UKCRC Centre of Excellence lessons learned 2008-2018 and future directions

Professor Frank Kee
UKCRC Centre of Excellence lessons learned 2008-2018

- about collaboration
- about people
- about “new” research directions
UKCRC Centre of Excellence lessons learned

Core mission

• Increase infrastructure
• Build academic capacity
• Multidisciplinary working

Foreword

It gives me enormous pleasure to write the foreword to this UKCRC Public Health Research Centres of Excellence Final Report. The achievements of the six Centres are highly significant. The research infrastructure that has been built, the capacity which has been developed, the research that has been undertaken, and the translational links which have been made with practice, policy and the public since 2008 are truly impressive. The impact, which the centres have had across the UK public health landscape, attests to the hard work of all involved - past and present. I have had the privilege of working in different ways with each of the Centres. I was on the original commissioning board and the recommissioning panel at mid-term. I have been delighted to see the way that the centres have developed and matured.
UKCRC Centre of Excellence
lessons learned 2008-2018

• about collaboration

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We prided ourselves that the science we were doing could not in any conceivable circumstances have any practical use. The more firmly one could make that claim the more superior one felt.

CP Snow, 1964

There is not pure science and applied science but only science and the applications of science

Louis Pasteur, 1863
Three Metaphors to Aid Interdisciplinary Dialogue in Public Health

Public health is a multidisciplinary field, and modern public health problems increasingly require cooperation between researchers from different disciplines. In practice, however, interdisciplinary collaboration is extremely challenging and some collaborative projects fail. As public health research and practice become more specialized, the importance of integration and engagement across disciplinary lines increases. Additionally, the convergence and popularity of multidisciplinary "dashboard" programs suggest a felt need for researchers who can confidently and effectively cross-disciplinary boundaries. It was during the completion of a combined undergraduate degree in biomedical science and economics that my own sense of the importance of disciplinary training (and the difficulty accounting disciplinary ideas about health) emerged.

In interdisciplinary and some multidisciplinary contexts, researchers are encouraged to (1) identify the set of fundamental concepts underlying their approach to public health; (2) discuss methodological choices in terms that do not depend on a common tradition of research excellence; and (3) maintain awareness that colleagues from other fields potentially hold different understandings of key public health concepts. (Am J Public Health 2011; 101: 1465-1466. doi:10.2105/AJPH.2011.300469)

The lens metaphor

The flashlight metaphor

The toolkit metaphor
Working together

Bammer G. 2005

Shared Mission
Develop T shaped researchers
Nurture constructive dialogue
Bridge research and practice
Institutional support

To solve the grand challenges facing society—energy, water, climate, food, health, security and social sciences—researchers must work together. But research that transcends conventional academic boundaries is harder to fund, assess, review and publish—and those who attempt it struggle for recognition and advancement (see World View, page 241). This special issue examines what governments, funders, journals, universities and academics must do to make interdisciplinary work a joy rather than a curse.

A News Feature on page 30 asks where the modern trend for interdisciplinary research came from—and finds answers in the proliferation of disciplines in the twentieth century, followed by increasingly urgent calls to bridge them. An analysis of publishing data explores which fields and countries are the biggest interdisciplinary researchers, and what impact such research has. Finally, one interdisciplinary project stands out: a multi disciplinary effort that delivers integrated and sustainable water management across multiple cities.

How to catalyse collaboration

Scientists must work together

An urgent push to bridge the divide between the biological and social sciences is crucial. It is the only way to deliver global sustainable development that delivers social inclusion, environmental sustainability and economic prosperity. Sustainability is the classic ‘wicked problem’, characterised by poorly defined requirements, unclear boundaries and contested values. How can the scientific enterprise help to address it?

It is crucial to understand, then, why so many well-meaning attempts at interdisciplinary collaboration fail or deliver tangible outcomes—and why others succeed. Here we present an unusual personal account by reflecting on how, working across multiple facilities in Mount University Melbourne, Australia, we have built a team of interdisciplinarian experts who lead integrated and sustainable water management across multiple cities.

