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

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Response from

Manchester Academic Health Science Centre (MAHSC)

A Federated Partnership of
The University of Manchester
Central Manchester University Hospitals NHS Foundation Trust
Manchester Mental Health and Social Care Trust
Salford Primary Care Trust (NHS Salford)
Salford Royal NHS Foundation Trust
The Christie NHS Foundation Trust
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Summary of Key Points

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2. The relationships between industries and the public sector are recognised to be less than optimal. We need to develop our relationships, ideally into more collaborative and partnership type arrangements and only encourage work to develop things that hold the promise of delivering genuine value to the NHS and offer real improvements.

3. There needs to be a systematic engagement from the clinical communities to shape and validate throughout the development process. To encourage this input from clinicians should be recognised in the Clinical Excellence Frameworks. The Universities Research Excellence Framework and the NHS Excellence Awards system should be aligned to make the appraisal of jointly appointed staff easier to manage.

4. There should be greater use made of Science, Innovation and Business Parks to encourage the private sector to take the lead in developing NHS innovations and taking a significant share of the up front risk.

There are a growing number of “health business parks” with NHS Trusts for the co-development of new ideas that are rapidly adopted by the lead Trust. There is evidence that co-production leads to faster uptake and diffusion. These developments should be given greater prominence in the discussion with DBIS, UKTI and NHS Global.

5. The NIHR pilot programme for the Health Technology Cooperatives has been successful and including procurement and adoption within the HTC consortium may provide the extra added value to attract private sector investors into the HTC programme.

6. Encourage the move to a system of Open Innovation that has been embraced very effectively by industry for a number of via the duty to promote (Open) innovation.

7. The House of Lords Report on procurement points to the need to use the spending power of the NHS, to drive additional value into the UK healthcare industries.

8. Create a NHS Innovation Gateway in each region to provide a “right first time” service that will connect the NHS and business to optimise the development of products and services to meet the needs of the NHS and gain a greater share of the NHS market.

9. Open Innovation also leads to a greater opportunity from the integration of technologies and solutions from different sectors. There should be more emphasis on creating links between the NHS and other potential suppliers of innovations e.g. the Science and Technologies Facilities Council

10. The Technology Strategy Board Knowledge Transfer Partnerships have been underused by the NHS and these could be further promoted.

11. The NHS Regional Innovation Hubs have an important role to help NHS organisations to protect the valuable knowledge assets. Ensuring that ideas are captured and “exploited”
either commercially or via the spread of new and improved systems and processes has the potential to return real value to the service.

12. The “innovation gaps” identified in the Cooksey Report (2006) described the need for specific funding to address this early stage risk area and there is a shortage of public and private sector early stage risk funding to help cross the translational gap.

13. The concept of generating innovations that are “adoption ready” should be promoted by including these requirements as a part of the legal duty to promote innovation.

15. Making it easier for the creators and suppliers of potential innovations to test and validate their new products and services is important. There should be a system of support (or with access fully funded by the suppliers) that enables a broader range of solutions to access the NHS for testing and this is particularly important for SMEs.

16. There is significant anecdotal evidence that the SME community bypasses or avoids the NHS when developing and testing their ideas and that the NHS is in some cases, not the preferred first route into the market. This disadvantages the NHS patients and the UK economy and the current situation should be examined and remedies at national and local levels introduced to improve the situation.

17. A pilot is being operated by TRUSTECH and supported by the Greater Manchester Comprehensive Research Network, to support a number of SMEs to meet the NIHR criteria to gain access to the NIHR infrastructure in order to evaluate the clinical efficacy of their innovations and thereby the products are accelerated into use in the NHS.

18. There should be a more proactive encouragement of NHS organisations to participate in trials and evaluations of potential innovations whether they are eligible for NIHR support or need to be supported by other parts of the NHS e.g. procurement, or by others, such as the Technology Strategy Board or Department for Business Innovation and Skills.

19. The issue of risks from the trials of innovations needs to be addressed, so that not all innovations need the same level of administrative processes prior to permission for testing and thus simplify, speed up and reduce the cost of trials and evaluations.

20. The evaluation of products and services should include the financial benefit, with consensus on what is an acceptable way to calculate these benefits would be helpful, perhaps with the use of some “common language”.

21. The embedding of a culture of innovation has been demonstrated in many business sectors to begin with the CEO. They need to “give permission” to the executives, managers and clinicians. The legal Duty to Promote Innovation will play an important part in spreading this permission across the system. Ensuring that the Chairs and Non executive Directors of NHS Boards are cognisant of this responsibility will ensure the proper degree of challenge is offered to the Trust executive.

Provision of the training requirements to introduce the change and to properly embed it into routine practice is important.
23. The concept of innovation clusters or **Discovery Communities** should be explored. In the North West the Advancing Quality Alliance, focusing on Integrated Care models will show how effective change programmes can be when done across organisational boundaries. A proposal for an Innovation Cluster or Community is shown in Appendix 1.

24. As referred to in the Call for Evidence papers, there is a need for a common language that describes the risks, how these would be mitigated and clear clinical end points or standards that the innovation seeks to improve.

25. Local Authorities with their responsibility for Public Health will need to engage more effectively with patients and carers to develop a consensus around the need to move from an Illness to a Wellness model of care. Mobile or ehealth will play a significant role in this and to accelerate this transfer.

26. The national plan to install smart energy meters in every home by the utilities companies could provide a connectivity platform to help patients and their carers to more confidently manage their health at a distance from traditional healthcare providers.

27. The **National Clinical Directors** and the respective Royal Colleges (and other similar professional organisations) should recommend and support the adoption and spread of clinical good practice and innovations.

28. Introducing the evaluation and implementation skills required for success innovation into the undergraduate and post graduate training programmes would play a long term part in the further development of an embedded culture of continual improvement.

29. Creating a positive link between the benefits that an innovation actually delivers and the pricing has already been started in the area of medicines. The links between the outcome from innovation and the CQUIN payments is already making changes and this can be strengthened by explicit alignment to the innovation agenda.

