Health Services Research Unit

Newsletter Summer 2010

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HSRU team wins best paper at international healthcare conference

A team of researchers from HSRU (Kathryn Charles, Sharon McCann and Lorna McKee) has won 'Best Paper' at the 7th Biennial Organisational Behaviour in Healthcare Conference, which took place in Birmingham.

Sharon McCann and Kathryn Charles with their award for best paper

The paper entitled 'Patient Safety: Whose Vision?' examined the concept of 'patient safety' and attempted to unravel its inherent complexity by examining the perceptions of a range NHS managers and professionals. It drew from a recently completed National Institute for Health Research Service Delivery and Organisation (NIHR SDO) programme commissioned study, which employed qualitative methods to explore understanding of cultural and broader contextual influences on patient safety and staff well-being in eight acute English NHS Trusts.

The paper's focus was on how Trust staff reported highly varied meanings and understanding of what constitutes safety and risk; often struggling to find a common language or interpretation. In particular, staff made clear connections between their own well-being and patient safety. The data revealed perceived system and conceptual weaknesses with few examples of integrated patient safety systems which linked to overall governance. Theories from change and health care management, organisational behaviour and sociology were used to highlight that a common understanding of a vision for patient safety appears limited. The case was made for better understanding and documenting of everyday care practices and contexts, as well as marrying up these micro realities with a more holistic awareness of organisational level governance, risks and structures. It was argued that patient safety research, and consequently evidence informed interventions, benefit from adopting both ethnographic and processual research strategies and traditions.

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Difference elicitation in trials – The DELTA review

The randomised controlled trial (RCT) is widely considered to be the gold standard method for comparing the effectiveness of health interventions. Central to the validity of a RCT is a calculation of the number of participants needed (the sample size). This provides reassurance that the trial will identify a difference of a particular magnitude if such a difference exists. This difference, which is used to determine the sample size, can be considered the "target difference".

From both a scientific and ethical standpoint, selecting an appropriate target difference is of crucial importance. For example, two drugs for treating hypertension may differ in how well they reduce blood pressure. A small difference based upon blood pressure may have limited patient, clinical, or economic relevance. As a consequence, specifying too small a target difference could be a wasteful (and unethical) use of data and resources. Conversely, too large a target difference could lead to an important difference being easily overlooked because the study is too small. Furthermore, an undersized study may not usefully contribute to the knowledge base and could potentially have a detrimental impact upon decision making.

DELTA
Difference ELicitation in TriAls

Given its importance, determination of the target difference, as opposed to statistical approaches to calculating the sample size, has been greatly neglected. A variety of approaches have been proposed for formally determining what an important difference should be (such as the 'minimum clinically important difference') though the current state of the evidence is unclear particularly with regards to informing RCT design. This project, funded by the UK Medical Research Council, seeks to provide an overview of the current evidence through three main components: (i) a systematic review of methods for identifying a target difference developed within and outside the health field to assess their usefulness for various forms of RCTs; (ii) a survey of trialists to identify current 'best' trial practice; and (iii) a structured guidance document will be produced to aid the design of future trials.

This project includes collaborators from the Universities of Aberdeen, East Anglia, Glasgow and Oxford in the UK, the National University of Ireland in Galway, and the Ottawa Health Research Institute in Canada.

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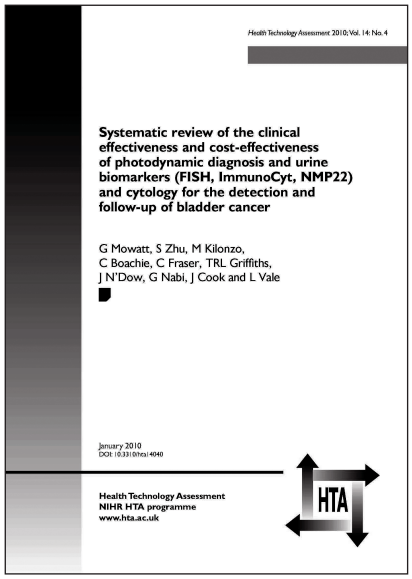
Photodynamic diagnosis and urine biomarkers for the detection and follow-up of bladder cancer: a systematic review and economic modelling

Bladder cancer is the seventh most common cancer in the UK, affecting more than 10,000 people each year. Photodynamic diagnosis (PDD) is a technique that has been proposed to enhance tumour detection and resection. The principle of PDD is based on the interaction between a photosensitising agent with a high uptake by tumour cells and light with an appropriate wavelength, which is absorbed by the agent and re-emitted with a different wavelength. This systematic review aimed to assess the clinical effectiveness and cost-effectiveness of PDD compared with white light cystoscopy (WLC), and selected urinary biomarkers (fluorescence in situ hybridisation (FISH), ImmunoCyt, NMP22) and cytology for the detection and follow-up of non-muscle invasive bladder cancer. The review was commissioned and funded by the National Institute for Health Research Health Technology Assessment programme.

