NHS Top Managers, Knowledge Exchange and Leadership – The Early Development of Academic Health Science Networks: A Mixed Methods Study

Professor E. Ferlie[1], Professor D. Nicolini[2], Dr J.Ledger[3] , Dr D'Andreta[4], Mr D. Kravcenko[5] and John de Pury[6].

1 King's College London, School of Management and Business, London, UK.

2 Warwick Business School, The University of Warwick, Coventry, UK.

3 King's College London, School of Management and Business, London, UK.

4 Warwick Business School, The University of Warwick, Coventry, UK.

5 Warwick Business School, The University of Warwick, Coventry, UK.

6 Universities UK, London, UK.

Important

A ‘first look’ scientific summary is created from the original author-supplied summary once the normal NIHR Journals Library peer and editorial review processes are complete. The summary has undergone full peer and editorial review as documented at NIHR Journals Library website and may undergo rewrite during the publication process. The order of authors was correct at editorial sign-off stage.

A final version (which has undergone a rigorous copy-edit and proofreading) will publish as part of a fuller account of the research in a forthcoming issue of the Health Services and Delivery Research journal.

Any queries about this ‘first look’ version of the scientific summary should be addressed to the NIHR Journals Library Editorial Office – journals.library@nihr.ac.uk

The research reported in this ‘first look’ scientific summary was funded by the HS&DR programme or one of its predecessor programmes (NIHR Service Delivery and Organisation programme, or Health Services Research programme) as project number 12/5002/19. For more information visit https://www.journalslibrary.nihr.ac.uk/programmes/hsdr/12500219/#/

The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The HS&DR editors have tried to ensure the accuracy of the authors’ work and would like to thank the reviewers for their constructive comments however; they do not accept liability for damages or losses arising from material published in this scientific summary.

This ‘first look’ scientific summary presents independent research funded by the National Institute for Health Research (NIHR). The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the HS&DR programme or the Department of Health.

Scientific summary

Background: Academic Health Sciences Networks (AHSNs) have been created to accelerate the spread of innovations which can promote health gain and also pursue novel goals of wealth creation. AHSNs are regionally based networks involving many sectors and partners, including private sector firms. Their creation reflects a continuing stream of health policy to stimulate NHS knowledge mobilisation. Our study responded to a NIHR call for research into knowledge mobilisation in health care, taking the AHSNs as a substantive site.

Objectives: Our research aims were to: (i) explore AHSNs' strategies and practices of knowledge mobilisation in their formative phase and (ii) investigate how knowledge leadership took place and characteristics of people perceived as knowledge leaders (KLs). We initially focussed on AHSN Very Senior Managers (VSMs) as possible knowledge leaders, although in practice a broader set of KLs later emerged. Our initial research objectives operationalised our aims as follows:

1. What role does 'knowledge networking' play both formally and informally (within knowledge mobilisation strategies and practices in AHSNs?

2. How is 'knowledge' (in particular about knowledge mobilisation strategies and practices) diffused by VSMs in their AHSNs?

3. Is there a subgroup of VSMs emerging who are highly engaged with knowledge mobilisation events AND who appear to act as knowledge leaders in their AHSNs?

4. If so, what explains such knowledge leadership behaviours?

Methods: This is a mixed method study, comprising a linked sequence of work packages (WPs):

- Scoping work, including examining all 15 AHSN prospecti to select a balanced sample of 5 AHSNs (rural/urban; north/south; hosted/not hosted; linked or not linked to a local AHSC; strongly/more weakly developed regional life sciences cluster);

- an analysis of the relevant national policy stream back to the early 2000s examining key policy texts and undertaking semi structured interviews with influential policy level respondents (16); theoretically, we here examined the extent to which pluralisation of the health policy making process was evident;

- a structured and narrative based literature review of academic journals and books, along with grey literature. We here identified interesting literature to inform the design of interview pro formas;

- a Social Network Analysis (SNA) of health and wealth networks at AHSN level. This was conducted at two time points, by administering a short electronically based survey. SNA is a well-known analytic technique which maps the structure of

social networks. We used VSMs in our AHSNs as 'seeds' to nominate their knowledge contacts and then snowballed out. The SNA survey yielded data on 1,016 individuals (t1, n=818; t2, n=198). Time 2 responses are smaller, reflecting some attrition and fatigue from respondents and it was also open for a shorter period. The data helped us produce SNA maps by region;

- qualitative data: We started with semi structured interview with AHSN senior managers and their teams, followed by interviews with their nominated 'knowledge contacts' (135 interviews in total). We undertook five case studies of AHSNs, with an intensive examination of ten innovation tracers (2 per AHSN), selected in conjunction with AHSNs. We undertook observation of some AHSN 'network of networks' meetings nationally. The AHSN case studies used data from: attendance at events, semi structured interviews and AHSN texts. Case study reports were originally written up in a standardised and descriptive way, followed by more analytic treatment (e.g. the typology of AHSN approaches to innovation promotion);

- finally, we undertook semi structured interviews with individuals (9) nominated by AHSN respondents as nationally important 'knowledge beacons' to identify their career histories and their basis of influence.