Personal Journey

Our journey began in the early 2000s, with two matching groups working on urban water research. One in the Faculty of Engineering, focusing on sustainable water technologies, and the other in the Faculty of Arts, focused on urban water governance. The research teams had a common impact agenda, and our collaboration grew from a realisation that an interdisciplinary approach would be more effective. In 2005, the two groups joined forces and secured funding for the establishment of a $5 million...
Academic and non academic partnerships - what we have learned -

- Spotting the opportunities that can create a “win-win” is sometimes arbitrary and often requires tact.

- We have different languages and expectations.

- We measure success in different ways.
UKCRC Centre of Excellence lessons learned

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Early microscope
Creativity is just connecting things...A lot of people in our industry haven’t had very diverse experiences.

So they don’t have enough dots to connect, and they end up with very linear solutions without a broad perspective on the problem.

The broader one’s understanding of the human experience, the better design we will have.

Fortune favors the well read

You found that in what journal?” My adviser, sitting across the desk from me as we discussed my next research project, raised his eyebrows in surprise. We had recently finished my first project and realized that our methods had some limitations. We needed to redesign our experiments, so I had done a lot of thinking and reading and had collected some preliminary results on new approaches. And based on some surprising sources, I had come up with an unusual proposal for advancing past the obstacles we had encountered.

“Actually, two journals,” I replied somewhat sheepishly, “Inorganic Chemistry and The Journal of Physical Chemistry.” We are organic chemists, and although the difference between our field and those represented by these two journals may seem small to a nonchemist, to specialists they are practically different planets. Neither of these journals is usually found near the desk of a card-carrying organic chemist—yet here we were discussing these two papers, the more recent of which was published 2 decades ago.

“I know that this sounds crazy,” I continued, “but look at the reactivity that they saw.” We craned our heads over the printouts. The authors of these papers had given little thought to whether their results had much bearing on our field—they weren’t organic chemists, after all. However, being good scientists, they made copious observations during their experiments, and sure enough, some had interesting implications for our studies. “I see what you mean,” my adviser said, “but I don’t know how you find these papers.”

The answer is pretty simple. I aggressively curate and monitor the notifications I receive about newly published papers, and I read those that strike my interest, even if they’re not directly related to my research. Then, if I find an interesting string of references in a paper I’m reading, I’ll follow where it leads. That’s how I found my way to those decades-old papers. Chemistry also has a small but vibrant blogging community, and sometimes a thoughtful post highlighting a recent paper will start me on one of my literature dives. If I find that many of these references come from the same source—Inorganic Chemistry, for example—I’ll add it to the stable of journals that I follow.

Perhaps the bigger question is why I make the effort. The short answer is that I read widely to prepare myself for whatever might come along in the lab. My biggest fear is the one that got away, the important discovery that I missed because I couldn’t see it for what it was. It’s this fear that drives me to cast my intellectual net widely, so that I have the broad foundation I need to see my research from multiple angles. Given the limited number of hours in each day, it can be tempting to read only in my subdiscipline, but I know that doing so would ultimately limit the kinds of connections I can draw. Fortune favors the prepared mind, as Louis Pasteur famously said to explain his scientific success, and I am doing my best to be prepared.

That conversation with my advisor was a few years ago. The intellectual leap inspired by those old papers enabled me to finish and publish my project, and I am now wrapping up my Ph.D. studies. As I look back on my graduate career, I realize that it’s been replete with these sorts of situations. Time and time again, strange observations in the lab reminded me of a paper I had read in some far-out journal, or a seemingly irrelevant visiting speaker’s talk suddenly led me to understand a result that had been bugging me for weeks. These are my favorite moments in research; the thrill of finally fitting disparate pieces together is tough to beat.

One of the new first-year students in our department recently asked me for advice on making it through graduate studies. I typically find that type of vague question tough to answer succinctly, but this one was easy: Read widely and voraciously. Fortune doesn’t come every day, but when it does, you will be prepared to make the most of it.
When English is your second language
Conflict is the gadfly of thought. It stirs us to observation and memory. It instigates to invention...and sets us at noting and contriving. Conflict is the sine qua non of reflection and ingenuity.

John Dewey.
UKCRC Centre of Excellence
lessons learned

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How might we know a 4* paper?

