Response to NHS Chief Executive’s Open Call for Evidence and Ideas

Respondent ID: 208

Organisation name: Institute of Digital Healthcare, Univ. of Warwick

Type of response: Online
Learning from elsewhere about adoption and spread

Q: What can the NHS and NHS Commissioning Board learn from national and international best practice to accelerate the pace and scale of adoption of innovations throughout the NHS? Please include relevant examples, published papers or other evidence you have found useful.

Answer 1:

There is a large research evidence base focusing on the adoption & spread of innovations in health care. While this research uses some of the same methods as are used in health technology assessment, the focus is completely distinct from the conventional research evidence base used by NICE etc. to assess health interventions such as drugs. The evidence on innovation covers five decades and includes studies using a wide variety of qualitative & quantitative methods, eg.:

- Qualitative work on the innovation process and barriers to innovation, eg. a study using nominal group methods to uncover barriers to UK GPs ordering echocardiograms & prescribing ACE inhibitors in the elderly with suspected heart failure (Hickling J, Nazareth I, Rogers S. The barriers to effective management of heart failure in general practice, BJGP 2001; 51: 615-8)
- Rogers’ classic work, The Diffusion of Innovations (New York: Free Press), eg. characterising the type of innovations most likely to spread
- Rigorous studies of the impact of alternative methods to promote adoption and spread in healthcare, eg. a trial of educational outreach visits in 25 UK obstetric units studying the impact on adoption of 4 innovative practices in 4500 pregnant women (Wyatt J, Paterson-Brown S, Johanson R, Altman DG, Bradburn M, Fisk N. Trial of outreach visits to enhance use of systematic reviews in 25 obstetric units. BMJ 1998; 317: 1041-6)

Please see attached annotated list of references from the 2002 Clinical Practice Innovation website and toolkit for clinical innovators, developed by Wyatt while he directed the UCL Knowledge Management Centre, but now archived.
Suggested actions:

1. The evidence base on innovation, adoption and spread should guide future NHS actions in this area. The Institute of Digital Healthcare would be happy to convene an international workshop to bring together experts to agree findings on innovation methods, and how this evidence can guide DH / NHS actions (as JW did to inaugurate the NICE Implementation support programme when he was R&D director at NICE 6 years ago).

2. Ask NIHR to commission a significant new programme of applied R&D & systematic reviews on innovation methods in the NHS, similar to the modest Implementation Research Programme it commissioned when it was the NHS R&D division, c 1996-2000. This new programme would be designed to investigate important unanswered questions about NHS innovation and methods to promote it.

Answer 2:

One risk of encouraging innovation, adoption and spread of apparently good ideas is that the innovation may prove to be useless or even harmful in other settings. Just because it makes sense and there are success stories does not make an innovation universally safe and cost effective. Thus, we need to use conventional health technology assessment methods before advocating the universal use of promising innovations, or we could be doing more harm than good. While this evidence-based approach may sometimes appear slow and backwards looking, there are ways we can speed up the technology assessment process to select out those innovations that are safe to spread widely.

Suggested actions:

We believe that what is needed is to integrate NHS innovation and research in a kind of NHS-wide “Living Laboratory”. This could entail the following actions:

1. Loosen the very restrictive clinical trial regulations and encourage innovators working inside the NHS to objectively assess their innovations and build an evidence base about them. Good quality evidence about an innovation is known to hasten adoption, at least in clinical circles.

2. Ask NIHR to fund researchers to make more frequent but rigorous use of routine data captured by NHS electronic records systems to monitor the risks and side effects of innovations. While it may sometimes be possible to assess the effectiveness of innovations using routine data, special care must be taken to avoid the many known biases that can interfere with such studies (eg. data recording bias, confounding by indication, immortal time bias).


4. For all patients in whom innovative technologies are used, require the capture and entry of a small amount of essential data into a prospective register, analogous to the National Hip etc. Registries. This ensures that any complications can be picked up as early as possible.

Actions at national level in the NHS

Q: What specific actions do you think national NHS bodies, such as the NHS National Commissioning Board, need to take to encourage and stimulate the successful and rapid adoption and spread of innovations throughout the NHS?
Answer 1:
The innovation process relies heavily on people. We think that more needs to be done to identify and support the work of the many serial innovators in the NHS. These are staff working within the NHS with no formal innovation role but who are nevertheless involved in the identification, adoption and spread of good ideas on more than one occasion.

