Putting knowledge into practice

What counts as knowledge? How is knowledge generated? Once knowledge has been produced, what makes people use it? Does more knowledge actually help people to innovate or change? How do new ideas travel from person to person, or organisation to organisation? These are the kinds of questions that researchers at the Innovation Knowledge and Organizational Networks (IKON) research centre at Warwick Business School routinely investigate in their study of the social science of innovation.

The process of why and how new ideas become accepted into routine practice, particularly in large, complex organisations like the NHS, is a bit like a cake with many layers. It has all kinds of components and—like a cake with vanilla sponge, jam, cream and icing—the factors that make up the different parts can be produced in many different ways and to numerous different recipes. Only when all the layers have been properly made and sandwiched together in a way that appeals to the particular tastes of the consumer will the cake be ready to be eaten enthusiastically: in knowledge transfer, this will be the point at which people working in hospitals and clinics in the NHS will happily accept and put into practice the new evidence that has become available.

The notion that all anyone has to do to influence clinical practice is to present staff with new evidence-based research findings is an unrealistic one (see panel starting on page 2). Research over the past couple of decades has established that there are many factors relating to the creation, translation and adoption of innovations that will influence the prospects of success.

Stumbling blocks

Jacky Swan, Director of the IKON Research Centre, points out that many of the research projects focus on why knowledge fails to be translated into practice. This is, she says, a big problem for the NHS.

One of the first stumbling blocks in knowledge transfer is often to do with who has produced the new evidence. Jacky says: “Frequently, the people involved in producing the research are not the same ones involved in the practice. The evidence may be produced in a research institute, for example, and you then find that it is difficult to bring that evidence back into the context in which it needs to be applied.”

A recurrent finding of studies undertaken at IKON is that it is much easier to translate research into practice when projects are focused on problems that are relevant for NHS staff. “If there is greater engagement with the clinical community that you are actually producing the knowledge for in the first place, then it will be more relevant and more easily applied. The knowledge itself is more likely to focus on problems that your collaborators really want solved, and, through co-design, practitioners will ‘own’ what comes out of the process,” Jacky explains.

Other reasons that explain why knowledge transfer does not occur could be that the knowledge that has been produced may never reach those people who are supposed to apply it; or it may reach those people and be applied in some areas but it may not spread as broadly throughout the NHS as it could.

Davide Nicolini, core member of IKON (above), describes how many of the projects looking at these issues focus on aspects of social networking that influence knowledge transfer. He says: “Rather than maintaining a narrow focus on implementation of new evidence in the NHS, many of our projects try to look in depth at what people really do and what is the reality behind the path from generation of new knowledge to its implementation. We carry out mostly qualitative and interpretative studies to bring forward the social texture of these events—to identify factors that affect how the knowledge is passed around, whether it is passed around and, in general, how innovation travels from place to place.”

Evidence is not, he emphasises, something that comes in from outside and is poured into the NHS as if through a funnel. People have to use their local experience to interpret and apply evidence. Moreover, evidence is not transmitted into a vacuum—understanding established working practices is just as important to changing those practices as is a new form of evidence.

Root cause analysis

For example, Davide has just finished a project that aimed to investigate the practical problems and available solutions for health care practitioners carrying out a recognised method for determining what went wrong following a serious incident; this method is called Root Cause Analysis (RCA).
What boosts the chances of success?

Translating evidence into practice in health care is a much more complicated process than many people first thought. Those who believed it was simply a case of providing health professionals with a new set of guidelines about how something is best done (according to the latest evidence from research)—and people’s practice would change—need to think again.

Many health care managers now recognise that implementing new guidelines can only be achieved by addressing what helps and what hinders use of evidence; by looking at whole systems—not just individuals’ attitudes but, often, how whole departments or organisations are run.

To get guidelines into practice needs some constructive help.

Kate Seers, Director of the Royal College of Nursing Institute at the School of Health and Social Studies at the University of Warwick, says: “There are numerous examples of cases where someone has got all the evidence together on best practice and produced some guidelines, but if you just give these to health care staff, nothing tends to happen. What is needed to get guidelines into practice is some more constructive help.”