Overarching criteria: originality, significance, rigour

- **Scientific rigour**
  - with regard to design, method, execution and analysis

- **Addition to knowledge and conceptual frameworks**

- **Significance**

- **Scale, challenge and logistical challenge**

- **Logical coherence of arguments**

- **Contribution to theory building**

- **Advance in knowledge, skills, scholarship, practice, education, policy**

- **Applicability and significance to users**
A more promising approach construes *best* as *loveliest*. On this view, we infer the hypothesis that would, if correct, provide the greatest understanding. Its central descriptive claim is that loveliness is a guide to likeliness, that the explanation that would, if correct, provide understanding, is the explanation that is judged likeliest to be correct. This at least is not a trivial claim, but it faces at least three challenges. The first is to identify the explanatory virtues, the features of explanations that contribute to the degree of understanding they provide. There are a number of plausible candidates for these virtues, including scope, precision, mechanism, unification and simplicity. Better explanations explain more types of phenomena, explain them with greater precision, provide more information about underlying mechanisms, unify apparently disparate phenomena, or simplify our overall picture of the world.

Other challenges are: to show that these aspects of loveliness match judgments of likeliness and that granting the match between loveliness and judgments of likeliness, the former is in fact our guide to the latter.
“What may be more important than adding the “C-word” to the Introduction is to require authors to add the “T-word”—that is, to explain their underlying theory of causal mechanism, whether it is the underlying biology or the underlying social structures and systems that clarify why the authors hypothesize that exposure x causes outcome y, so that we start off with questions that are most likely to yield effective interventions.”
Research Question

Is there evidence of ageism in access to potentially curative surgical treatments for lung cancer?
Can we estimate the proportion of the effect of age on survival that is mediated through surgery using the \textit{g-computation formula}.

Total Causal Effect of age on survival

1) Direct Effect of age on survival (NDE)

2) Natural Indirect Effect (NIE) acting through surgery = under-treatment
Methodology

1) NDE =

TCE =

2) NIE =

Mean Survival Surgery Mean Survival Surgery
Mean Survival Surgery Mean Survival Surgery
Mean Survival Surgery Mean Survival Surgery
Mean Survival Surgery Mean Survival Surgery
Methodology

What would happen to the survival of the old if they got the adjusted* surgery rates of the young?

*Adjusted for stage, frailty and comorbidity
Results

**Curative surgery**

<table>
<thead>
<tr>
<th>Younger</th>
<th>Elderly</th>
</tr>
</thead>
<tbody>
<tr>
<td>33%</td>
<td>14%</td>
</tr>
</tbody>
</table>

**Total reduced 2-year survival <75 vs ≥75**

- **TCE**: 23.8% (p<0.05)

**Reduced survival <75 vs ≥75**

- **NDE**: 16.6% (p<0.05)
- **NIE**: 7.8% (p<0.09)
Results

<table>
<thead>
<tr>
<th>Treatment ≥75 (adjusted OR)</th>
<th>Surgery</th>
<th>Radio</th>
<th>Chemo</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.18</td>
<td>0.51</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Total reduced 1-year survival <75 vs ≥75

<table>
<thead>
<tr>
<th>Reduced survival &lt;75 vs ≥75</th>
<th>TCE</th>
<th>NDE</th>
<th>NIE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15.9%</td>
<td>9.9%</td>
<td>6.0%</td>
</tr>
</tbody>
</table>

(p<0.001)
The discrepancy between social isolation and loneliness as a clinically meaningful metric: findings from the Irish and English longitudinal studies of ageing (TILDA and ELSA)

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Objective: Scant evidence is available on the discordance between loneliness and social isolation among older adults. We aimed to investigate this discordance and any health implications that it may have.

Method: Using nationally representative datasets from ageing cohorts in Ireland (TILDA) and England (ELSA), we created a metric of discordance between loneliness and social isolation, to which we refer as Social Asymmetry. This metric was the categorised difference between standardised scores on a scale of loneliness and a scale of social isolation, giving categories of Concordantly Lonely and Isolated, Discordant: Robust to Loneliness, or Discordant: Susceptible to Loneliness. We used regression and multilevel modelling to identify potential relationships between Social Asymmetry and cognitive outcomes.

Results: Social Asymmetry predicted cognitive outcomes cross-sectionally and at a two-year follow-up, such that Discordant: Robust to Loneliness individuals were superior performers, but we failed to find evidence for Social Asymmetry as a predictor of cognitive trajectory over time.