Suggested action:
An independent Support Unit for NHS Innovators (SUNI) should be created, linked with appropriate academic centres and with NHS Evidence and the NHS Innovation Institute, with access to study designers and also experts in the use of digital techniques for promoting exchange of both tacit & explicit knowledge. Correctly applied, digital knowledge management techniques will help build and cement relationships within the NHS innovation community of practice and provide the community of serial NHS innovators with appropriate knowledge feeds.

SUNI needs to undertake the following work to identify and support serial NHS innovators:

- Finding out who these serial NHS innovators are (their current role, professional background, demographics, membership of formal and informal groups, etc.) to prompt a search for further likely serial innovators
- Recognise these innovators with protected time, an award, salary bonus, social recognition by membership of a community of practice, etc.
- Exploring, testing and replicating the methods successful innovators use to identify, adopt & spread innovations
- Understanding the innovation problems and hurdles they face, and the information they need to help them realise and develop their - often unrecognised - innovation role
- Develop scalable, effective methods to support them in overcoming these hurdles, and increase their innovation success rate

Answer 2:
We are very fortunate in Warwick to work with an enlightened local network of NHS staff and organisations. However, tariffs and other NHS mechanism can easily stifle such innovations such as remote clinical consultations.

Suggested action:
We suggest that both national structures and processes as well as local commissioning processes for NHS services need to be checked for their potential adverse impacts on innovation, diffusion and adoption, using a process analogous to Privacy or Environmental Impact Assessment. We could call this check an Innovation Diffusion Impact Assessment (IDIA), maybe?
4

**Actions at a local level in the NHS**

Q: What specific actions do you think local NHS bodies, such as providers and Clinical Commissioning Groups, need to take to encourage and stimulate the successful and rapid adoption and spread of innovations throughout the NHS?

**Answer 1:**

More needs to be done to make the discovery and invention process more directly relevant to NHS needs. We suggest the way to do this is to build on local NHS-University links to map, enlarge and straighten the innovation pipeline for specific classes of technology and pathways, combining the best of applied university research and NHS innovation. For example, following a year of planning in the Arden Cluster, the Warwick Institute of Digital Healthcare is working closely with the HIEC, the Arden / Coventry & Warwick IM&T programme, Warwickshire eHealth Board, the West Midlands Simple Telehealth project and others to build a close-coupled Arden Digital Healthcare **Incubator** and Arden Digital Healthcare **Demonstrator**. These work in a coordinated way and function as a complete innovation pipeline for the local health economy, as shown in the diagram.

![Innovation Pipeline Diagram](image-url)

Innovation projects are only taken into the Arden Incubator if they are of specific interest to the Arden Cluster because they will deliver QIPP benefits within 6-12 months maximum and have clear potential for wider diffusion and adoption. This helps us guide the invention / development / testing / diffusion / adoption process towards innovative solutions of clear relevance to the NHS. The benefits for inventors of placing their innovation project in the incubator include access to:

- Key NHS contacts to inform the development of the product and testing criteria
- Key University / Business school contacts for technical and business case support
- Anonymised patient data for testing purposes
- Clinical environments for piloting and impact studies, to help build the evidence base on safety and cost effectiveness that feeds into their business cases.
- Clinical and managerial advocates around the local health economy, to encourage adoption and spread

**Suggested action:**

We suggest that NIHR/ BIS fund each health economy or HIEC to work closely with selected academics who are genuinely keen on applied research to set up and manage an NHS-focused Incubator and accompanying closely coupled Demonstrator, in a specific disease or technology area of interest to that health economy, based on the Arden model. We believe that the new products and models of care resulting from this network of local NHS Incubators / Demonstrators will be more rapidly piloted and rolled out and much more effective & appropriate to NHS needs than relying either on industrial R&D or using more centralised models like the NHS Innovation Centre, NTAC or iTAPP.

**Actions by NHS Partners**

Q: What specific actions do you believe others, such as industry, academia, patient groups or local authorities, could take to accelerate adoption and spread, and what might encourage them to do so?