Nurses who have spent long professional careers making sure that patients having surgery the following day have nothing to eat or drink from midnight the previous night—leaving some patients with nothing to eat or drink for 14 hours or more—might find it difficult, for example, to accept new guidance that says that water can safely be taken up to two hours before surgery. It can be a case of, “We have always done it like that”.

To address problems such as these, Seers and her colleagues have been trying to find out which methods and approaches are most effective when it comes to getting evidence into practice.

A practical tool

The team are developing a tool for diagnosing and evaluating the implementation of new ideas into practice. The PARIHS framework (which stands for Promoting Action on Research Implementation in Health Services) will help practitioners and researchers to assess how successful implementation of new evidence-based practice has been.

Kate says: “We believe that PARIHS has the potential to be used as a practical and pragmatic tool by practitioners and researchers at the local level.”

The group’s studies have identified three factors that greatly influence whether new guidelines will become cemented in practice. First, the quality of the new evidence is important: people are much more receptive to evidence that is very robust.

Secondly, certain factors relating to the environment in which the innovation is being introduced are influential. “We know that there are certain characteristics that will improve the chances of new evidence being taken on board,” Kate says. “For example, strong leadership or having a ‘champion’ will help, as will a culture of learning. Conversely, if staff do not see research as important or if they are resistant to change, then this will hinder the introduction of changes to practice.”

The third factor is facilitation, which has been defined as “a technique by which one person makes things easier for others”. Kate says: “There is increasing evidence to suggest that having someone to help you—it may be a project manager, for example, who can keep up the impetus and help you think about what you need to do in order to get the new evidence in place—and using principles of change management will boost the chances of success.”

The PARIHS framework helps researchers to probe these issues and consider how these factors affect the study in hand. “Researchers and practitioners can use PARIHS to decide what the challenges are, to diagnose the local setting, what the likely barriers are and how they can reduce their effect,” Kate says. The tool will also be used to evaluate what happens when the new evidence has been put into practice.

PARIHS will also encourage researchers who are hoping to introduce new interventions into practice to ask themselves other useful questions. For example, is their intervention likely to conflict with or support existing clinical experience? (In the case of fasting for long hours before surgery, where new guidance challenges existing views about practice, some conflict is likely.)

Focus on facilitation

Researchers may also want to ask whether the target audience is likely to appreciate or understand the evidence. Is there even any information about what people currently do and therefore how they will need to change their practices? The answers to these questions could show the need for changes not only to behaviour but also to working practices or changes in staffing.

The concept of facilitation is one of the most important components of the PARIHS framework. A facilitator has the role of working with individuals or a team to enable them to implement an agreed change in practice. With such an important function, you might expect that facilitation would have been the subject of detailed study—yet Kate and her colleagues note in their paper that there have been few, if any, systematic investigations of facilitation as an intervention.

They are about to change that with a randomised controlled trial that will compare different types of facilitation. This European-
In NHS hospitals, it is mandatory to perform an investigation following serious incidents. The NHS recommends using RCA, which provides a structured, prescribed framework for reviewing patient safety incidents. The aim is to identify what happened, and how and why it happened, so that staff can determine ways of stopping similar incidents happening in future. The project found that although many NHS trusts are doing RCA, the way in which they carry it out varies enormously. For example, some acute trusts have a central office handling RCA, while in others each department will tackle local incidents individually, sometimes using rather different versions of RCA. Each approach carries its own set of issues.

Jacky says: “The advantage of the decentralised approach is that people are more likely to commit to it because they have designed it themselves, but the disadvantage is that you have a lot of disconnected systems, so that it is hard to learn from the experience of all the other groups. The centralised approach is more ‘joined up’ but it is more difficult to get engagement with those involved in the incident.”