30. A requirement to report innovation activity and which was publicly available may help to create patient pull. Patient groups could stimulate a “voice” to create a demand for this type of information.

34. The positive pressure that could be generated from patients and carers is at present under researched.

35. Within clinical job plans and the clinical excellence frameworks, there should be a more explicit recognition of the value of innovation activities with of funding to support the time (PAs) of innovation champions.

36. The implementation of innovative practice, procedures and systems, is rarely without upfront or additional costs. An “investment bank” is needed to frontload the funding of investment to support the early costs, before the payback can be generated.
37. There is work in the Netherlands and the Basque country to assess the value of new practice/technologies and to actively manage old out technologies/processes as a precursor to introducing new ones.

38. In Canada, the Alberta Health Services (commissioners) are putting in place an integrated framework to engage the Alberta Health System and Industry to improve the supply of relevant innovations that are aligned explicitly to the top level objectives of the AHS.

39. The establishment of the legal duty to promote innovation was a powerful signal of the intentions of the NHS, to change behaviour in terms of stimulating and adopting innovations. Within the new system, it is important that this duty is retained and further refined to ensure that it is devolved to the all appropriate parts of the new NHS.

40. The NHS is major economic influencer. To optimise the impact on health improvements and to the economy, it would benefit from a greater alignment of the efforts of NHS, Local Authorities, LEPs and others to create a healthier population and workforce.

41. Some research providers are adopting a research and innovation title for their services (R&D Offices) and this is a positive sign and should be further encouraged.

42. The current DoH guidance on the identification, protection and exploitation of NHS intellectual property would now benefit from updating to include broader definitions of intellectual property and knowledge assets, including requirements for implementation.

44. The NHS Challenge Prizes has made its first round of awards. The winners of the prizes have a role to play and working with the National Clinical Directors together they could play a powerful role in championing the roll out.

45. To deliver QIPP it is essential to provide the innovation capability and capacity to support the NHS to meet its challenges. There should be a review of the current providers of innovation services as determined by the outcome of the NHS CEO review.

48. The DoH HCAI Technology Innovation Programme included a Smart Solutions Programme. An independent report produced for the DoH recommended the Smart Solutions Programme is continued “as it represents the most successful work streams (Showcase Hospitals and Smart Solutions) in terms of their perceived value, worth and achievement of objectives”.

49. The National Audit Office produced some practical guidance for public sector organisations on the management of risk in respect to innovation. This work could usefully be refreshed.
Introduction

This response has been prepared by the Manchester Academic Health Science Centre (MAHSC) with particular acknowledgement of Central Manchester University Hospitals NHS Foundation Trust (CMFT), which leads on the technical innovation agenda for the NHS in MAHSC, and TRUSTECH (the North West Innovation Service) which provides IP and commercialisation support to MAHSC NHS members and is housed within CMFT. MAHSC, in common with its sister AHSCs, exists both to provide leadership within its local healthcare system and to be a beacon of excellence for UK plc across a tripartite mission of research & innovation, education & training and health service delivery & wellbeing. Such centres can support, accelerate and enhance innovation through strategic project investment, coordinated asset management, standard operating procedures and adoption of best practice, and pan member innovation programmes are some examples are included in this response.

This response is focused on technical innovation but we wish to emphasise that innovation in service delivery is equally important and a culture that supports and enables innovation in all its guises within the QIPP agenda is what the NHS must deliver. NHS organisations recognise the need to up rate their innovation performance and this is often carried out under a variety of labels, including improvement, QIPP, quality and efficiency. It is therefore difficult to establish a single measure or indicator of innovation activity that will provide a baseline of current adoption and diffusion; however undoubtedly there is a considerable volume of activity.

Despite this the NHS is still a slow and late adopter of innovations and the paper prepared to introduce the NHS CEO Review of Innovation describes many of the reasons that are regularly cited to be the cause of this – and they are many. This response does not rehearse these, but seeks to suggest some ways in which the situation can be improved, by a number of measures and actions. Some of these need to be taken centrally and some are local and others are in the hands of different parts of the system and to optimise the uptake of new ideas and ways of delivering care, there will need to be a greater alignment and focusing of effort – the NHS organisations cannot do this alone.

Done well, this cross sector endeavour will deliver benefits for our NHS patients and for industry and our economy and our communities.

Our reply has been prepared to address the supply of innovations; gathering the evidence of effectiveness and the adoption and diffusion of innovations. There are some specific actions identified.

Keith Chantler, Director of Innovation, Central Manchester University Hospitals NHS Foundation Trust
Linda Magee, Chief Operating Officer, Manchester Academic Health Science Centre
A. The Supply of Innovations

1. Current Situation

- Typified by Technology and Market push.
- There exists a relationship between NHS (public service) and industry, that isn’t comfortable although the work being done by the NIHR is helping to address this in the area of clinical research is making some progress, particularly with pharmaceutical companies. The closer working of the DH and DBIS is to be applauded with regard to improving the NHS-industry interface and overcoming, at times, opposing or conflicting priorities between the departments. At the current time there is little evidence of patient voice in the prioritisation of innovation.
- Funding support for early stage (risk) translation of raw ideas into worthwhile and commercial services and products is scant and diminishing.
- The very small number of NIHR Health Technology Cooperatives is a formalisation of a situation that pertains informally across the NHS and is anecdotally where the leakage of NHS ideas often occurs. Many healthcare businesses engage with clinicians and groups and strip them of incremental developments and ideas for new products and services without always rewarding or recognising the NHS contribution. This is exacerbated where there is no culture of, or professional infrastructure, supporting industry partnerships and commercialisation.

Making things better

2. The relationships between industries and the public sector are recognised to be less than optimal with problems on both sides and this leads to simple and uncommitted relationships, that don’t create the ideal environment for innovation and adoption. The helpful work being done by parts of the DH and NHS, for example the NIHR and NICE, continues to change in the way that industry, universities and other innovation suppliers develop new products and services so that they are better aligned to the NHS needs and priorities. However to do this effectively and systematically, we need to develop our relationships with these suppliers, ideally into more collaborative and partnership type arrangements.