Conclusions: We present a new metric and preliminary evidence of a relationship with clinical outcomes. Further research validating this metric in different populations, and evaluating its relationship with other outcomes, is warranted. Copyright © 2016 John Wiley & Sons, Ltd.
**Process tracing**

**Congruence**

**Theory 1**

\[ X \rightarrow ? \rightarrow Y \]

Casual inference based on unbroken chain of action and reaction between \( X \) and \( Y \): is the mechanism present?

**Theory 2**

\[ X \ (or \ ?) \rightarrow ? \rightarrow Y \]

Assessing relative strength of evidence for different theories: is theory 1 better supported by evidence than theory 2?
Table 1 | Sample of a hypothetical truth table for crisp sets

<table>
<thead>
<tr>
<th>Condition A</th>
<th>Condition B</th>
<th>Condition C</th>
<th>Cases</th>
<th>Proportion of cases that exhibit the outcome Pr (Y)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1.00</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>0.50</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0.33</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1.00</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>0.00</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>0.00</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>0.75</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
<td>0.00</td>
</tr>
</tbody>
</table>

1 fully in the set, 0 fully out of the set

Fig. 1 | Necessary and sufficient conditions and set-theoretic relationships

Necessary conditions are supersets of an outcome set.
- Condition X is a superset of the outcome set Y.
- X is necessary for Y. However, X does not guarantee the outcome Y. A case can have X, but still be outside of the set Y.

Sufficient conditions are subsets of an outcome set.
- Conditions A, D, and the combination of B and C are subsets of the outcome set Y.
- Any one (A, or D, or B & C) of the sufficient conditions is linked to the outcome Y. All cases with any one of these conditions are within the set Y.
Developing agent-based models of complex health behaviour

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ARTICLE INFO

Abstract

Managing non-communicable diseases requires policy makers to adopt a whole systems perspective that adequately represents the complex causal architectures of human behaviour. Agent-based modelling is a computational method to understand the behavior of complex systems by simulating the actions of entities within the system, including the ways these individuals interact and are influenced by their physical and social environment. The potential benefits of this method have led to several calls for greater use in public health research. We discuss these challenges facing potential modelers: model specification, obtaining required data, and developing good practices. We also present steps to assist researchers to meet these challenges and implement these agent-based models.

1. Introduction

Agent-based modelling (ABM) is a computational method that simulates individuals making decisions according to programmable rules. These rules are set by the modeler to represent key elements of the real world, such as the individuals’ own characteristics and their social and physical environment (Bonabeau, 2002; Epstein, 2006; Gilbert, 2008; Railsback and Grimm, 2011). This makes it particularly useful in areas with an important factor in behaviour. There have been several calls for greater use of ABM to understand public health issues and to formulate and evaluate plans to address them (including Auchincloss and Diaz-Rowe, 2008; El-Sayed et al., 2012; Chalabi and Levine, 2013). These calls are consistent with broader encouragement of a complex system perspective of public health issues (Lake and Stacke, 2012; Academy of Medical Sciences, 2016; Butter et al., 2017).

This paper is aimed at public health researchers who have been persuaded by these calls to action and are considering their next steps. It is intended to assist potential modelers to assess whether ABM is a viable and useful method for their research questions and set them on an appropriate path if the answer is ‘yes’.

We start by describing relevant features of ABM, emphasizing the particular way of thinking that is embodied in the method and the benefits of that framing. The paper then discusses three challenges that are particularly salient for public health researchers who wish to represent human behaviour in ABMs, such as researchers interested in non-communicable diseases, and how these challenges might be overcome. These challenges are: appropriately representing behaviour mechanisms, obtaining data to calibrate these mechanisms and validate the model, and developing the skills to undertake and report ABM based research.


Many issues in public health are complex; that is, behaviour of the system arises partly from interactions rather than simply the characteristics of the individuals within the system (Lake and Stacke, 2012; Butter et al., 2017). Complex interactions can be conceptualized as social processes such as social influence and social support (Kohn et al., 2000), and as place effects such as air quality and transport availability (Macintyre et al., 2002). Complex systems also involve interactions through time, where actions in the past affect the future decision making context, for example the feedback cycle (presented in Butter et al., 2017) where a smoking ban in public areas reduces the visibility of smoking, which reduces uptake and hence future visibility.