The subtext of the RCA project, says Davide, was to understand how people in an organisation produce the evidence (and therefore their understanding) of what happened. “Investigation of incidents is something that takes place inside an organisation,” he points out. “We looked at how an organisation produces knowledge from inside itself. We also looked at how organisations use this knowledge to actually learn, or introduce change.”

One conclusion of the RCA study was that the method does encourage groups to reflect on what they do, although they may not carry this out in the ways that the RCA process would dictate.

“This may not be a problem,” suggests Jacky, “so long as some appropriate tools are being used and these are helping people to investigate their practice. Possibly a more important question, however, is how RCA can lead to long-term or widespread changes in practice. How, for example, do you learn from individual cases of error and bring about changes in practice in the system as a whole? We need further research to address issues such as this.”

Following further analysis of the data collected, the team aims to generate a set of practical guidelines that will help health care organisations improve the way they approach the challenges of producing and implementing RCA recommendations. Incident investigations are not the only way to produce new evidence, of course. Evidence about good practice in health care also comes from research using systematically controlled clinical trials. There is also wide variation in how clinical trials are conducted and managed. Another recently completed project, for which Jacky is the Principle Investigator, has examined different models for performing clinical research with the aim of determining what kinds of management and organisation help trials to be successful.

**Efficiency of clinical trials**

The study was set up following concerns expressed by scientists, clinicians and industrialists in the UK about the ‘translational gap’ that exists between basic scientific discoveries and innovations that directly benefit patients; and worries about the decline of the UK's clinical research base. Researchers believed that, only if the efficiency and effectiveness of clinical trials could be improved, would it be possible to close this translational gap.

Jacky and her colleagues looked at four main areas that have a critical effect on clinical research and its success:

- The role of the regulation and approvals process;
- The efficiency of clinical trials;
- The role of the trial team;
- The role of the policy and funding process.

Where researchers carry out a randomised controlled trial examining implementation of new evidence-based practice, the trial will tell them whether the new evidence became used in practice or not. “If you don’t look at the process of implementation,” Kate says, “the results of the trial may tell you that implementation was or was not successful but it will not tell you why it did or did not work. Looking at what happened during implementation can give you much more understanding of the complex process of getting evidence into practice.”

- For more information about the PARIHS framework, visit http://www.parihs.org/

**Further Reading**

The need for people to have the appropriate knowledge, skills, expertise and training;

The existence of incentives and drivers that encourage participation in clinical research in the NHS;

The ability of those involved to collaborate with others.

“We were surprised by some of the results from this study,” says Jacky. “Previous research had highlighted problems with recruiting patients as one of the major issues. But we found that the ability to retain an experienced project team was the biggest predictor of success for the projects we looked at.”

For this study, the researchers looked at both commercial and non-commercial research projects. They found that it was sometimes difficult for non-commercial projects to retain their project teams because, once employment contracts ended, people had to seek other work.

“For this reason, projects were not always able to retain their project teams for the entire life cycle of the project. We are not just talking about clinicians here, but also research nurses, statisticians and other researchers,” explains Jacky. “As a result, if people left, important knowledge would be lost—often this is tacit knowledge that is tied up with the individual and not easy to write down.”

For example, she says, a research nurse might know important details about why or how certain patients are happy to continue to attend for tests or treatment as part of the trial. This type of information—such as providing certain facilities or holding clinics at particular times—might never be seen in a textbook about how to design a trial but could have important influences on the trial’s success.

The same study also found that, although the process of obtaining ethics and regulatory approval for a clinical research trial is now faster, the preparation time required before applying for approval is just as long as it was before, if not longer.

“Research groups don’t necessarily have the expertise to be able to prepare bids for studies to the standard required, and this is a particular problem for less-experienced groups,” Jacky says. “We are suggesting that you need a more flexible route through the regulatory and approvals process, and/or specialised ethics committees to deal with certain types of research, rather than a one-size-fits-all model of approval.”

Understanding commissioning

Other projects under the IKON umbrella also focus on how to ensure that the evidence produced through clinical research and other routes is used to influence what clinicians do. One important way to influence clinical practice in the NHS is for managers to commission services according to evidence on best practice.

