Welcome to the latest issue of your NIHR CLAHRC West Midlands News Blog.

In the latest issue of our News Blog we look at the possible future of systematic reviews. We also look at papers on using data from other researchers; the effect Michelle Obama had on students at a London school; the effectiveness of interdental devices; the history of trials in medicine; the frequency of safety incidents in primary care; and the provision of lectures at universities.

Further, we bring you the latest news and events; profile Ryan Irwin; feature a number of replies to our previous blogs; list some of our latest publications; and display some recent Tweets. Finally we also have our latest quiz question.

Available at: http://eepurl.com/ccqGrn
We hope that you find these posts of interest, and we welcome any comments. You can find previous issues of our News Blog here.

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Director's Blog

Digital Future of Systematic Reviews

A good friend and colleague, Kaveh Shojania, recently shared an article about bitcoin (a form of digital currency), which predicts the end of the finance industry as we know it.[1] The article argues that commercial banks, in particular, will no longer be needed. But what about our own industry of clinical epidemiology? Two thoughts occur:

1. The current endeavour might not be sustainable.
2. There might be another way to study prognosis, diagnosis and treatment.

We have argued in a previous post that traditional systematic reviews might soon become a victim to their own success. News blog readers will remember that we have argued that the size of the literature will soon become just too large to review in the normal way. In addition to which we have posited the twin issues of “question inflation and effect size deflation”. That is to say the number of potential comparisons is already becoming unwieldy (some network meta-analyses include over 100 individual comparators [2]), and plausible effect sizes are getting smaller as the headroom for further improvements gets used up. Our colleague Norman Waugh tells us that his latest Cochrane review concerning glucagon-like peptides in diabetes runs to over 800 pages. Many have written about the role of automation to search and screen the relevant literature,[3-5] including ourselves in a previous post, but the task of analysing the shedload of retrieved articles will itself become almost insurmountable. At the rate things are going, this may happen sooner than you think! [6]

What is to be done? One possibility is that the whole of clinical epidemiology will be largely automated. We have written before about electronic patient records as a potential source of data for clinical research. This 'rich' data will be available for analysis by standard statistical methods. However, machine learning is being taken increasingly seriously, and so it is possible to imagine a world in which the bulk of clinical epidemiological studies are largely automated under programme control. That

Available at: http://eepurl.com/ccqGrn
is to say, machine learning algorithms will sit behind rapidly accumulating clinical databases, searching for signals and conducting replication studies autonomously, perhaps even across national borders. In previous posts we have waxed lukewarm about IT systems, which have the potential to disrupt doctor-patient relationships, and where greater precision may be achieved at the cost of increasing inaccuracy. However, it is also possible that these problems can be mitigated by collecting and adjusting for ever larger amounts of information, and perhaps by finding instrumental variables, including those afforded by Mendelian randomisation.

Will all this mean that the CLAHRC WM director will soon retire, while his young colleagues find themselves being made redundant? Almost certainly not. For as long as can be envisaged, human agency will be required to write and monitor computer algorithms, to apply judgement to the outputs, to work out what it all means, and to design and implement subsidiary studies. If anything, epidemiologists of the future will require deeper epistemological understanding, statistical ability and technical knowhow.

-- Richard Lilford, CLAHRC WM Director

Leave a comment

References

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CLAHRC WM Quiz

In his Systema Naturae, the taxonomist Carl Linnaeus separated the animal kingdom into six classes – Quadrupedia (mammals), Aves (birds), Amphibia (amphibians and reptiles), Pisces (fish), Insecta, and which other?

Email CLAHRC WM your answer.

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Answer to our previous quiz: Recent research conducted in Ethiopia suggested that malarial mosquitoes could be warded off by the smell of a live chicken. The study included suspending a live chicken in a cage near a volunteer sleeping under a bed net, and found a significant reduction in trap catches. The authors are hopeful that bioactive compounds from chickens can be isolated and be used as a repellent. The study is available online here.

Available at: http://eepurl.com/ccqGrn
Congratulations to Alan Hargreaves, Sandra Bell, CaroleCummins and Robert Smith, who were first to answer correctly.

**Director's Choice - From the Journals**

**Ethics of Using Other Researcher’s Data**

It is good practice to make data collected in research projects available to others. A recent editorial in the New England Journal of Medicine [1] says that just using such data is ‘parasitical’, and suggest that researchers who use archived data should collaborate with the researchers who collected the original data. The CLAHRC WM Director disagrees. While there may be times when collaboration with the originators of the data is a good idea, it should not be expected or required. The original researchers are ‘invested’, and in many occasions it is in the public and scientific interest for the new investigations to maintain independence. It is best that data ‘gifted’ to the research community should be just that – a gift. Also, the original researchers might have lost interest, retired or died. Reinhart and Rogoff’s magisterial database of economic data is a case in point.[2] Independent re-analysis of the data they had collected and magnanimously made available to other researchers sometimes produced conclusions different to the original.