Models are used to help understand, interpret and forecast system

Simulating network intervention strategies: Implications for adoption of behaviour

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Abstract

This study uses simulation over real and artificial networks to compare the eventual adoption outcomes of network interventions, operationalized as idealized contagion processes with different sets of seeds. While the performance depends on the details of both the network and behaviour adoption mechanisms, interventions with seeds that are central to the network are more effective than random selection in the majority of simulations, with faster or more complete adoption throughout the network. These results provide additional theoretical justification for utilizing relevant network information in the design of public health behavior interventions.

Keywords: social contagion, network interventions, simulation
Ethical Issues in Social Media Research for Public Health

Social media (SM) offer huge potential for public health research, serving as a valuable tool for surveillance, advocacy, and understanding the impact of health interventions, recruitment to clinical trials, collection of data, and dissemination. However, the rapid growth and the unregulated nature of social media present numerous ethical challenges. This article outlines the key ethical concerns for public health researchers using SM and discusses how these concerns might be addressed.

1. Privacy and Anonymity
2. Consent
3. Use of Personal Information
4. Data Security
5. Research Integrity

Social media research should be conducted with the consent of participants and with appropriate safeguards to protect their privacy and anonymity. Researchers must also be aware of potential biases and conflicts of interest. The rapid growth of social media requires ongoing ethical considerations to ensure that research is conducted in an ethical manner.
Social influence maximization under empirical influence models

Sinan Aral* and Paramveer S. Dhillon*

Social influence maximization models aim to identify the smallest number of influential individuals (seed nodes) that can maximize the diffusion of information or behaviors through a social network. However, while empirical experimental evidence has shown that network assortativity and the joint distribution of influence and susceptibility are important mechanisms shaping social influence, most current influence maximization models do not incorporate these features. Here, we specify a class of empirically motivated influence models and study their implications for influence maximization in six synthetic and six real social networks of varying sizes and structures. We find that ignoring assortativity and the joint distribution of influence and susceptibility leads traditional models to underestimate influence propagation by 21.7% on average, for a fixed seed set size. The traditional models and the empirical types that we specify here also identify substantially different seed sets, with only 7.8% overlap between them. The optimal seeds chosen under empirical influence some dimensions of the problem have attracted more research interest than others.

The optimization framework has received the most attention, as researchers developed efficient discrete optimization strategies for choosing the seed set. The optimization is known to be NP-hard and a greedy algorithm that achieves a 1 − 1/e approximation has been proposed previously. Since then, multiple refinements have improved the computational efficiency of the procedure and have implemented optimization in software that substantially reduces the run time of the original greedy algorithm. However, the influence model, which specifies the influence diffusion process in the network (that is, how the behavior of a set of seed nodes at time t diffuses to other nodes at time t + 1), has received much less attention, except in some recent studies that describe algorithms for robust influence maximization in the presence of uncertainty in edge propagation probabilities or the influence functions. Two broad classes of influence models exist in the current literature: threshold models and cascade models.

![Diagram](https://via.placeholder.com/150)

**Fig. 1** Parameterization of influence and susceptibility and implications for seed set selection. This same network is displayed, parameterized by four different models of the distribution of influence and susceptibility. Results are shown for high influence and high susceptibility nodes, high influence and low susceptibility nodes, low influence and high susceptibility nodes, and low influence and low susceptibility nodes. The optimal seed nodes selected under each model are outlined in green. A. Baseline IC and LT models for which propagation properties are specified as constant (top) and the average of node degree (bottom), respectively. B. Baseline IC and LT models for which propagation properties are specified according to the assortative influence, assortative susceptibility, substitute influence-susceptibility (AASS) model. C. The same influence as in B, but for the assortative influence, disassortative susceptibility, substitute influence-susceptibility (ADOS) model. D. The same influence as in B, but for the assortative influence, disassortative susceptibility, substitute influence-susceptibility (DASS) model. E. The same influence as in B, but for the substitutive influence, assortative susceptibility, substitute influence-susceptibility (SASS) model. The influence of the four types of nodes with different influence and susceptibility characteristics are displayed under each graph or model. Seed sets differ substantially across different parameterizations of the graph, implying vastly different influence maximization results for the different models of influence and susceptibility.