Results:

*Diverse AHSN Knowledge Mobilisation Strategies and Practice*s

Firstly, we highlight strong AHSN level diversity in their pre-existing assets which then influences their knowledge mobilisation strategies. These assets included the strength of inherited academic health sciences infrastructure (e.g. AHSC; BRC) and the relative development of science parks and clusters, alongside other health networks (e.g. CLAHRCs). These inherited regional characteristics shape the development of regional innovation eco systems.

AHSNs had different types of knowledge mobilisation networks; some were looser but others tightly organized. While there is no 'one size fits all' success formula; these different types have their own advantages and disadvantages. For example, looser networking systems may draw in more and varied new contacts to support health and wealth objectives; however, implementation of newly acquired knowledge may here require more effort, given that networks remain highly dispersed. Conversely, tighter networks may expedite implementation through their strong interconnections; yet be less open to new ideas and actors.

AHSNs were engaged in a spectrum of knowledge mobilisation activities which we plotted in a typology of four models or ideal types. We emphasise diverse strategies found, reflecting the wide remit of AHSNs and their multiple stakeholders which now cross public and private sector boundaries. AHSNs were involved in very differently scaled discussions about how to scale up a regional innovation eco system with other partners (e.g. with LEPS and HEIs) but also in supporting individual clinical entrepreneurs to scale up research based innovations.

We reiterate the complexity of AHSN performance measurement, given the many agencies and stakeholders involved (e.g. AHSNs; LEPS; HEIs). These bodies may well all claim the attribution of any innovation success, but according to their distinct KPIs. In addition, AHSNs have different involvement in and ownership levels of the tracer innovations studied which may affect the returns which can be realistically expected to go back to them.

AHSNs' approaches to knowledge mobilisation were often pragmatic. There was some use of Roger's diffusion model and also CLARHC related service and quality improvement approaches. Texts were used from IHI and NHS IQ occasionally. However, a theoretically well developed and empirically grounded framework for their knowledge mobilisation activity was generally lacking.

The Shape of Knowledge Networks Within and Around AHSNs

We identified two different forms of knowledge networks which differed in the types of contacts and knowledge being exchanged. Early knowledge exchanges and networking were more linked to implementation of national policy and local projects. They were associated with pre-existing ties and established relationships. In the later phases, the knowledge being exchanged around wealth objectives suggested the emergence of new AHSN connections and activities, linked more to pan regional developments and initiatives. These emergent wealth networks were less mature and based on newer relationships and contacts. AHSN Board members importantly helped bridge role new contacts. Our later survey suggested the knowledge being implemented was becoming more specific and 'joined up' across the region. We further note that across the 5 AHSNs, different network types were found locally.

The Construction of Knowledge Leadership

An important finding is that those in formal leadership positions (i.e. in AHSN networks or in associated organizations) may not necessarily be the most effective knowledge brokers, as leadership in a complex health system may well be dispersed. The holding of formal authority by itself does not always lead to effective knowledge mobilisation, as it may arise at different points and be undertaken by those with less formal role power.

We identified some attributes of individuals seen as effective knowledge leaders: acting as powerful gatekeepers and brokers (indeed easier for those in senior formal positions); but also strong access to material, cognitive and social resources or capital; operating with a broad outlook and breadth of skills. Such individuals might wear multiple hats and/or act as skilled social brokers with strong interpersonal networks. They were good communicators, able to transmit their vision or passion widely. So we suggest that effective knowledge leadership involves strong relational capital (i.e. strong networks; high trust relationships). While personality traits (e.g. communication skills; drive) have a role to play alongside formal role position in knowledge leadership, access to social capital also plays an important role.

We then explored a subset of national knowledge 'beacons'. These individuals were hyper connected and influential beyond their own region. We differentiated them from region specific knowledge leaders and contacts. These were high profile individuals

at the top of their profession. Many had long tenure in the NHS or public service; fewer came from private industry. Their generally nonlinear careers could explain their high connectivity, as over time they had moved across sectors and professional communities. These peer nominated beacons were not directly involved in operational level AHSN work, but had wide indirect influence with AHSN leaders and/or teams. They also needed to be visibly rooted in a specialism to have the necessary legitimacy to 'spread the gospel'. In short, complete generalists, hyper networkers and celebrities – perhaps with a lot of Twitter followers but with no NHS track record - are unlikely to be effective as knowledge leaders. We found these beacons grew their network organically and used their position actively to increase their influence – so these mechanisms at some point become self-reinforcing. This finding is different from the traditional SNA argument that one becomes important simply because of structural positioning and stresses the role of activity.