**Answer 1:**

As described above, we see great potential for synergy between university-based applied researchers and the local NHS, to build and sustain an incubator to prime local innovation pipelines in focused technology / disease areas. The academics benefit from exposure to real world problems, access to clinicians, data and clinical environments for testing their inventions. They also benefit from tangible evidence of impact on social and economic indicators, which makes up a significant part of the REF score. The local and national NHS benefit from much more focused, appropriate R&D with lower risks of failure once the innovation passes into the local health economy.

**Suggested actions:**

- Ask HIECS to co-ordinate Universities, NHS bodies, potential industry partners and others be to map current / potential innovation pipelines, identify synergies & priorities in the local health economy and apply for Incubator / Demonstrator funding, once announced.
- Seek BIS support for these cross-sector bodies, analogous to the BIS-funded Local Entreprise Partners.
Q: Do you have any further comments about accelerating the adoption and spread of innovation in healthcare?

Answer 1:

In many ways, there is too much innovation in the NHS, with doctors constantly inventing new ways to manage their patients with simple problems such as moderate hypertension or type 2 diabetes. Doctors are highly trained to apply their knowledge of basic sciences to patient care and they do, leading to the organised chaos that is clinical practice, with each patient getting subtle (sometimes gross) variations on standard therapy. While some patients – 10-15% maybe – need highly educated doctors to provide them with one-off solutions in the form of tailored care, most patients [by definition] pose standard problems for which the NHS needs to develop safe, economical standard solutions, documented in protocols that everyone understands. This strongly suggests that much care in future needs to be delivered in future by nurses, physician assistants and other non-medical staff who are willing – keen, even – to apply the organisation’s standard solutions. This is how all other service industries operate [Hansen MT, Nohria N, Tierney T. What’s your strategy for managing knowledge? Harv Bus Rev. 1999 Mar-Apr; 77(2): 106-16, 187], and it leads to greater clarity, predictability, safer care and the economies of scale that the NHS needs to make.

Suggested actions:

Ask the CNO to institute a steady process of reform to clinical working practices and staffing in the NHS, aiming to:

- Reduce chaotic innovation by over-trained doctors inventing new patient management plans based on unproven theory or basic sciences, which they often fail to communicate with other team members.
- Ask NICE to develop and maintain detailed evidence based protocols with summaries, covering all common clinical problems and common combinations of problems
- Make summaries of these protocols readily available at the point of care [possibly as integrated care pathways], with the expectation that the management of at least 80% of patient will follow the selected plan NB. This implies a new emphasis on point of care knowledge dissemination, to complement / replace the focus over the last 2 decades on capturing patient data. At least knowledge does not vary between patients, like data does.
- Ensure that if management deviates from NHS standard approach, the reason is captured and later analysed by NICE to help improve the plan
- Use appropriate means to incentivise compliant clinicians or limit the practice of clinicians who underperform [visit Kaiser or Partner’s Healthcare to understand how HMOs do this]
- Ensure that NHS clinical culture moves towards a consensus view that adherence to predictable, documented, evidence based care plans is good and ad hoc theory-based care or arbitrary, undocumented variance is bad.
- Arrange for the majority of Commissioning Boards to be chaired by clinicians who appreciate the need for this approach – which may mean nurses or other therapists taking a lead role.
• Publish each clinician’s “adherence score” annually and arrange for re-education in the gulags if it drops below 80% [Just kidding!]

Answer 2:
We need to not just "adOpt" the best national and international innovations, but to "adApt" them as well. Innovation is not just about bringing the best practices to the UK, but also about learning from others (eg. Netherlands, Scandinavia, even the USA), and adapting these practices to the local population. The process of innovation should not follow a "copycat" approach by simply cloning what is out there, but rather, through a process of evolution (aka "darwikinism" concept in Web 2.0), maximum benefits can be obtained to provide the best in terms of quality of patient care (aka "survival of the fittest"). This will also allow the NHS to provide a more "personalised" approach to our population, in line with the trend towards more personalised medicine.

Suggested action:
Adopt a healthy scepticism to innovations from elsewhere, passing them through validation / localisation / testing stages using a suitable incubator / demonstrator – as shown in the diagram.