-- Richard Lilford, CLAHRC WM Director

**Leave a comment**

**References**

**More on Education**

Michelle Obama visited an all-girls school in London back in 2009. She met with the pupils again in 2011 and 2012. The school is named after the first English woman doctor, Elizabeth Garrett Anderson. Simon Burgess has examined performance at the school over the years preceding and following these meetings. He used the results of national examinations (the GCSE) and compared the school’s results with those from the rest of London’s schools. A sharp uptick in performance, which later returned to baseline, was seen in the ‘intervention’ school, but not in the controls. Burgess used a difference-in-difference type approach in a multivariate statistical analysis (though a synthetic control may have been even better, as discussed in a previous post). The 'treatment effect' was half a standard deviation, which would carry a student destined to achieve eight grade ‘B's, to achieving a mix of ‘A’'s and ‘A’s. The paper is worth a read – it is really beautifully written and packs a powerful message regarding the beneficial effect of aspirations. The First Lady did not tell her listeners that getting good grades is easy. She said it’s hard, but 'you can do it'. Most of the pupils at the school are not white and Michelle Obama would have been a great role model.
Interdental Devices.
Weak Effectiveness Detected from Weak Studies

Recently the Associated Press published a report detailing their requests to the US departments of Health and Human Services and Agriculture for information regarding the effectiveness of flossing. They found only weak evidence, and when the federal government issued their updated dietary guidelines flossing was no longer recommended.

An overview (meta-review) from 2015 was cited, which evaluated various interdental devices with respect to protecting against plaque and gum disease. The effects of using a device and brushing, versus brushing alone, are small, but mainly in a positive direction. Also interdental devices were superior to floss when the two were compared head-to-head, but again the difference was of small magnitude. The quality of the trials in the six meta-analyses included in the overview was not very high on average. We do not know how good compliance with use of devices was in the intervention group across studies, nor the extent to which the control group abstained from use of devices. Interviewed on radio BBC Hereford and Worcester, the CLAHRC WM Director opined that he would continue to use interdental devices, despite their apparent nugatory effects, for reasons of taste and aesthetics, just as he shampoos his hair regularly even though it will not prevent him from going grey on top.

References

History of Controlled Trials in Medicine

Rankin and Rivest recently published a piece looking at the use of clinical trials more than 400 years ago, while Bothwell and Podolsky have produced a highly readable historical account of controlled trials. Alternate treatment designs became quite popular in the late eighteenth century, but Austin Bradford Hill was concerned with the risk of ‘cheating’ and carried out an iconic RCT to overcome the problem. But what next for the RCT? It is time to move to a Bayesian approach, automate trials in medical record systems, and widen credible limits to include the risk of bias when follow-up is incomplete, therapist is not masked, or subjective outcomes are not effectively blinded.
Frequency of Safety Incidents in Primary Care – an Ephemeral Quality

Most epidemiological studies of safety incidents have been done in hospitals, starting with the iconic Harvard Malpractice study.[1] Primary care has proved a more difficult context for quantitative evaluation of safety. A systematic review of reviews and primary studies (109 in total) has recently been published.[2] The main message that I took away is that all estimates are unstable, irrespective of the type of incident (e.g. diagnostic vs. prescribing error), or the quality of the study. Prospective studies seem to detect a higher proportion of incidents than retrospective studies. One important observation is confirmed – diagnostic errors are more likely to result in harm than other types of error – that is why I bang on about diagnostic error.[3]

Bring Back the University Lecture: More on Evidence-Based Teaching

News Blog readers are now familiar with Hattie’s monumental work on evidence-based education[1] – an overview (meta-synthesis) of:

![Image of triangle with statistics]

To remind you, the huge proportion of the meta-analyses and studies (96%) show positive effects – maybe a Hawthorne effect of some sort. So an influence or intervention that produces an effect size of, say, only 0.2 of a standard deviation must be considered not particularly useful – it will be at the bottom end of a distribution in which nearly everything ‘works’.

In our last two posts[2] [3] we identified two factors that were, perhaps surprisingly, effete:
1. Small class sizes.
2. Problem-based learning.

