MSc/CPD).
- My current research, DIAGRAMS, is focusing on developing a diagrammatic description of a mental health delivery service which I consider a pre-requisite for effective application of systems modelling and simulation (<https://www-edc.eng.cam.ac.uk/people/ak670.html>)
- No specific interventions - I think demonstrating value by delivery and building from there is much more effective.
- We have a PhD student who is actively using modelling (whole disease models) in schizophrenia
- Connected Health Cities (northern powerhouse) for NorthWestCoast
- MASHnet, PenCHORD - various initiatives, InterCLAHRC OR network, Health Service Research Network SIG
- Healthcare analytics training and development programme for 5 recent graduates
- Lead Educator of MOOC Quality Improvement in Healthcare (<https://www.futurelearn.com/courses/quality-improvement/1/todo/4236>)
- Nuffield trust events/publications on evaluation using linked data sets, matched controls and use of time series analysis
- Bevan commission. Partnership with Cardiff University School of Mathematics
- New risk model to support risk based regulation
- Integrated population analytics
- We are working with University of Bath to use OR for QI for people with Atrial Fibrillation
- A Scoping Study of Emergency Planning in Health Care R&D Needs
- <http://www.cardiff.ac.uk/news/view/105269-maths-saves-lives!-healthcare-modellers-win-innovation-award>
<http://www.cardiff.ac.uk/news/view/168426-maths-in-medicine-wins-the-award>
- Assessing the feasibility of revisions to services using DES - Acute Emergency Assessment process, Outpatient telephone contact centre, and post operative bed capacity
- ORAHS, INFORMS Health Applications Society, MASHnet, Cumberland Initiative: also teaching a systems thinking optional module for 3rd year medical students
- Every day in my role I try to espouse the case for ANORQI which is a combined approach using analytics, OR and quality improvement methodologies
- SBRI Healthcare: tripartite project with company, CCGs, and University.... Also short courses for analysts
- Developing metrics to assess Quality. Research call to fund work on registries and audits
- Supporting research staff to develop their OR skills and make funding/fellowship applications
- Improvement project - modelling cost-effectiveness of lung health assessment in community drug and alcohol teams
- patient safety, modelling healthcare pathways for people with frailty
- Development of a measurement planning support tool. Ongoing development of Web Improvement Support for Healthcare
- Lancaster University's Health Innovation Campus has broader aims re. research and healthcare, within which I am endeavouring to encourage OR modelling; Generation and supervision of MSc projects
- Working to persuade senior decision makers of the need of analysis of data and presentation with or without modelling to help discussion and decisions
- We have set up a 1 year simulation modelling programme in Yorkshire & Humberside via the Improvement Academy aimed at analysts. This programme was prompted by the work of PenChord
- Partnership with Health Foundation to set up an Improvement Analytics Unit, to apply advanced stats approaches to service evaluations
- http://www.oxfordahsn.org/wp-content/uploads/2016/09/13846_Best_Care_Clinical-Networks_Impact_Report_40pp_LINKS.pdf
- Workforce in primary care

The second part asked people for their Big Idea: Which one intervention do you feel could best improve the application and effective use of OR, modelling and advanced analytics in the health services?