The aim should be to encourage engagement only in work to develop things that hold the promise of delivering genuine value to the NHS and offer real improvements. To do this will require systematic clinical engagement, including time and the recognition of these activities as a valuable activity within the appraisal system. In the Manchester Integrating Medicine and Innovative Technologies (MIMIT) programme, which is affiliated to the Boston CIMIT, this has been achieved and has demonstrated success NHS and academic and industry engagement to produce new products to explicitly match NHS clinically defined needs. In addition MAHSC has signed an MOU with NICE which specifically identifies the evaluation of health technologies as an area of potential exploration utilising the examples in the MIMIT programmes and links to the wider biomedical community in the region.

A further upstream example is the successful engagement of MAHSC in the Translational Research Partnerships (formerly OLS clusters) in inflammation. These clinically focused
programmes will linked closely with fundamental research undertaken in the new Manchester Collaborative Centre for Inflammation Research, a unique partnership between the University of Manchester, GlaxoSmithKline and AstraZeneca.

3. There needs to be a systematic improvement the articulation and broadcasting of NHS innovation needs, so that companies and entrepreneurs can easily access them. These should be supported by on-going engagement from the clinical communities to shape and validate throughout the development process. To encourage this, the input from clinicians should be recognised as a valuable activity in the Clinical Excellence Frameworks. The NHS Procurement services/hubs have a significant opportunity to influence the supply of new products and services into the NHS and this was recognised in the recent House of Lords Report.

The Universities Research Excellence Framework is already changing to reflect the value of interactions with industry and the generation of economic outputs. Aligning the NHS Excellence Awards system to also reflect this would be helpful and would make the appraisal of jointly appointed staff easier to manage.

4. Science, Innovation and Business Parks are the homes of SMEs and their founders (entrepreneurs) are the very entities that can be ‘fleet of foot’ to address new market opportunities and to adapt existing solutions to meet NHS needs. There should be greater use made of these resources, which would provide the private sector lead in developing NHS innovations and taking a significant share of the up front risk.

As an AHSC, we are also able to contribute the commercialisation capabilities of a well developed and experienced technology transfer and incubation company within the University partner. This expertise and infrastructure can and has been leveraged to the benefit of NHS partners by working alongside the innovation hub (TRUSTECH) in programmes like MIMIT and more, recently, MAHSC has joined forces with the National Innovation Centre and the four other Academic Health Science Centres in England (Cambridge, Imperial, Kings and UCL), to scope, validate, prioritise and seek solutions to unmet health care needs. This example may speak more to the ‘invention’ stage rather than ‘adoption and diffusion’, the focus of this call for evidence, but is nevertheless, a powerful example of the opportunities afforded by NHS working with HEI partners.

There are a growing number of “health business parks” with NHS Trusts in the lead or in partnership with a university of private sector developer. Whilst some are only recently operating, and others are still aspirational, never the less, this new concept has the potential to create a fertile environment for the co development of new ideas and technologies at scale and pace which can then be rapidly adopted by the lead Trust(s). There is evidence that co-production leads to faster uptake and diffusion. These developments should be given greater prominence in the discussion with DBIS, UKTI and NHS Global.

1 Science and Technology Committee, March 2011; Public procurement as a tool to stimulate innovation
2 There are international examples in Bilbao, Aalborg and Oslo (and others) where there has been a rapid growth in healthcare company formation and growth stimulate by joint working.
3 Over ten current or developmental NHS led health business parks or similar ventures have been identified by TRUSTECH.
5. The NIHR pilot programme for the Health Technology Cooperatives has been successful in creating new relationships between the NHS clinical communities and industry and universities and this has produced new products and services to make the treatment of patients better. Although there remains the challenge to make this self-sustainable over the long term, these principles of the HTC are soundly based. The NHS and industry relationships and the environment that they create to allow the sharing of ideas and intellectual property and the ability to generate cooperative developments should be more widely adopted.

The current number of HTCs (two) is perhaps too low to create sufficient confidence in the investor market to be attractive for them. An increase in the HTC programme and including procurement and adoption within the requirements of the HTC consortium may provide the extra added value that the HTC can deliver to the industry and business partners. Done well, it may be possible to attract private sector investors into the HTC programme. The further opportunity to make explicit links between the HTC and the NIHR infrastructure e.g. Clinical Research Networks, could also help to de-risk the early stage development and speed up the route to market (see page 14, point 17).

6. As the Call for Evidence points out “few innovations now grow entirely within one sector and few innovations grow entirely within one organisation”. The move to a system of Open Innovation that has been embraced very effectively by industry for a number of years needs to be further promoted within the NHS – perhaps via the duty to promote (Open) innovation. An example of open innovation is being trialled by the Manchester Biomedical Research Centre. Prompted by the move of the BBC to Salford and the establishment of a “Media City”, they have engaged with digital and creative media companies and with clinicians to describe areas of clinical need that might be addressed by the industry sector. The levels of engagement have been positive and productive and a number of specific areas have been explored of which two are now being taken forward into the development phase:

i. Adult Congenital heart disease and interventional cardiology. These medical advancements have meant that individuals with congenital heart disease now survive into adulthood. While this is a medical breakthrough, often this means patients are asked regularly to present at clinic when more remote management might be more appropriate to their lives and medical needs and free resources to concentrate on more acute cases or on assessing real-life situations remotely.

ii. In the area of the assessment and rehabilitation of the lower limb, the problem is to find a means of remote monitoring of the knee post-surgery during rehabilitation – some technology is already available locally, but needs a connectivity technology.

Two other areas are being explored;

- Helping patient to manage multiple and complex co morbidities
- New technologies to enable patients to provide accurate and relevant information remotely to streamline the pre operative in preparation for admission.
7. There are many reports, including the House of Lords Report on procurement \( cf \) that point to the need to use the spending power of the NHS, to drive additional value into the UK healthcare industries and the benefits, including risk sharing with industry that effective procurement of innovation could deliver. However, in practice there is a relentless pressure on the procurement services with Trusts or aggregated procurement services, to deliver savings from the routine expenditure and this is essential work and must continue.