The systematic review included 27 studies reporting the diagnostic performance of PDD compared with WLC, four RCTs comparing PDD with WLC and reporting patient outcomes and 71 studies reporting the diagnostic performance of biomarkers and cytology. In pooled estimates (95% confidence interval, CI) for patient-level analysis, PDD had higher sensitivity than WLC [92% (80% to 100%) versus 71% (49% to 93%)] but lower specificity [57% (36% to 79%) versus 72% (47% to 96%)]. Across studies PDD had higher sensitivity than WLC [89% (6% to 100%) versus 56% (0% to 100%)] in detecting more aggressive, higher-risk tumours. In the RCTs, compared with WLC, the use of PDD at transurethral resection of bladder tumour resulted in fewer residual tumours at check cystoscopy [relative risk (RR) 0.37 (95% CI 0.20 to 0.69)] and longer recurrence-free survival [RR 1.37 (95% CI 1.18 to 1.59)].

In the pooled estimates for the biomarker studies, sensitivity (95% CI) was highest for ImmunoCyt and lowest for cytology [84% (77% to 91%) versus 44% (38% to 51%)], whereas specificity was highest for cytology and lowest for ImmunoCyt [96% (94% to 98%) versus 75% (68% to 83%)]. All three contemporary urinary biomarkers had higher sensitivity, but lower specificity than urine cytology.

In the economic model a strategy involving flexible cystoscopy (CSC) and ImmunoCyt followed by PDD in initial diagnosis, and CSC followed by WLC in follow-up surveillance was the most effective (15.23 life years) but also the most costly. Strategies involving PDD were more likely to be cost-effective than strategies involving WLC.



In January 2010, the review was published as a HTA monograph (http://www.hta.ac.uk/project/1713.asp).

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Results from the FOCCUS study

Around 4,500 patients in Scotland die every year around the time of surgery and many others suffer ill-health. The provision and delivery of pre- and post-operative care are hypothesised to be major factors in determining outcome. There is evidence that pre-operative optimisation improves outcome and reduces hospital length of stay after surgery.

The FOCCUS study was designed as a multi-centred randomised controlled trial to evaluate the roles of (a) intravenous pre-operative fluid loading before high-risk major surgery and (b) differing levels of dependency (high dependency care versus intensive care) in the post-operative period after high-risk surgery, using a partial factorial design.

Due to difficulties obtaining intensive care beds we were unable to complete the level of dependency comparison. Fluid therapy however appeared to reduce the length of time that patients stayed in hospital after surgery (mean difference 5.5 days; p=0.07) although this difference was non-significant. Complications of surgery were less common in these patients and their recovery over the first six months was more rapid with a quicker return to a normal life style. We also found that fluid loading was likely to save money for the health service. On average the reduced NHS costs difference was £1,366. This difference was again not statistically significant but did reflect an 87% likelihood that the fluid intervention would be cost-effective.

The study concluded that fluid therapy before major surgery may improve recovery and it is likely do this in an efficient and cost saving manner, although further research is required to confirm these findings. If these results can be replicated then this finding will have a major impact on the delivery of care in the NHS and improve how we use our health care resources. From a patient's perspective this treatment could allow them to get back to their homes earlier and with fewer complications. From the perspective of the surgical team this treatment is simple, inexpensive and is likely to represent good value for money as well as being relatively easy to introduce into practice. The reduction in hospital length of stay and improvement in recovery would lead to direct savings on health services budgets and allow the re-allocation of these valuable resources.

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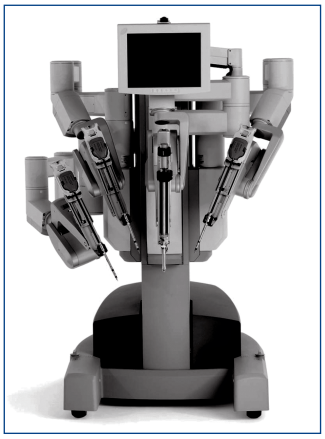
Staff news

New staff - We welcome Augusto Azuara-Blanco (Professor), Caroline Burnett (Unit Secretary), Pat Hoddinott (Senior Clinical Research Fellow), and Fiona Stewart (Information Specialist) to the Unit.