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Social Cohesion: A Network Approach

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Social cohesion refers to a group's tendency to stick together and is formed from the network topology. Our model is a type of social cohesion by strategically forming and maintaining coalitions that are stable. We graphs and draw a link between cohesion and social networks. Nevertheless, we give two efficient heuristics enjoy high popularity and

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needs to belong to groups. By analysing different social groups, one can explain phenomena like group conformity, self-identity, and social change. It can be shown that on arrival to Western way of life, or the presence of relatives and acquaintances among friends and family that come to farmland ownership. Thus, the essence of social cohesion lies in the unity, which is considered from the top of the hierarchy. Firstly, group cohesion refers to a group cohesive. Secondly, cohesion can refer to a common ground from both views. Thus, it is characteristic by both the micro-focus (goals, needs), and the macro-focus of the micro-level is therefore to build a general pro-foci.

Fundamental drives: tasks, and social can be expressed as a certain task; cooperation is desired to better collective outcome. Based
Mechanisms for Social Networks and Norms effects in Smoking

The Mechanisms Study – a proof of concept study

- How are individual psychosocial and cognitive traits related to individual sensitivity to social norms?
- How does individual sensitivity to social norms cluster among friendship cliques and across school year groups?
- How are average social norms, measured at classroom level, affected by social network structures?
- After the ASSIST and Dead Cool intervention: how are changes in attitudes, intentions and behaviours towards smoking related to social norms sensitivity at the individual level, and to average social norms at the class and year group level?
- After the ASSIST and Dead Cool intervention: have smoking-related social norms changed and how are these changes correlated among friendship cliques?

Disciplines and partners

- Education / schools based Trialists
- Games theorists/ behavioural economists
- Computer scientists
- Practitioners
- Public health and policy specialists
- In NI and Bogota
Starting with an explicit description of the policy problem

Improved methods for evidence synthesis

Being explicit about methodological strengths and weaknesses

Avoiding Baroque language and spurious precision

Remembering the distinction between efficacy from effectiveness

Making positive suggestions for what needs to be done to solve the policy problem

Focussed challenges to current thinking

Timeliness

How might we know a 4* paper?

- Applicability and significance to users
Many good scientific papers are let down by simplistic, grandiose or silly policy implications sections; policy making is a professional skill; Most scientists have no experience of it and it shows.”
• Don’t think evidence speaks for itself
• Dispense with the idea that policy making is orderly
• Don’t imagine that if you publish, they will come
• Cultivate a mentor and do your homework
• Pick your battles
• Lots of patience, beware feeling left out.

HOW TO BE HEARD

By Erik Stolstad

PAUL CAIRNEY, a political scientist at the University of Stirling in the United Kingdom, has a message for those who want facts and research findings to guide policy. “Evidence-based policy making” is a good political slogan, but not a good description of the policy process,” he writes on his blog, which has become a popular read for policy wonks (paulcairney.wordpress.com). “If you expect to see it, you will be disappointed.” It’s a typically frank assessment from Cairney, who last year published a well-received book entitled The Politics of Evidence-Based Policy Making. But his goal isn’t to discourage efforts to inject evidence into statecraft; rather, he aims to arm scientists with some practical advice about the policymaking world that might help them do better. In a recent interview, Cairney offered some do’s and don’ts for getting involved.

Beware feeling left out. Events like the election of fact-averse President Donald Trump can leave scientists feeling “that science has lost and feelings have won,” Cairney says. But many, if not most, government policies are developed by specialists, deep inside offices and departments experienced in policymaking. “That’s where scientists tend to have an easier ride and more of a place in the discussion.” And in some specialty areas, such as analyzing drug risks or highway safety, “the scientific way of thinking” often dominates.

Don’t think the evidence speaks for itself. “Well, it never does,” he says. “Don’t assume anyone cares.” Moreover, policymakers are already swimming in white papers, reports, and studies. A common refrain, Cairney says, is “I don’t have the time to consider all the information. How do I decide?” In that situation, scientists can play an important role as sifters, synthesizers, and analyzers.