However, it leaves little capacity in the procurement services to develop the engagement frameworks with industry to enable a shared risk approach to the development of new solutions. There should be in each of the regional (or sub national) procurement services, dedicated resources, with connectivity into, for example, NHS Providers, CLAHRCs, and the Regional Innovation Hubs, to create a “Gateway” into the NHS that is simple and easily accessible.

8. There has been some work done in this area in the North West to develop an **NHS Innovation Gateway**. This is currently being further developed, and could for example also include specific Trusts, NIHR infrastructure to support trials and evaluations, MIMIT and the NHS Technology Adoption Centre. The aim is to provide a “right first time” service that will connect the NHS and business to optimise the development of products and services designed to meet the needs of the NHS and that are able to gain a greater share of the NHS market.

9. Open Innovation also leads to a greater opportunity from the integration of **technologies** from different sectors. Renal dialysis machines came from the space programme and there are a number of other examples where the science outputs from one sector have been turned in valuable healthcare treatments and diagnostics\(^4\). There should be more emphasis on creating links between the NHS and other potentials suppliers of innovations. The Science and Technology Facilities Council in its Futures Programme has prioritised health as a key area to translate its rich science base into new diagnostics and devices to help particularly:

- Cancer
- Dementia
- Confident care closer to home.

10. There are existing schemes such as The Technology Strategy Board Knowledge Transfer Partnerships (which originated from the NHS model of Teaching Hospitals) that have been underused by the NHS and these could be further promoted, alongside close working with the HealthTech and Medicines Knowledge Transfer Network (KTN) and its connectivity to other KTNs.

11. The NHS Regional Innovation Hubs have an important role to help NHS organisations to protect the valuable knowledge assets that the highly motivated NHS staff produces at scale. Ensuring that these ideas are captured and “exploited” either commercially or via

\(^4\) QinetiQ http://www.hesmagazine.co.uk/print.php?page=printfeature&id=164
the spread of new and improved systems and processes has the potential to return real value to the service.

These innovation services are also a conduit into the NHS for the introduction or co-development of new systems of care delivery, diagnostics and other innovations. This can speed up the transfer of things that have worked elsewhere in the UK or internationally and ensure that the efficiencies for healthcare and resources are available sooner. Since the benefits of these services accrue to the wider NHS, there is can be a reluctance at an individual organisational level to support them and there should be a level of funding made available, centrally, that corresponds to the actual value that the regional innovation hubs are able to evidence.

12. The “innovation gaps” in the Cooksey Report in 2006 identified the need for specific funding to address this early stage risk area. There has been some progress with public funds e.g. SBRI Scheme and the NIHR i4i Programme, there is still a shortage of public and private sector early stage risk funding to help creators of ideas to cross the translational gap. The proposal led by Office of Life Sciences and a number of leading Trusts, major corporates and investors to set up a NHS Innovation Investment Fund will address some of these issues. However the funds are risk capital based and therefore are likely to display typical investment profiles high/low risk and so this will not be a system wide solution.

13. In all of these systems that develop new solutions, be they technology based or improvements to services and healthcare delivery, it is essential that procurement and adoption be considered at an early stage in the development process. The concept of generating innovations that are “adoption ready” should be promoted. The availability of input from the NHS Technology Adoption Centre and from organisations such as AQuA, should be encouraged more by including these requirements as a part of the legal duty to promote innovation.

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5 SBRI programme (http://www.innovateuk.org/) aims to use government procurement to drive innovation. It provides business opportunities for innovative companies whilst solving the needs of government departments.

6 The NIHR i4i Programme (http://www.ccf.nihr.ac.uk/i4i/Pages/Home.aspx) Supports either early- or late-stage product development, i4i is positioned to transform the translation of healthcare technologies for increased patient benefit.

7 AQuA is a membership health improvement organisation. Its mission is to stimulate innovation, spread best practice and support local improvement in health and in the quality and productivity of health services.
B. Testing of Innovations

Current Situation

14. NHS organisations are pointed towards supporting research that is supported by the NIHR portfolio although there is evidence that in practice a significant amount of non NIHR research is undertaken. In both areas, the preponderance of activity is towards drug trials. There are only small numbers of medical devices and diagnostics being tested and evaluated and this isn’t a satisfactory situation if we require the NHS to be “evidence led”.

Clearly the resources of the NIHR should only be used to support the high quality research that it seeks to promote, but other parts of the NHS e.g. procurement should be more active in making the case for NHS organisations to support good quality trials and evaluations. This is also an area where the Technology Strategy Board could have an important role to play to encourage the NHS and industry to work together.

At the preset time, there isn’t any formal assessment of the trials and evaluations to establish whether they would be adopted across the NHS because they have the potential to deliver a better outcome than current products or services and that the costs and risks of adoption make it a viable option. This can waste NHS resources (not least, opportunity costs) waste valuable clinical time and burden patients. It also wastes the time and money of the companies and investors and doesn’t build their confidence in the NHS market.

Making things better

15. Making things easier for the creators and suppliers of potential innovations to work with the NHS to test and validate their new products and service is important, if we are to increase the volumes of new products that have robust and independent evidence from within NHS. The major pharmaceutics industry and medtech companies gain access to the NHS test bed via the National Institute for Health Research infrastructure and they dominate the current situation. There is significantly less emphasis on supporting the evaluation on service changes, improvements (and devices and diagnostics) and in part, this leads to a situation where every potential innovation is re evaluated by prospective adopter organisations.

This is wasteful of resources, slows down the uptake and diffusion of innovations and contributes to the continued perception of the NHS as a slow and late adopter. World leading organisations such as NICE and the Health Technology Assessment programmes play a leading role in providing high quality evidence to support the adoption process, but they deal with “big ticket items”. There should be introduced a similar system of support (or with access fully funded by the suppliers) that enables a broader range of solutions to find a route into the NHS for testing and this is particularly important for SMEs.