I should have mentioned that there is no threshold class size – reducing from 200 to 60; 60 to 20; 20 to 8 all yield nugatory benefits. Moreover, and again perhaps surprisingly, the results of most studies are not very age-group dependent. You can see where I am going – abandoning the lecture in universities, in line with current fashion, should be questioned, especially given the cost-efficiency of the method. Important variables (have the students pre-prepared; does the lecturer stop and ask questions to assess understanding; do the students set time aside to reflect; does the lecturer assess herself; does she adapt herself to the type of class/group she is teaching) are all more important than the size of the class. A great lecturer is a scarce resource to be used wisely. Think TED talks.

-- Richard Lilford, CLAHRC WM Director

References
Wellcome 4ward North Clinical PhD Academy - University of Manchester, University of Leeds, University of Newcastle and University of Sheffield

Wellcome GW4 Clinical Academic Training Programme - University of Bristol, Cardiff University, University of Exeter

Wellcome Imperial Immunity, Inflammation, Infection and Informatics (4i) Clinician Scientist Programme - Imperial College London

Wellcome Clinical PhD programme in Global Health Research - London School of Hygiene & Tropical Medicine; University College London; King's College London; Queen Mary, University of London; St Georges' University of London, Brighton and Sussex Medical School

Wellcome PhD Programme for Primary Care Clinicians - Keele University, Cambridge University, Oxford University and Southampton University

Wellcome Clinical PhD Programme in Cancer Research - The Institute of Cancer Research, London

Wellcome/Health Research Board National Programme for Clinician Scientists - Trinity College Dublin; University College Dublin; National University of Ireland, Galway; University College Cork; Royal College of Surgeons in Ireland; Queens University Belfast

Existing programmes:

- Wellcome PhD Programme for Clinicians - University of Oxford
- Wellcome PhD Programme for Clinicians - University of Cambridge
- Edinburgh Clinical Academic Training (ECAT) - University of Edinburgh
- Wellcome PhD Programme for Clinicians - University College London
- Health Priorities in Resource-Limited Settings - University of Liverpool

Find out more about the PhD programmes at: https://wellcome.ac.uk/news/our-new-clinical-phd-programmes

UCL Qualitative Health Research Symposium 2017 - Call for Abstracts

Engagement, Co-production, and Collaborative Meaning-Making: Collaboration in Qualitative Health Research

Hosted by the Qualitative Health Research Network (QHRN) with support from the Wellcome Trust.

In recent years, there have been increasing calls for collaboration between academia and the wider healthcare community in health research. This is largely driven by efforts to engage the public in the “co-production” of evidence-based healthcare and healthcare decision-making, as well as penetrate borders between disciplines. Engaging all stakeholders in health care research is now a key requirement of funding bodies and the Research Excellence Framework. As a result, traditional "lone researcher" models of qualitative health research have shifted to include
research teams which are increasingly made up of qualitative researchers alongside quantitative researchers, members of the public, health professionals, policy-makers and other stakeholders. In these ways, health research is assumed to be more relevant, ethically justifiable, and broadly applicable. However, such collaborations may be complex and may create challenges. To date, there has been limited critical consideration of these challenges and little is known about the assumptions and effectiveness of these collaborations.

For this symposium, we invite contributions that take a closer look at collaborative qualitative health research by critically exploring both the results of these research projects and the processes used to build and carry out research as a diverse team. We are also seeking to explore the ways in which qualitative researchers negotiate their roles within interdisciplinary teams and make contributions to interdisciplinary research.

While not limited to the following topics, we are particularly interested in reflections on:

- What ‘collaboration’ has come to mean, and the ways in which the concept is growing in prominence;
- How collaborative relationships are established and embedded, and particularly how qualitative researchers are positioned in interdisciplinary teams;
- The production and reproduction of power differentials and inequalities in collaborative qualitative health research;
- How research designs, data interpretation and reporting are affected by collaboration;
- The role of the “lay researcher” and the extent to which they offer the views and experiences of the groups they represent, as well as how marginalised groups are accommodated.

We also seek examples of qualitative health research projects that are conducted in collaborative environments.

**Date and location**
The symposium will take place at UCL’s Institute of Child Health on 7 February 2017. Further details and registration opportunities will be circulated in November 2016.

**Abstract submission**
We invite abstract submissions from any discipline. Submissions should include an abstract (maximum 250 words), affiliation for all authors, and full contact information. The deadline for submission is 26 September 2016. All accepted abstracts will be published in BMJ Open.

To submit an abstract, please email Gianina Harvey at g.harvey@ucl.ac.uk. Submissions will be considered for oral and poster presentations. Authors will be
notified of acceptance by 1 November 2016.