“Another way to influence what clinicians do. One important way to influence clinical practice in the NHS is for managers to commission services according to evidence on best practice,” Harry explains. “Good commissioning is about ensuring that the evidence produced through clinical research and thus help support better treatment for NHS patients.”

The NHS has focused recently on the concept of ‘world class commissioning’, which aims to improve health outcomes and reduce health inequalities by delivering better and more appropriate services for local populations, in accordance with available evidence.

“Our aim is not so much to apply the prescriptive model of world class commissioning, but to understand what really goes on, what are the dynamics of decision-making around commissioning, so that we can see what the barriers are to improvement,” Harry explains. “Good commissioning is about utilising the available information and resources most effectively, so that you reflect the priorities of your particular region and exploit that information to ensure that the optimal mix of treatments and pathways is available. If we can understand the commissioning process as it happens, that will be a big step towards being able to improve it in the future.”

New models for innovation

One problem that the team has already identified is that, in organisations of all types, the required knowledge and expertise for certain decisions is available, but—because people may not work very well together—that knowledge and expertise is not applied at the right time to the right decisions.

A closely related study, on which Harry is the principal investigator, will examine new administrative bodies in the NHS, whose role is to translate research and new evidence into practice.

The NHS has set up nine of these bodies, called Collaborations for Leadership in Applied Health Research and Care or CLAHRCs (pronounced ‘clarks’). The CLAHRCs are collaborative partnerships between universities and local NHS organisations. Their aim is to develop new ways of translating and disseminating research and new evidence into practice.

Harry says: “The CLAHRCs provide a new model for how innovation happens in the health sector. We are, in a way, observing a natural experiment: we want to investigate what the challenges for the CLAHRCs are going to be, and how they will develop the right capabilities to carry out their role. These capabilities are to do with developing the right networks with different groups and finding the right tools to translate ideas and evidence from research settings into real-life situations.”

Important insights will come from comparing similar bodies in the US and Canada. “These international comparisons will allow us to see what it is about the particular context of the NHS that influences the ability of the CLAHRCs to be effective, either by supporting them or by inhibiting them,” says Harry. “Once we have completed this project, we will be able to provide valuable feedback to the CLAHRCs themselves on how well they are doing, and provide feedback to the NHS generally about what the challenges are in improving the translation of research and evidence into practice, and what the effective mechanisms and solutions might be for doing that.”

For more information about IKON, visit http://www2.warwick.ac.uk/fac/soc/wbs/research/ikon/
The School of Health and Social Studies is proud to announce the launch of SEVEN titles

3rd March 2010 – 1.30pm-3.00pm
Room S0.98, Social Sciences Building, University of Warwick

Books:
1. Global Perspectives on War, Gender and Health: The Sociology and Anthropology of Suffering
   Edited by Hannah Bradby and Gillian Lewando Hundt
2. Violence Against Women in South Asian Communities
   Edited by Ravi K Thiara and Aisha K Gill
3. Domestic Violence Working with Men: Research, Practice Experiences and Integrated Responses
   Andrew Day, Patrick O'Leary, Donna Chung and Donna Justo
4. Ethnic Minorities and Politics: The British Electoral System
   Muhammad Anwar
5. The Real Cost of Poor Housing
   Maggie Davidson, Mike Roys, Simon Nicol, David Ormandy, Peter Ambrose
6. Gender and Policy in France
   Gill Allwood and Khursheed Wadia
7. Evidence and Knowledge for Practice
   Tony Evans and Mark Hardy

Coinciding with the book launch there will be a School Seminar
Seminar: ‘Violence Against Refugee Women: A North African Case Study’
Seminar led by Elena Fiddian-Qasmiyeh
12.30pm-1.30pm, Room S0.98, Social Sciences Building, University of Warwick

Institute of Health
School of Health & Social Studies
The University of Warwick
Co-Director
Professor Gillian Hundt
+44 (0)24 7657 3814
Gillian.Hundt@warwick.ac.uk