16. There is significant anecdotal evidence that the SME community bypasses or avoids the NHS when developing and testing their ideas and that the NHS is in some cases, not the
preferred first route into the market. This disadvantages the NHS patients and the UK economy and the current situation should be examined and remedies and national and local levels introduced to improve the situation.

17. A small scale pilot is being operated by TRUSTECH\textsuperscript{8} and supported by the Greater Manchester Comprehensive Research Network, to support a number of SMEs to meet the NIHR criteria to for adoption to the portfolio and gain access to the NIHR infrastructure in order to evaluate the clinical efficacy of their innovations. This will report at the end of the current year and aims to show how small companies, with good solutions for the NHS can be helped and thereby the products accelerated into use in the NHS. The advisory committee for this pilot has been augmented via input from NICE under the aegis of the MAHSC MOU.

18. There should be a more proactive encouragement of NHS organisations to participate in trials and evaluations of potential innovations whether they are eligible for NIHR support or need to be supported by other parts of the NHS e.g. procurement, or by others such as the Technology Strategy Board or Department for Business Innovation and Skills.

19. The issue of risks from the trials of innovations needs to be addresses, so that not all innovations need the same level of administrative processes prior to permission for testing. Some system improvements e.g. the use of Green Bags, to store patient medicines or new ways of contacting patients via social media can be done pragmatically, without danger to patients and thus simplify, speed up and reduce the cost of trials and evaluations.

20. Where the evaluation of products and services is carried out, this in all cases should include the financial benefits and doing this in a way that satisfies the various decision makers is important and this should be a part of the trial protocol, even when funded by industry. Achieving some form of consensus on what is an acceptable way to calculate these benefits would be helpful – perhaps with the use of some “common language”.

Included in this approach would be some type of pragmatic Health Technology Assessment, that might be used for local innovations and is done at pace. A current call through the Framework 7/Interreg is setting out to explore different options and the feasibility of this approach. This will include carrying out HTA along the pathway of care and in routine practice situations, so that the outcomes reflect what the downstream adopters will encounter and the types and levels of efficiency gains that may be produced are more plausible.

\textsuperscript{8} The Medtech Access Pilot: TrusTECH is the North West NHS Innovation Service www.trustech.org.uk
C. Adoption and Spread

Making things better

21. The embedding of a culture of innovation has been demonstrated in many business sectors to begin with the CEO. They need to “give permission” to the executives, managers and clinicians that spending time on seeking out appropriate new ways of delivering services is a valuable part of their role. The legal Duty to Promote Innovation will play an important part in spreading this permission across the system. Ensuring that the Chairs and Non executive Directors of NHS Boards are cognisant of this responsibility will ensure the proper degree of challenge is offered to the Trust executive.

Similarly this signal from the top is important to set the tone for the level of risk that an individual organisation might be prepared to take. Sometimes this level of risk will vary depending upon the prevailing circumstances and thus it’s not the same level of risk for all contributors to the innovation process. It is important therefore, that where the intended change is significant, that all of the departments and contributors (including commissioners) who may be affected or are necessary to achieve the adoption of the innovations are involved. Provision of the training requirements to introduce the change and to properly embed it into routine practice is important. A certain points of the process the necessary procurement input are a part of these teams is important.

22. If the innovation is intended to make efficiency gains as well as improved clinical outcomes, the implementation teams need to consider at the outset the data requirements so that the baseline and end points can be accurately measured and benefits calculated and the rewards secured.

23. The concept of innovation clusters or Discovery Communities is being investigated in the Northwest by AQUA, working with the Sir John Oldham’s Long Term Conditions QIPP team and the Kings Fund. This programme of work, focusing on Integrated Care models will show how effective change programmes can be when done across organisational boundaries. This work is at early stage, but has already created significant interest from Clinical Commissioning Groups in participating and is anticipated to lead to improved implementation. A further and broader partnership is being explored that will draw from the expertise and networks of other innovation organisations including the NHS Technology Adoption Centre and TrusTECH and these will deliver a technology focus. Other organisations such as the HIECs and CLAHRC will provide a further integration of adoption and improvement activities to embed a change in the innovation culture of participating NHS organisations, supported by long term educational and training.

24. As referred to in the Call for Evidence papers, there is a need for a common language (across boundaries and professions including clinical and management) that describes the risks, how these would be mitigated and clear clinical end points or standards that the innovation seeks to improve. It is often the lack of this clarity that prevents the alignment of common aims and objectives for clinicians and managers. (e.g. what improvement is the innovation going to make and is it worth the risk).
25. Local Authorities with their responsibility for Public Health will need to engage more effectively with patients and carers to develop a consensus around the need to move from an Illness to a Wellness model of care and the personal responsibilities that needs to transfer from the healthcare system to individuals. Creating the confidence to do this will not be engendered without the Local Authorities and NHS providing the connectivity between home and the care system. Mobile or ehealth will play a significant role in this and to accelerate this transfer there needs to be changes in the way that the various roles and interventions are reimbursed. The recent announcement by the Technology Strategy Board for its DALLAS\(^9\) programme and the DH Whole System demonstrator will support this move.

A complementary activity, which builds again on the university-NHS inks within MAHSC, is the Manchester m-health ecosystem. This pilot initiative established by the Manchester m-Health Innovation Centre hosted by the University, in partnership with the European Mobile Health Association (EuMHA) and industry partners. It involves the MAHSC NHS members, NW e-health, CLAHRC and MIMIT. The motivation for establishing an mHealth ecosystem echoes many of the issues and the reasons why this Innovation Review is being undertaken - the near universal experience that mHealth trials, however successful, do not result in adoption into routine practice. The reasons for this include: poor user acceptance, ‘point’ rather than whole system solutions, poor understanding of healthcare needs, poor understanding of public/private business models, failure to build the necessary partnerships, failure to plan for pilot-to-deployment, and lack of critical mass. The aim is to address these issues, gaining leverage by bringing together the right partners and concentrating, at scale, on one geographical location (in the first place).