- Identifying a small set of key health service problems that would benefit from the distinctive contribution of OR, modelling, AA. The key problems should be common to many health services, though the solutions will vary with the local context
- Capacity building of in-house analysts, managers etc.
- Delivery of measurable benefit to patient care and organisational sustainability
- The aforementioned 'Building capacity and capability within the NHS' intervention, maybe with a 'modelling champion'.
- DESIGN - I think OR should be employed in the context of design where we adopt a holistic approach to the problem and draw on OR tools.
- Development of a multidimensional GIS based tool to support consolidation and networking of hospital based specialist clinical services
- More focus on delivery and then sharing - using the senior commissioners as our advocates
- Government Support and Incentives
- To get informaticians/analysts to understand the topic they are attempting to model - much of modern informatics is dismissed clinically because it is biologically implausible.
- Supported secondments across (in both directions) between NHS/research/industry to support the use of these methods in healthcare
- More money for more resources
- Demonstrate the effectiveness of a specific OR intervention and publish the results in a high-impact peer reviewed journal
- Buy in and support from senior managers and executives is still a key barrier that needs to be overcome through education and capacity building
- Modelling Emergency Department and Inpatient bed capacity
- Increase capacity to train 'analytics' professionals at both postgraduate taught and research levels
- New ways to develop analytical capability in a way that works with academics
- Build internal capability for OR
- Better cascade and open discussion of examples and knowledge through the services, to develop more intelligent customers
- Wider understanding of benefits at executive levels
- Inter organisational patient flow over STP footprints
- Large research platform grant / funding for a UK wide research centre akin to Health Foundation Improvement Science Institute for OR and Analytics - drawing in the wealth of academic expertise in the UK we have and strong partnerships with NHS, plus allowing for funding of doctoral training programme to help build capability and capacity
- Need to raise the profile of the OR toolkit within healthcare
- Make "appreciation of OR methods" a compulsory part of medical training
- I believe that the bringing the system together at all levels (senior management, operational management, clinical delivery, analytical support etc) will start to raise more complex questions which will promote the use of OR, modelling and analytics
- Visibility and career structure for the profession
- Better ways for NHS staff to understand the systems that they currently work in
- Develop a portfolio of case studies.
- Integrate OR and Design and OR and management
- Patient safety
- Awareness and buy-in of NHS staff to high quality use of data to understand and improve health services
- Embedded researchers seems a very good idea to me. I am keen to hear evidence about how well they are working.
- Effective modelling leading to best decision
- Embedding OR expertise within the NHS so that this is second nature with access to "free" expert support as required. The classroom based approach to learning OR is relatively straight forward. The doing in the messy real world is challenging requiring "coaching" and "expert" help desk type support for those applying OR in the NHS
- Collaboration between different groups, to work on an important, high profile but difficult issue
- A well-publicized success story with huge impact - eg our Maternity Network SGA project
- New models of care in terms of a) workforce development b) targeting personalised care to the most vulnerable groups

The final part asked for any additional comments.

- It is difficult for analysts to get inside the NHS and understand what they are modelling - a couple of meetings with token clinicians is not enough. It's almost impossible to quiz a multiple regression black box that reports "results" with a strong p value. Yet if the inputs were non valid etc. We need to combine stats cleverness with the insights about what is going into the processes. Analysis needs to be closer to the front line. Questions above presume a top down service but clinical care is a front line issue
- At the Euro 2015 OR conference last year, there were, in my opinion, lots of examples of advanced methods being applied to poorly specified problems. Engagement with management should be focused on improved problem structuring rather than on building support for specific OR techniques
- I think we could learn from the South Wales example where OR staff are integrated into NHS QI teams, demonstrating the practical effectiveness of OR
- Healthcare staff more often than not do not know or understand what OR is and how useful it is to the organisation
- We must produce a compelling argument that these methods are not a luxury but are needed most of all in times of austerity
- As with our work in the QI field the main drivers will be culture, collaboration, capacity and capability. I believe that there is probably the capability in the analytic community but capacity is constrained as people are more focussed on Quality Assurance (e.g. performance section of board reports) than Quality Improvement which in turn requires a shift in culture of boards, regulators and senior managers to move away from the safety blanket of "it was in the board report" to "these are the areas we are focussed on".
- Currently it is not in the culture of the NHS to use 'formal' modelling and simulation. If OR is to be used this cultural aspect needs to be tackled.
- Accessing data can be a major challenge.
- I think the biggest problems lie in getting the basics right - too often in my experience our ability to make improvements in the quality of care provided by the NHS is hindered by a lack of good-enough data. This creates a vicious circle of poorly designed interventions which are then poorly evaluated, leading to incorrect decision making and lack of progress. To counter this we need to raise awareness of the basics, and build capability and capacity in the system.
- Healthcare modelling can be at its most effective when within multidisciplinary teams, which is an added challenge for creating a successful OR group.