Co-Director
Dr Davide Nicolini
+44 (0)24 7652 4282
Davide.Nicolini@wbs.ac.uk

Administrator
Jas Bains
+44 (0)24 7652 3164
+44 (0)24 7652 4415
j.k.bains@warwick.ac.uk

For further details about research in health, medicine and social care at the University of Warwick: www.healthatwarwick.ac.uk

Refereed Journals

Books

Book Chapters

Report

Under review
“The role of objects in interdisciplinary collaboration: the case of biomedical engineering” (Nicolini, Swan, Mengis), under review for Organization Science (first revise and resubmit)
### Institute of Health Seminar

**APRIL 7**

**Title:** Using DHS Data for Research on Maternal and Child Mortality  
**Speaker:** Dr Kandala Ngianga-Bakwin  
**Institution:** Clinical Sciences Research Institute, Warwick Medical School, University of Warwick

Analysis of Demographic and Health Survey data: does geography matter in childhood health and survival in Africa?

Recognition among researchers of the adverse effect of the environment on child health and survival in Sub-Saharan Africa (SSA) countries has flourished in recent years. However, many countries in SSA do not collect environmental data and statistical or epidemiological techniques trying to account for environmental factors is called for (such as the use geographical location as a proxy for environmental factors or Geographical Information System (GIS)). Identifying and understanding the environmental factors that are associated with individual differences in mortality/diseases risks represents an important line of inquiry.

Because of the complexity of factors associated with childhood survival and health in SSA, traditional measures such as household socioeconomic and education may require supplementation with types of data that are both novel and less conventional. Statistical and epidemiological techniques that incorporate spatial analysis using a combination of data sources and spatial covariates offer such possibility, though broadening the view of environment at both the macro level (e.g., seasonal, geographic, and climatic variation) and the micro level (the household milieu and factors that impact upon it), may be required to understand fully the scope of such influences.

This talk will try to bring together my works on statistical and epidemiological techniques in disease or mortality prevalence mapping using different data sources (Demographic and Health Survey, Multiple Indicator Cluster Survey etc…) in Sub-Saharan Africa.

@ 12.30pm-1.30pm, Room S0.98, School of Health and Social Studies, Social Sciences Building, University of Warwick.

---

### Institute of Health/Institute for Advanced Study Workshop

**APRIL 27**

**Title:** Methodological Problems in Researching the Impact of Poverty and Social Circumstances on Child Health in Longitudinal Birth Cohort Studies  
**Speaker:** Professor Louise Séguin  
**Institution:** Department of Social and Preventive Medicine, University of Montreal

We will discuss general methodological and logistic issues in conducting longitudinal birth cohort studies. Issues about design of the study, choice of the target population and sampling procedures will be raised. We will address problems and barriers encountered with different recruitment and enrolment procedures, assessment methods and quality controls, retention of participants, research infrastructure for data and specimen management, staffing issues and some ethical questions and need for an informed consent. Some aspects of longitudinal analysis will also be discussed. We will focus on the specific questions for a researcher investigating the impact of poverty and of social circumstances on child health in such a study. The Quebec Longitudinal Study of Child Development will be used to illustrate some of these issues.

Lunch provided.  Please RSVP for catering purposes (j.k.bains@warwick.ac.uk)  
@ 12.30pm-2.30pm, Room S0.98, School of Health and Social Studies, Social Sciences Building, University of Warwick

---

### Institute of Health/Institute for Advanced Study Public Lecture

**APRIL 28**

**Title:** Poverty During the Early Years: Does it Matter? Some Data from the Quebec Birth Cohort  
**Speaker:** Professor Louise Séguin  
**Institution:** Department of Social and Preventive Medicine, University of Montreal

To book a place, please contact Jas Bains at j.k.bains@warwick.ac.uk or phone 024 7652 3164 or visit www.warwick.ac.uk/go/ioh
Mechanisms underlying the links between child poverty and health are not fully understood in industrialised countries. Experiencing deprivation during the early years matters for health in adulthood but does it matter for children's health in rich countries and how is that so? Using results from our recent analyses of data from the Quebec Longitudinal Study of Child Development, this lecture will examine trajectories of children exposure to poverty from birth up to 8 years old. Then, it will look at how timing and duration of poverty in early life might influence the health of young children. The potential mediating role of biological vulnerability at birth and/or of early exposure to various psychosocial adversities in the relationship between poverty and child health will also be discussed.