26. The national plan to install smart energy meters in every home in the UK by the utilities companies has the potential to provide an always on, fault tolerant connectivity platform that will stimulate a new industry to develop technologies and systems to help patients and their carers to manage their health at a distance from traditional healthcare providers in secondary and primary care. Creating the confidence that these new systems are genuine alternatives will be an important task and some work needs to be initiated with patients to understand the degree of acceptability of these new systems. The CLAHRC in Manchester is leading a research programme exploring the technology interface with people, working with medical sociologists. This opens up the market place for new providers of (health) care.

27. The National Clinical Directors could play a positive role in defining those innovations, particularly where there is a direct (interventional) impact and they could provide positive professional guidance. The respective Royal Colleges (and other similar professional organisations) should also play a part in generating a confidence in the clinical workforce to innovate and to recommend and support the adoption and spread of clinical good practice and innovations.

\(^9\) Technology Strategy Board; Delivering Assisted Living Lifestyles at Scale (DALLAS)
http://www.innovateuk.org
28. Introducing the evaluation and implementation skills required for success innovation into the undergraduate and post graduate training programmes would play a long term part in the further development of an embedded culture of continual improvement.

29. Creating a positive link between the benefits that an innovation actually delivers in practice and the pricing has already been started in the area of medicines. The concept of Payment by Results (outcomes) is understood in the NHS and it may help NHS organisations to increase their appetite for taking the risks of managing change, if there was to be introduced a shared risk approach. Creating links between the outcome from innovation and the CQUIN payments is already making changes in the system, and this can be strengthened by a more explicit alignment to the innovation agenda.

30. As NHS organisations operate within a more plural and competitive market place, the positive impact that innovation make and that might influence the choice decisions is coming increasingly to the fore. This will be a powerful stimulus to change the way the NHS approaches the sustainable pull of innovations. Providing a further stimulus, to encourage this could be achieved by a requirement to report innovation activity within a risk matrix and which was publicly available may also create patient pull. This would describe the innovations that are being trialled for adoption (could include things such as NICE, iTAPP and HTA) showing a balanced risk approach. If it is not possible to get FTs to do this, a pilot programme should be considered to encourage a number of Trusts to do this and use this to create a competitive situation. Patient groups could be a part of this pilot, to stimulate a “voice” to create a demand for this type of information. The Care Commissioning Groups could own this part of the pilot.
D. **Specific Actions**

A paper has been included at Appendix 1 that describes a possible approach to creating an Innovation Community.

**Local**

In our conversations in the North West, particularly with clinicians, to help us to understand the apparent inherent barriers to the adoption of new ideas, particularly where these are clinical and have a direct impact on patient care, a number of themes consistently emerge:

31. As referred to in the call for evidence papers, there is a need for a common language across boundaries and professions, including clinical and management, that describe the risks and to set out clean clinical endpoints or standards, that make clear what it is the supposed improvement is trying to achieve, and which is better (not just different) than the current standards. There is often a mismatch in the way that the objectives are articulated between clinical management staff and this undoubtedly impedes the adoption process.

32. Silo budgeting both within organisations and between NHS organisations and social care and local authorities, is still frequently raised as one of the biggest disincentives to change current practice and procedures. Within the issue of silo budgeting, other financial barriers including expenditure in one year and saving in other years, a common appreciation of risk, which will vary along the patient care pathway and between organisations, are cited as barriers.

33. The positive impact that clinical leadership and champions provides to encourage clinical groups to take up new ideas. The role of the National Clinical Directors, in respect of innovation, is often raised.

34. The positive pressure that could be generated from patients and carers is at present under researched. This is an area that should be addressed in conjunction with the further development of the option of choice. Enabling patients to choose their healthcare providers and take decisions about the characteristics of the provider and the types of care they provide enables a more informed choice.

35. Innovation as an activity, and which includes the time to carefully evaluate new ideas, whether they have been used elsewhere or not, as well as the implementation process, isn’t currently valued alongside other activities, such as research or teaching. Within job plans, career development and the clinical excellence frameworks, there should be a more explicit recognition of the value of innovation activities. In the research field, this is recognised through the NIHR Clinical Research Networks, by the provision of paid for sessions. This is having a very clear benefit on raising the quality and volumes of clinical research within the NHS and this effect may be transferable to innovation. The availability of funding to support the PAs of innovation champions would immediately up rate the perceived value of innovation activities, and provides incentives within the system, creating upward pressure with NHS organisations.
The implementation of innovative practice, procedures and systems, is rarely without some upfront additional costs, and sometimes these can be significant where there are dual running costs or significant training, new equipment or other resource costs are required. Securing the funding for these within organisations is often challenging, as the competition for scarce resources, set against things that glow red on risk registers and the maintenance of existing clinical activities which support known income streams, in most cases prevents innovation from getting to the top of the investment priorities.

A number of people cite the need for some form of “investment bank”, whether this is held at a national level, or could be done at Clinical Commissioning Group level. The aim being to frontload the funding of investment to support the early costs of adoption of innovations, before the payback can be generated. Each investment decision would be accompanied by with clear commitments for the payback of the ROI to make the bank sustainable after initial investment.

Internationally

There is work in the Netherlands and the Basque country to assess the value of new practice/technologies and to actively manage old technologies/processes out – as a precursor to introducing new ones. The R&D strategy of the Basque health service is focused upon a small number of priority areas determined by the health service and is linked to a determined effort to drive innovations into the health system. A new method of using Health Technology Assessment combined with a disinvestment and investment analysis was being developed for implementation 2 years ago.

In Alberta, Canada, the Alberta Health Services (commissioners) are putting in place an integrated framework that operates across the Alberta state (3 million population) and which creates a single portal to engage the Alberta Health System (AHS) and Industry to improve the supply of relevant innovations that are aligned explicitly to the top level objectives of the AHS.

There is an explicit link between the AHS and the positive impact that it can have on the economy and in particular to foster and support a growth in the healthcare business sector to provide long term GDP growth. The AHS are developing quite explicitly this twin track health and wealth approach, aligned to the State economic strategy. Procurement plays a more significant role in this portal, than would be typical in the UK and a more explicit evaluation of "is this what the AHS really needs" is also a feature.