Conclusions

Implications for the Future Direction of AHSNs

We here summarise the implications of the research for the future direction of AHSNs:

Chapter 4 – The National Policy Process and Implications for AHSNs

Those at a distance from AHSNs may be confused by the number of agencies and initiatives aimed at supporting innovation in the NHS in a 'crowded landscape'.

The important and developing macro national policy level and the micro level of the individual AHSN could usefully be connected at the middle level where the existing AHSN 'network of networks' could continue to play an important role

'Mission creep' and frequent reorganization may cause problems for the AHSNs.

Chapter 5: National Knowledge Networking

The health and wealth networks took very different forms. Building new networks around a new policy 'problem' (here wealth creation) takes time and effort. AHSNs may need to place continuing special emphasis on building up their novel wealth related networks.

Non executive Board members and Chairs need to be chosen carefully so that they can help widen existing health orientated networks.

Chapter 6: Regional Knowledge Mobilisation Systems

Different knowledge mobilisation systems emerged in each AHSN region in terms of their structure. Connected and hybrid networking systems were found in regions with mature infrastructure, whereas loosely-organized networking systems were found in regions with developing infrastructure. These different network forms have distinctive advantages and disadvantages. An awareness of these findings and core SNA

concepts might help network leaders understand and then develop their own regional networking processes.

Chapter 7: Processes of Knowledge Mobilisation and Innovation Spread In Action

AHSNs may find our four category typology of approaches to knowledge mobilisation helpful in developing their own strategies.

Intermediary networks and agencies (such as AHSNs) AHSNs can provide the local capacity to support for an important group of innovators and clinical entrepreneurs. AHSNs might wish to think about how they engage and sustain this critical group.

Because AHSNs engage with a wide and diverse array of stakeholders, they may be well situated to understand how different institutional and organisational objectives can be aligned regionally to support innovation processes (i.e. provide systems leadership and support).

AHSNs may wish to reflect on 'what works' and what not in their strategies of knowledge diffusion and build an applied knowledge base. They may wish to access some clear change models (e.g. Rogers) to inform their approach.

We suggest that innovations will often take the form of a complex and long 'innovation journey'; this should be realistically recognised in the KPIs set for AHSNs.

Chapter 8: Knowledge Leadership

AHSNs may want to reflect on the research's implications for (i) the skills and competences needed in senior AHSN leaders and what this analysis implies for selection to these key posts; (ii) how they can best identify and engage with a small but hyperconnected set of 'national knowledge beacons'.

Recommendations for Future Research

Top priority: While our study was not an evaluation of AHSN impact, there was a desire in the policy and practice fields for such a study. This would not be without some methodological challenges. Nevertheless, we suggest that this is the highest research priority, to be designed in consultation with AHSNs.

Second priority: We suggest that the AHSNs' wealth creation role is the second priority for research: there is as yet little research on their wealth creation role – despite its rising importance in the policy domain - as opposed to a more traditional health improvement and clinically orientated focus. Our SNA produced early evidence about evolving wealth networks but only over a short period. We need more longitudinal survey data on the presence of SMEs and industry in these wealth networks and how this pattern changes over time. We further found the health innovation landscape was highly diverse, with radically different innovation types. So large pharmaceutical companies were found alongside smaller start-ups and SMEs which lacked substantial experience of navigating the NHS. Therefore future

research should explore the how such conditions of high diversity influences AHSN strategies.

We have as yet few English case studies of 'Triple Helix' style regional innovation eco systems, especially where the life and health sciences sector are developing as a key component. This also a high priority area in the wealth field. Partnerships and alliances may be forming between sectors and agencies that are novel and should be explored.

Third priority: Our analysis of the national policy process around life sciences policy suggested a broadening of the actors engaged as policy partners, reflecting possible movement beyond a traditional lobbying role for industry associations to greater incorporation in the policy making process. The OLS was seen as important, again highlighting changes in the wider institutional landscape nationally. This chapter also raised the question of where national leadership for AHSN development (and related policy developments) sat. This policy stream could usefully be informed by more political science informed research.

As a fourth priority, Chapter 7 also suggested an important pro innovation role was being played by a small group of academics, entrepreneurs and inventors. This insight should be explored further: what is their role, career trajectory and skill set? We noted these people tended to span different sectors, often having a basic professional identity (e.g. nurse, doctor, engineer, academic), later acquiring a more entrepreneurial approach and skill set.

As a final and fifth research priority, Chapter 8 drew a distinction between actively managing networks and a wider knowledge leadership role. It is important to study more intensively the nature and operation of knowledge based forms of leadership in these settings. Our idea of a national 'knowledge beacon' should be explored more.