**Travel bursaries**
Several national and international travel bursaries are available for students and early career researchers. When you submit your abstract, please indicate if you would like to apply for a travel bursary and provide a justification for the amount you are applying for.

**Contact**
For more information on the symposium or questions about submitting an abstract, please contact Dr Cecilia Vindrola at c.vindrola@ucl.ac.uk. You can also visit the symposium website: www.ucl.ac.uk/qhrn

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**Profile**

**Ryan Irwin**

Mr Ryan Irwin is a final year PhD student at the School of Primary Care Clinical Sciences, University of Birmingham, and is funded through the NIHR, working with CLAHRC WM theme 3, prevention and detection of diseases.

Academically, he has previously gained a BSc (hons) in Physiotherapy and an MSc in Healthcare Policy and Management from the University of Birmingham, and a Masters in Public Administration (MPA) from the University of York. His PhD is centred around understanding variation in the clinical quality of primary care, linked to his current research interests around quality measurement, quality improvement, and implementation science in primary care and health systems. As part of this research, clinical indicators relating to cardiovascular disease and diabetes were analysed in general practices in the West Midlands. Practices showing unusually high or low performance across indicators were identified and semi-structured interviews were then conducted with practice staff to explore reasons for variation and practice approaches to quality improvement. A typology of primary care practices was then developed based on practice differences in leadership, culture, care systems, and approaches to quality improvement.

Prior to his PhD Ryan held a range of strategic, operational, and consultancy roles in healthcare management, having started his career through selection to the national NHS General Management Training Scheme. Roles occupied have included supporting development of new models of population-based, integrated care in large
health economies of more than 1.2 billion people, to senior management roles as a General Manager, Associate Director and Director working for a number of NHS commissioners and providers. His experience has included leading on the design and development of a primary care-led population-based, out of hospital care model that aimed to manage care and reduce per capita care costs for a population of around 150,000. The model was successful in achieving this aim, whilst improving quality of care as measured through quality, outcome and health care utilisation measures, gaining national recognition through the NHS pioneer programme.

Outside of work, Ryan enjoys going to the gym and eating unhealthy portions of red meat, though usually not at the same time!

Selected Replies

Re: Another Study of Pay for Performance in Hospitals

That is not to say that looking at the quality of care in patients who die is not worthwhile. Where I work the quality of care as reflected by referral and interventions from palliative care services has been transformed after mortality data demonstrated insufficient input. At the same time the data recognise that very large numbers of the population come to the hospital because it is the best available place to die. Should acute hospitals be hospices -only until there are enough hospices to meet the need.  
-- John Elton

Re: Beyond Logic Models

Hmmm, I think its a bit simplistic to reduce to mathematics quite yet. Are you aware of the 'assumption-querying approach?' I think you'd like the fact that the causal pathways are laid bare, but it uses mixed methods and tries to examine the problem of 'context' (ie what works this much in this way in context A, might work that much in opposite way in context B).  
-- Susan Bewley

Re: More on Fats...

On the new studies justifying the removal of cholesterol from the list of harmful food, it will take a decade or more to confirm, convince and change dietician food prescriptions and teachings in medical nutrition therapy, and fingers will continue to point to the suspected influence of the fast food industries.  
-- Olufemi Fasanmade
Events

6 October 2016, 12:30-16:15
RDS Fellowships Event
University of Birmingham

The Research Design Service (RDS) West Midlands are holding a Fellowships event, which will offer an opportunity to gain a greater understanding of the NIHR/MRC Fellowship application process, with the aim to maximise attendees chances of success in securing a Fellowship. The event will feature presentations from funders, tips on how to produce good applications, and a question and answer session. There is also the opportunity to present Fellowship ideas to panel members and receive feedback (limited places).

To register, please contact Anne Walker (a.walker@bham.ac.uk) with your name, institution, position, fellowship applying for, and whether you wish to present to the panel.

Recent Publications


Tweets

Congratulations to the HSJ Clinical Research Impact Award shortlist, announced today at https://awards.hsj.co.uk/2016-shortlist #HSJawards #NHSresearch

Available at: http://eepurl.com/ccqGrn
@BCHBoss speaking about #matreview on @NHSEnglandEvent stand & importance of local implementation #Expo16NHS

-- @Innovation Expo 2016, 7 September 2016

Applying for #NIHR #RfPB funding this November? #RDS @OfficialNIHR @NIHR_CCF https://pbs.twimg.com/media/Crly2XBWEAAq5r1.jpg

-- @NIHR RDS, 5 September 2016

Return to top