Alia Ali, Jude Frankau, Alyson Forrest, Alex Greene, Debra Hopkins, Kathleen McIntosh and Stephen Ryan have recently left the Unit and we wish them well.



Robotic surgery for the removal of the prostate in men with localised prostate cancer

In the UK, approximately 35,000 new cases of prostate cancer are reported each year. The majority of these asymptomatic cancers appear confined to the prostate and are therefore amenable to radical prostatectomy, whereby the prostate is completely removed surgically. However prostatectomy can damage the nerves that supply the erection tissue for the penis and the muscles that control the bladder outlet. The development of laparoscopic techniques and robotic technology (where the surgeon controls the surgical instruments from a console) has purported to increase the accuracy of the surgery in order to better preserve the erection nerves and urinary sphincter muscles. The main advantage claimed for robotic prostatectomy over more traditional laparoscopic techniques, is a reduction in the learning curve due to increased degrees of freedom of the robotic arms that hold the instruments leading to improved patient outcomes. However the relative impact of the two procedures has not been compared in a randomised comparison.

The Unit has recently received funding from the National Institute for Health Research Health Technology Assessment programme to determine the clinical effectiveness and cost-effectiveness of robotic prostatectomy compared to laparoscopic prostatectomy in the treatment of patients with localised prostate cancer. The specific objectives of the study are to:

- Describe clinical care pathways for laparoscopic and robotic prostatectomy in a UK context;
- Determine the clinical effectiveness and safety of each procedure;
- Determine the influence of the learning curve on estimates of effectiveness and safety;
- Determine which procedure is most likely to be cost-effective for implementation into the UK NHS; and
- Identify future research needs.

The results will enable better planning of the provision of surgeons and the best equipment to treat early prostate cancer over the next 10 - 15 years.

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New trial to investigate treatments for haemorrhoidal disease

Haemorrhoidal tissue is a normal component of the anal canal, and composed predominantly of vascular tissue. The term haemorrhoid (or pile) is usually used to describe the enlargement of the vascular tissues, which become inflamed or prolapsed.

Haemorrhoids are common in all age groups from mid-teens onwards. Conventional surgical haemorrhoidectomy (CH) involves excision of the haemorrhoidal cushions and is generally advocated for symptomatic 3rd and 4th degree haemorrhoids. This traditional approach is effective; however, it is often accompanied by complications.

eTHoS
either Traditional Haemorrhoidectomy or Stapled Haemorrhoidopexy for Haemorrhoidal Disease

Stapled haemorrhoidopexy (SH) was conceived over 10 years ago. Potential advantages over conventional surgery include a reduction of operating time, hospital stay, time to return to work and postoperative pain. These features would seem to make it attractive to patients and healthcare providers, however, uncertainties around complication rates, recurrence of symptoms and costs, precludes its widespread use in the NHS.

eTHoS is a multicentre randomised controlled trial comparing stapled haemorrhoidopexy with conventional haemorrhoidectomy. The primary objective is to compare patient reported health related quality of life (measured using the EQ-5D) over a period of two years. The secondary objectives are to compare sub-domains of health (SF-36 scores, pain and symptoms), disease recurrence, complication rates, direct and indirect costs to the NHS, and cost-effectiveness (measured in terms of quality adjusted life years derived from responses to the EQ-5D).

Approximately 15 colorectal surgical units across the UK will recruit 676 patients aged over 18 years for whom surgery for haemorrhoidal disease is recommended. Patients will then be assessed by self-completed questionnaires at one, three and six weeks and one and two years after surgery. Participants will have a clinical review approximately six weeks after surgery. Recruitment is due to start in September 2010.

The trial will be coordinated and managed by the Centre for Healthcare Randomised Trials (CHaRT). eTHoS is funded by the National Institute for Health Research Health Technology Assessment programme.

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Prestigious Fellowship at Harvard

Tânia Lourenço has gained a prestigious health policy fellowship in comparative effectiveness working with the Agency for Healthcare Research and Quality (AHRQ) and the Society for Medical Decision Making (SMDM) based at the School of Public Health in Harvard. The aim of the fellowship is to facilitate collaboration between SMDM members and AHRQ staff by fostering expertise and career development in clinical and comparative effectiveness research and translation. The fellowship will allow Tânia to participate in developmental and health care research activities related to the design and content of future AHRQ research. The fellowship is for one year, and will start in September 2010. Tânia is currently a research fellow in HSRU and has recently been awarded her PhD with a thesis entitled 'The introduction of new interventional procedures to health care: exploring information needs and the feasibility of providing additional information'.