Dispense with the idea that the policymaking process is orderly. “If only life were so simple. It’s like a spiograph. A thousand cycles that interact in a big mess.” But don’t let the muddle prevent you from getting involved.

Don’t imagine that if you publish, they will come. “You don’t drive a decision by the production of the evidence, by when you’ve published a paper or had a breakthrough.” Cairney says. Instead, for scientists who want their evidence to influence policy, it helps to be persistent, develop networks, and find the right moment. If you study better ways to prevent oil spills or reduce deadly medical mistakes, for example, be ready to reach out to policymakers at the next headlining disaster. “If there’s huge attention, that’s the time to present your findings.”

Cultivate a mentor, and do your homework. “It takes a phenomenal amount of time to work out who is powerful in the political process,” Cairney says. So look for experts who are already involved, particularly insiders who are trusted by policymakers because they provide reliable information, are predictable, don’t make excessive demands, and don’t get upset if their advice isn’t always acted on. “Find these people and ask what you can do.”

Pick your battles. “If you’re a scientist and you want to be influential, you either avoid those areas where emotions are highly charged, or find another way to engage,” Cairney counsels. Scientists who do get involved in highly politicized debates, such as those over stem cell research or genetically modified crops, should learn key techniques. They include ways of presenting technical information in persuasive and accessible language and images, and methods of recognizing and addressing an audience’s pre-existing concerns, values, and biases. “Unless you do that,” he warns, “your audience will switch off.”

Have patience, and lots of it. Even in areas where researchers have developed strong evidence of cause and effect (think smoking and cancer), it can take decades to see a proportionate effect in policy. Cairney says, “That should be an anchor for scientists: Profound change will take 2 or 3 decades. That thinking would make people profoundly less dissatisfied with the process.”
Saratoga County and other LSTs conducting landing practice off San Diego, Calif.
If you risk nothing,
Then you risk everything
Frequently Asked Questions (FAQs)

21 December 2017: New FAQs have been added at the end of this document addressing queries received about the current UKPRP funding call which closes on 18 January 2018.

**PURPOSE & SCOPE**

1) What is the purpose of UKPRP?
   The purpose is to:
   - fund research and network building to prevent non-communicable diseases (NCDs);
   - build and support research teams, containing a range of relevant disciplines and non-academic partners, that are focussed on addressing a specific NCD prevention research question(s);
   - fund research and network building to develop, implement and evaluate generalisable and scalable preventive policies/interventions;
   - support interventions which will enable change within complex adaptive systems;
   - foster solutions that are impactful at a population level and cost-effective;
   - deliver improvements that meet the needs of providers and policy makers.

2) What will be the scope of the research?
   - The UKPRP will examine the best ways of modifying common risk factors and upstream determinants of NCDs, and reducing inequalities in these through population level actions.
   - It will develop and build on basic research in a number of relevant disciplines (e.g. social, biomedical, engineering, environmental and computing sciences), use and develop appropriate methods for evaluating the effectiveness and value of existing or novel preventive strategies.

3) How is UKPRP different to other initiatives on prevention?
   - The funding is longer-term and large-scale.
   - It is designed to support highly interdisciplinary groups, extending disease prevention research into areas like engineering and physical sciences and brings in experts from these areas that have not typically worked on disease prevention before.
   - Research can be done across regions and sectors (e.g. NHS and non-NHS) and there is no one dominant methodological model (e.g. epidemiology or trials).
   - Co-production of research with policy makers and practitioners is mandatory and can include industry (i.e. the commercial/business and profit-making private sector), if relevant to the research question(s).
   - The research will not focus on individual behaviour(s) but look at the antecedents of NCDs that exist in the physical and social environment.
Key considerations
(looking through both ends of the telescope)

• Research funders processes and language and criteria are different

• Timeliness and responsiveness

• A variety of different types of evidence used for decision making

• Early engagement necessary for co-production

• Infrastructure, skills, capacity building and training

• Need to better appreciate where real evidence gaps exist

• Need to better appreciate each others roles

• What constitutes a “win-win”?
Questions for you.....

• Better use of existing data and enhanced data for evaluation
  – Give me specific examples

• Better evaluation design
  – What does “fit for purpose” evidence/evaluation look like?