The case of asthma will be used to illustrate.

Refreshments provided. Please RSVP for catering purposes (j.k.bains@warwick.ac.uk)

@ 4.00pm-6.00pm, Room R0.12, Ramphal Building, University of Warwick

<table>
<thead>
<tr>
<th>MAY</th>
<th>5</th>
<th>Institute of Health Seminars - TWO Seminars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1) Measuring or Capturing the Impact of User Involvement - A New Tool</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr Jonathan Tritter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Institute of Governance and Public Management, Warwick Business School</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ 12.00pm-1.00pm, Room S0.98, School of Health and Social Studies, Social Sciences Building, University of Warwick.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Ways of Conceptualising the Process of User Involvement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pam Carter</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Keele University</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ 1.00pm-2.00pm, Room S0.98, School of Health and Social Studies, Social Sciences Building, University of Warwick.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>JUNE</th>
<th>16</th>
<th>Institute of Health Seminar</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Identifying the Content for a Novel Vision-Related Quality of Life Questionnaire for Visually Impaired Children and Young People</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr Valerie Tadic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MRC Centre of Epidemiology for Child Health, UCL Institute of Child Health</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Objectives: To describe a child-centred approach to identifying the content for a novel self-report questionnaire for assessing vision-related quality of life (VQoL) of visually impaired children and young people. We defined QoL as ‘self-discrepancy’ between the child’s current experiences (Actual self) and their hopes and expectations (Ideal self), after Eiser et al (2000).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Methods: Individual semi-structured interviews were conducted with 32 VI children and young people, age 10-15 years, randomly selected and stratified by age and visual acuity to be representative of the population of children attending two ophthalmic hospital outpatient clinics. The interviews lasted approximately an hour and followed a topic guide based on vision-related issues developed from a focus group of VI children, through a literature review and consultation with professionals. Collaborative qualitative thematic analysis was undertaken to identify underlying conceptual themes and derive draft questionnaire items, using the children's own language wherever possible. An expert reference group of VICYP, face-to-face interviews with VI children, and expert ‘Delphi’ consensus by the multidisciplinary research team were used to reduce, evaluate and refine the items in terms of their importance, comprehensibility, difficulty and response format.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Results: 874 potential questionnaire items were initially generated spanning the following themes: Social relations, acceptance and participation; Independence and autonomy; Psychological and emotional well being; Future aspirations and fears; Functioning - home, school and leisure and Treatment of eye condition. This was reduced to a 47-item questionnaire through the procedures detailed earlier. Each questionnaire item is presented as a vignette describing a VQoL issue from an ‘illustrative’ child’s perspective. The respondent child reports on how much they are like (Actual self), and also how much they want to be like that child (Ideal self), using a 4-point Likert-type scale ranging from ‘not at all’ to ‘exactly’. The lower the absolute discrepancy between the Actual and Ideal self, the higher the child’s subjective VQoL.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Conclusions: A child-centred approach to identifying the content for a self-report VQoL questionnaire is feasible. We suggest this is critical to capturing the VI child’s subjective perspective of the impact of living with impaired vision, and will ensure that future VQoL instruments adhere to prevailing approaches in paediatric QoL literature.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>@ 12.30pm-1.30pm, Room S0.98, School of Health and Social Studies, Social Sciences Building, University of Warwick.</td>
</tr>
</tbody>
</table>

To book a place, please contact Jas Bains at j.k.bains@warwick.ac.uk or phone 024 7652 3164 or visit www.warwick.ac.uk/go/ioh