MRC Fellowship awarded to Niina Kolehmainen

A Medical Research Council Population Health Scientist Fellowship was recently awarded to Niina Kolehmainen. The fellowship will focus on participation in physical play in children with motor impairments.

The primary project to be conducted as part of the fellowship will develop a theory- and evidence-based intervention to increase the children's participation in physical leisure pursuits and play. The project will consist of five stages:

(1) identification of biomedical, personal and environmental factors proposed to predict children's participation in leisure pursuits and play;
(2) development of an explicit model of the key predictors of participation;
(3) selection of therapeutic and behaviour change strategies to target the proposed predictors;
(4) operationalisation of the strategies in a feasible and acceptable intervention; and
(5) modelling of the intervention processes and outcomes within single cases.

The project draws on the WHO International Classification of Functioning, Disability and Health - a conceptual framework that integrates biomedical, personal and environmental perspectives on illness and health. The methodology is based on the MRC guidance for developing complex interventions.

Niina, who has a background in children's occupational therapy, will collaborate with researchers and clinicians from CanChild at McMaster University, Canada, and with researchers from the Netherlands and the UK.

If the intervention is found to be effective, it could have a significant positive impact on the children's long-term health and well-being, and would provide guidance to therapists and parents about the ways to support these children. The project will also be an exemplar of the methods for developing non-drug interventions in other fields.

The fellowship runs from September 2010 to August 2014. As part of the fellowship, Niina will spend a year in McMaster University, which is home to world-leading experts in childhood disability research.

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Recent publications

Abrahamsen B, Masud T, Avenell A, Anderson H, Meyer E, Cooper C et al. Patient level pooled analysis of 68,500 patients from seven major vitamin D fracture trials in the US and Europe. *Br Med J* 2010;340(7738):b5463.

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Kolehmainen N, Francis J, Duncan E, Fraser C. Community professionals' management of client care: a mixed-methods systematic review. *J Health Serv Res Policy* 2010;15(1):47-55.

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Lourenco T, Shaw M, Fraser C, MacLennan GS, N'Dow J, Pickard R. The clinical effectiveness of transurethral incision of the prostate: a systematic review of randomised controlled trials. *World J Urol* 2010;28(1):23-32.

McCann S, Campbell MK, Entwistle VA. Reasons for participating in randomised controlled trials: conditional altruism and considerations for self. *Trials* 2010;11(31):22nd March 2010.

Mowatt G, Zhu S, Kilonzo M, Boachie C, Fraser C, Griffiths TRL et al. Systematic review of the clinical and cost-effectiveness of photodynamic diagnosis and urine biomarkers (FISH, ImmunoCyt, NMP22) and cytology for the detection and follow-up of bladder cancer. *Health Technol Assess* 2010;14(4).

Wong S, Fraser C, Lourenco T, Barnett D, Avenell A, Glazener C et al. The fate of conference abstracts: systematic review and meta-analysis of surgical treatments for men with benign prostatic enlargement. *World J Urol* 2010;28(1):63-9.

Staff profile - Cynthia Fraser

Cynthia Fraser is the Information Specialist for HSRU, with a remit to provide information support to the Unit. A key aspect of her work is to undertake literature searching for the evidence synthesis and CHaRT teams. She also provides advice and assistance on literature searching and reference management to all Unit staff. Other responsibilities include giving guidance on information-related issues such as open access publishing and copyright as well as managing the dissemination of Unit publications on the Unit website and the Aberdeen University Research Archive.

Cynthia joined the Unit in 1997 as Information Officer to the Cochrane Effective Practice and Organisation of Care (EPOC) Group and on re-location of the group's editorial base in 2001, she remained in the Unit as Information Specialist. Since then she has gained much experience in undertaking comprehensive literature searching for systematic reviews and health technology assessments. This has led to a research interest in search filters to enhance efficient evidence retrieval and she has developed and published articles on filters to identify diagnostic test accuracy and observational studies. She is about to commence work on a MRC funded project on the assessment of search filter performance along with colleagues at the Cochrane Collaboration, York Health Economic Consortium, NHS Quality Improvement Scotland and HSRU.

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CHIEF SCIENTIST OFFICE

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