Centre

The establishment of the legal duty to promote innovations, laid on the Strategic Health Authorities, was a powerful signal of the intentions of the NHS, to change its behaviour in terms of stimulating and adopting innovations. Within the new system, it is important that this duty is retained and further refined to ensure that the “duty” is devolved to the various parts of the new NHS structures.
The duty to innovate – where this responsibility is lodged at a high level, for example within the Commissioning Board, has the potential for other parts of the system to assume it is someone else’s job. It would help to provide further reinforcement to encourage the adoption of innovation, if this duty was rippled down through to individual provider units, including into the Care Commissioning Groups and Local Authorities.

40. With the help of the Departments of CLG and Business Innovation and Skills a broader recognition across local and national govt that the NHS is major economic influencer could be developed and recognised more explicitly by the NHS as a valuable output from NHS organisations. For example in the North of England the healthcare services (NHS and private) employ 14.2% of the workforce and there is, in addition, the people in the healthcare industries and healthcare and supply chain. There is an opportunity to use the economic leverage of healthcare to the benefit of communities, although this isn’t evident in the business plans of the Local Enterprise Partnerships (LEP). To optimise the impact that could be made to health improvements and to the economy, it would benefit from a greater alignment of the efforts of NHS, Local Authorities, LEPs and others to create a healthier population and workforce. This will require that local planning systems integrate health organisations more into their development and investment planning. The Health and Wellbeing Boards can play a role in this, particularly if innovation forms a specific part of their remit.

41. In most NHS organisations, there isn’t a link from the research programmes that segues into the innovation activities. There are only few examples where the remit of a Trust Research Support Service (office) has an explicit role to assist the organisation in the identification and management of new treatments, services and methods and to be a part of their implementation. Some research providers are adopting a research and innovation title for their services and this is a positive sign and should be further encouraged. This move towards an integrated remit could be reinforced by the alignment of the Clinical Excellence and appraisal systems to include innovation activities and through the funding of specific time for innovation alongside research activities.

42. There is extant guidance from the DH on the responsibilities of Chief Executives of NHS organisations for the identification, protection and exploitation of intellectual property, and this at its time was groundbreaking documentation, and has stood the NHS in good stead over a number of years. However, it would now benefit from updating, to include the broader definitions of intellectual property and knowledge assets, leading towards the implementation of these new ideas, i.e. the full innovation process. Once again, in its current construct, the majority of executives and managers within the NHS, presume that the management of intellectual property is the domain of a very few large university hospitals, and including the AHSCs, and this responsibility doesn’t feature highly, if at all, in the objectives of management teams.

43. The prime responsibility for innovation must sit with the local systems of commissioners and providers of care. However the benefits of developing and implementing innovations often crosses organisational boundaries and when resources are pressured, there is an understandable reluctance to investment in activities that do not show a direct benefit to the source of investment or where it might be detrimental to securing
competitive advantage, by sharing a better and more effective way to deliver X or Y service. In these circumstances, there is a case for central funding for some limited service benefit innovation activities. This is already provide for example for the HTA Programme and NICE and Foresight Programmes and a further example might be the NHS Technology Adoption Centre.

44. The **NHS Challenge Prizes** has made its first round of awards, and others will soon follow. There should be a follow through to raise the visibility of those services judged to be class leaders, to promote wide and rapid take up across the system. The winners of the prizes have a role to play in this, however, working with the National Clinical Directors together they could play a more powerful role in championing the roll out.

45. Going forward to deliver the QIPP challenge, it is essential to provide the clarity (de cluttering of the plethora of innovation services) and to provide the correct capability and capacity to support the needs of the NHS and to help it meet its challenges. There should be a review of the current providers of services matched to the essential parts of the innovation pathway from the early stages of idea creation through the protection of intellectual property, commercialisations and adoption and diffusion.

46. An example is the Health Innovation and Education Clusters (HIECs). These have the potential to play a valuable role in the development and embedding of the skills and capabilities in the staff of NHS organisations to upscale their innovation performance. However the remit of the HIEC nationally varies and some do appear to have an innovation education focus, whereas others are innovation suppliers and others are advocates for core health services education and training.

47. The capacity and capability requirements should be assessed against the needs of the service as determined by the outcome of the NHS CEO review and then a decision made on those services that will receive central funding support and for other services, they should be exposed to the operation of a market.

48. Under the Department of Health (DH) and the (then) NHS Purchasing and Supply Agency (NHS PASA) jointly launched the HCAI Technology Innovation Programme in January 2008. TRUSTECH, the NHS Northwest Innovation Service was commissioned to operate a **Smart Solutions Programme** initially for Healthcare Associated Infections and more recently for Long Term Conditions\(^\text{10}\). The outcome of the initial HCAI programme was an engagement framework that comprised 500 companies, who were interested in working with the NHS to develop or transfer from other business sectors, technologies that could help to better manage innovations.

After independent expert review nine new products were tested across England and independent evidence reports produced and made available to the service. This has increased the availability of new and effective products to help to better manage HCAIs – it has also created a new relationship between these companies and the NHS, where they have worked in a more collaborative and engaged way. They are seeing increases in sales, which is good for the company and UK Plc.

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\(^\text{10}\) [http://www.smartsolutionsforhc.co.uk/](http://www.smartsolutionsforhc.co.uk/) The current programme is funded by NHS North West, the Manchester Innovation Funded with NESTA and the former Northwest Development Agency.
An independent report produced for the Department of Health\textsuperscript{11} has recommended that the Smart Solutions Programme is continued “as it \textit{represents the most successful work streams (Showcase Hospitals and Smart Solutions) in terms of their perceived value, worth and achievement of objectives}”. This programme could be further developed working with the Clinical Commissioning Groups to address further areas of priority within the NHS and the systems and processes are now well developed to accelerate the programmes.

49. Some time ago the \textbf{National Audit Office}\textsuperscript{12} produced some practical guidance for public sector organisations on the management of risk in respect to innovation. This work could usefully be refreshed and set in the context on the new NHS and the operational environment. This could help to develop a more consistent approach across NHS organisations in respect of assessing and managing the risks of innovations.

\textsuperscript{11} A Strategic Assessment of the HCAI Technology Innovation Programme. (Summary Report) March 2011
Aim: To drive the practical implementation into routine practice of proven systems and technologies, demonstrating adoption and diffusion across communities and creating a legacy of innovation pull.

Why?: The majority of NHS organisations don’t routinely reach out for innovative solutions to help them to deliver the QIPP challenges. Without the use of innovation to support and drive improvements the default will be a financial solution, which only fixes the here and now and doesn’t drive innovation in the delivery of healthcare services. There needs to be a culture that seeks out new ways of delivering existing services better and more efficiently and to seek out new solutions and services.

What are we would be aiming to achieve?: Improvements in the quality of care, providing patients with the opportunity to benefit from innovations in healthcare, that deliver better, safe and more effective care and achieving efficiency in the use of resources.

The market failure: In the future, there isn’t a ‘big system’ to drip feed or drive adoption activity through short term programmes or initiatives. A genuine and sustained innovation pull needs to organically emerge, in the way that private sector organisations use R&D, market intelligence and customer feedback to drive a constant and continuous cycle of innovation. There is plenty of evidence that the most successful organisations have a strong commitment to innovation.

The implementation of new systems and technologies particularly those with significant impact, frequently causes a ripple effect, spreading out from acute to community and general practice and social care. If those systems are not aligned, then barriers are often encountered that either slow down or disable/disrupt the opportunity to secure the full potential benefit that the initial implementation intentioned to deliver.

The proposal to engage communities of acute trust, community trusts and GP consortia, within some cases local authorities or private sector partners (cost to include e.g. opticians) provides the opportunity to create a holistic plan for the implementation of a new product or service and to be able to manage the impact of changes along the route of care.

The Proposal: A challenge would be put out that will encourage applications to be designated as Innovation Clusters. The application will have to include multiple organisations and they must be willing to commit to manage the implementation of [5] innovations from the iTAPP list or other innovations including pathway redesign that have NHS “approval”.

Appendix 1
These could be within a disease or condition area e.g. long term conditions or they could be in a class of technology e.g. PoC diagnostics or telehealth approaches to the delivery of care.

To be successful, the organisation within the cluster must show a level of existing commitment to the adoption of innovations. They should have an innovation strategic plan, signed off at Board level and be able to provide the resources in terms of staff and infrastructure to enable the selected innovations to be adopted.

The innovation clusters should, in the application design, be encouraged to include Clinical Commissioning Groups (CCGs) and procurement. This is an opportunity to use existing resources, already in the system, to support and incentivise our innovation pull. However the problem of “silo budgeting” is often cited as a barrier to innovation activities. By creating a community, the financial flows can be modelling and the changes, with suitable protections and transitional arrangements be negotiated between the parties. It also provides an example to the wider community of CCGs, to show how they can embrace innovation to deliver improvements to address the QIPP challenge.

This could be further stimulated by the CCGs engaging with patients and patient groups to help in the prioritisation of areas for change ad to be a part of the change processes. Creating a pull from patients and an interest in seeking out provider organisations that are demonstrating a commitment to developing and adopting the most up to date delivery and care systems will further develop the healthcare market place, where choice drives competition and which in turn creates the incentives for providers to relentlessly seek out new and better ways of delivering their services.

The successful clusters would work together to develop an implementation plan, supported by for example the National Technology Adoption Centre, the Health, Innovation and Education Clusters, Centres for Leadership Health and Clinical Research and the Academic Health Sciences Centres. Organisations such as Aqua may also be able to provide the support for these programmes. These supporting organisations could provide expertise in the adoption and implementation processes and will capture the learning from each cluster and make this available to the service more widely.

**Evidence that this will work:** The Safety Nodes Programme, operated by AQuA in the North West with the support of the Health Foundation showed that the implementation of new and better practice, with evidence of safer and more effective care could be managed – across a community or organisations. The approach to the implementation of the planned changes was adapted through the iterative interactions between the clinical practice groups from the various care providers. This led to shared ownership and innovation pull across organisations.

This approach to engage multiple sites was a development of the DH Showcase Hospitals Programme where the adoption of the ‘proven’ technology or systems was limited to a single site. The ‘showcasing’ of the results, provided

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13 AQuA is a membership health improvement organisation. Its mission is to stimulate innovation, spread best practice and support local improvement in health and in the quality and productivity of health services.
evidence for other organisations to follow/adapt if they wished to take up the innovation themselves. Although there is good evidence that the kudos (and project funding) from being designated as a showcase hospital has caused them to become more enthusiastic to embrace the adoption of innovations – albeit within a defined area, the approach doesn’t appear to stimulate a wider innovation pull.

For early stage innovations, there is evidence that co-production of the new product or service, will lead to a faster and more sustained uptake.

**Why would people apply?:**

1. This will be stimulated by the pressing need to deliver more efficient services and to share risks. The implementation should produce a real ROI that can be captured and reinvested within the organisation where the savings occur.

2. There are tangible and intangible benefits that accrue to organisations that are regarded as leaders in the delivery of innovative care.

3. This is becoming increasingly evident with the growth in patient expectations, patient choice and the opening up of the healthcare markets.

4. The concept of Healthcare Groups, Academic Health Science Centres, HIECs, CLAHRC etc have all shown the appetite of organisations to work together to stimulate and manage system change increasingly to deliver QIPP.

5. The demise of SHA and PCTs to be replaced by geographically smaller Clinical Commissioning Groups leaves a vacuum in the strategic management of change and inevitably some organisations/groups will step forward to take a leadership role in innovation and improvement.

6. Initial awards to cover the costs of inter organisational working and the development of the evidence for dissemination may be required to stimulate the applications to apply for the pilot. Thereafter, the demonstrator will provide the evidence and the confidence to support a continued emphasis, promoted by the new body with responsibility for the Duty of Care to promote innovation.

**Example of what an application would look like**

An example would be included of what an application would look like with a realistic ROI.