Elizabeth Lammiman Stephen Robinson, Robert Ireland and Richard Cure

The Development of Orthodontic Managed Clinical Networks in the United Kingdom

Abstract: Managed clinical networks were developed in the UK as an alternative model of healthcare delivery. They are said to focus on the patient journey making best use of available resources, improving access and the quality of care. They are based on a concept pioneered in Scotland and have recently been introduced into dentistry. This paper reviews the historical background and structures of existing UK orthodontic networks.

Clinical Relevance: The recent introduction of managed clinical networks into orthodontics is designed to improve equity of patient access and the quality of care. It is also said to have economic benefits, with services designed to cross geographical, political and National Health Service (NHS) boundaries, providing a way of achieving full coverage of specialist services beyond historical provision based in major population centres. The key principles ensure quality assurance and standardized evidence-based care aiming to improve clinical standards and, ultimately, the allocation of resources.

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The government's devolution policy in 1998 created important differences within the UK with respect to NHS policy.[1] The resulting divergence led to an experiment in some areas with collaboration replacing competition as a significant policy theory.[2] In Scotland 'professionalism' led to the development of integrated healthcare models leading to the concept of managed clinical networks (MCNs). The structure is not a set design but is described as a way of working, the ultimate goal being to improve access, quality and appropriateness of treatment and focus on the 'patient journey'.[3] They have been defined as 'linked groups of health professionals and organizations from primary, secondary and tertiary care working in a co-ordinated manner, unconstrained by existing professional and existing [organizational] boundaries to ensure equitable provision of high quality effective services'.[4]

Public sector policy makers and managers have developed a growing interest in the concept of networks[5] and, in the United Kingdom, attention has been focused mostly on the development of 'clinical networks'. Patient care is said to be paramount to the core principles of an MCN. These key principles ensure quality assurance and standardized evidence-based care aiming to improve clinical standards and ultimately the allocation of resources. The process of establishing an MCN is well described by Baker[3] and involves extensive consultation and the identification of funding sources and key personnel (Figure 1).

The development of Managed Clinical Networks in medicine

The idea of reorganizing services into MCNs was developed during the Scottish acute services review.[6] It proposed organizational change to improve access and the potential to improve services for those with chronic conditions followed.[7]

Elizabeth Lammiman, BDS, MSc, Specialist Orthodontic Practitioner, Isle of Wight, **Stephen Robinson**, BDS, MSc, MOrth RCS(Eng), FDS RCPS(Glasg), Consultant Orthodontist, Isle of Wight and the Spires Cleft Centre, **Robert Ireland,** BDS, MPhil, MFGDP(UK), Hon Associate Clinical Professor, Warwick Dentistry, University of Warwick and **Richard Cure**, BDS, MDS RCS(Eng),FDS RCS(Ed), MOrth RCS(Ed), FFGDP(UK), Hon Associate Clinical Professor, Warwick Dentistry, University of Warwick.

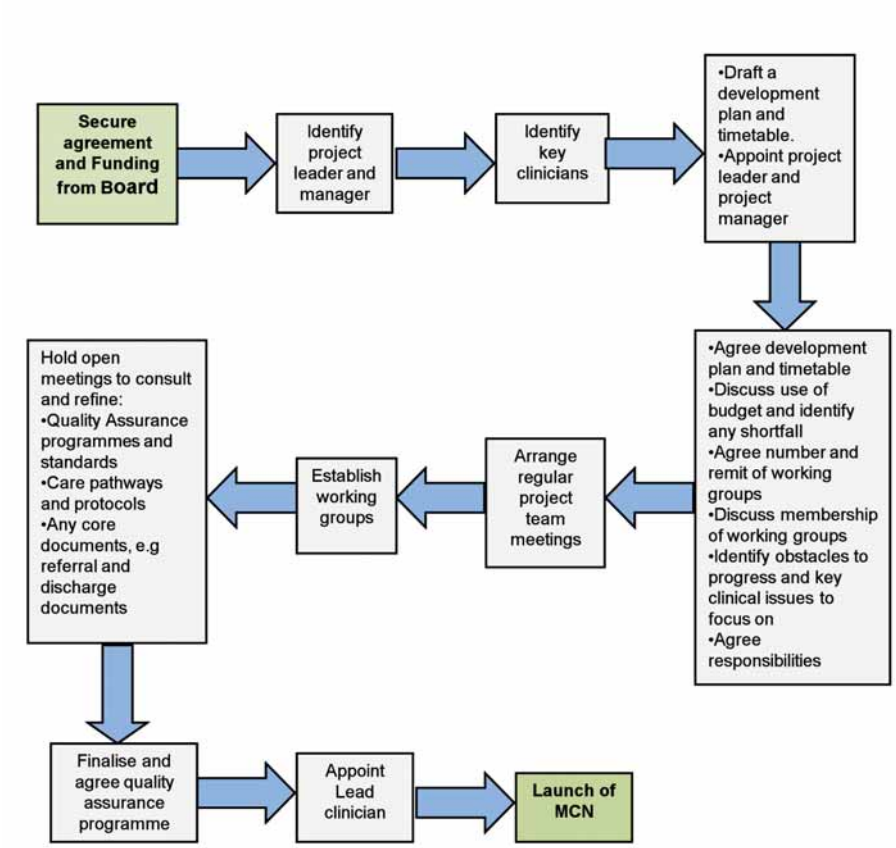

Figure 1. The process of setting up a Managed Clinical Network (after Baker, 2002).[3]

Figure 2. The distribution of Managed Clinical Networks: the'hub and spoke' model.

The traditional hierarchical provision of services was replaced by 'hub and spoke' and 'clinical networking' models. The need for developing a whole-system approach was highlighted later and designing services across geographical, political and NHS boundaries provided a way of achieving full coverage of specialist services away from the major population services.[3] Many MCNs have now been created in Scotland as a result of this policy.[8]

The development of a network allows clinicians across primary and secondary care to participate in improving the patient journey bottom up.[9] Dunbar and Reddy[10] found that poor access to services contributed to inequity in health care. The main role of the network is seen as breaking down barriers to ensure that the patient has the care he/she needs throughout the course of treatment.[11]

Managed clinical networks may be grouped according to:

- Function;
- Disease; or
- Specialty; or by
- Area:
  - local;
  - regional; and
  - national (Figure 2).

The structure may vary from a 'hub and spoke' model, for example in cleft lip and palate care, or more simply to connection and partnership rather than isolation and self sufficiency.[6] The 'hub and spoke' model is inherently suited to highly specialized services such as cancer, vascular and cleft networks, as is seen in Scotland.[8]

Networks allow patients to access specialist care either centrally, at the hub, or more locally, through spoke teams. Uniformity of care provided by support services and strong leadership by well-respected hub clinicians ensures 'excellence' throughout with a commitment to quality assurance and training.

Links between hospitals and specialties are strengthened, facilitating integrated, seamless patient care. In addition, there may be a tertiary hub or a cascade arrangement (Figure 3), which may be of more significance to primary care. The service design is not 'mutually exclusive'[6] and each model may have some elements of the other.

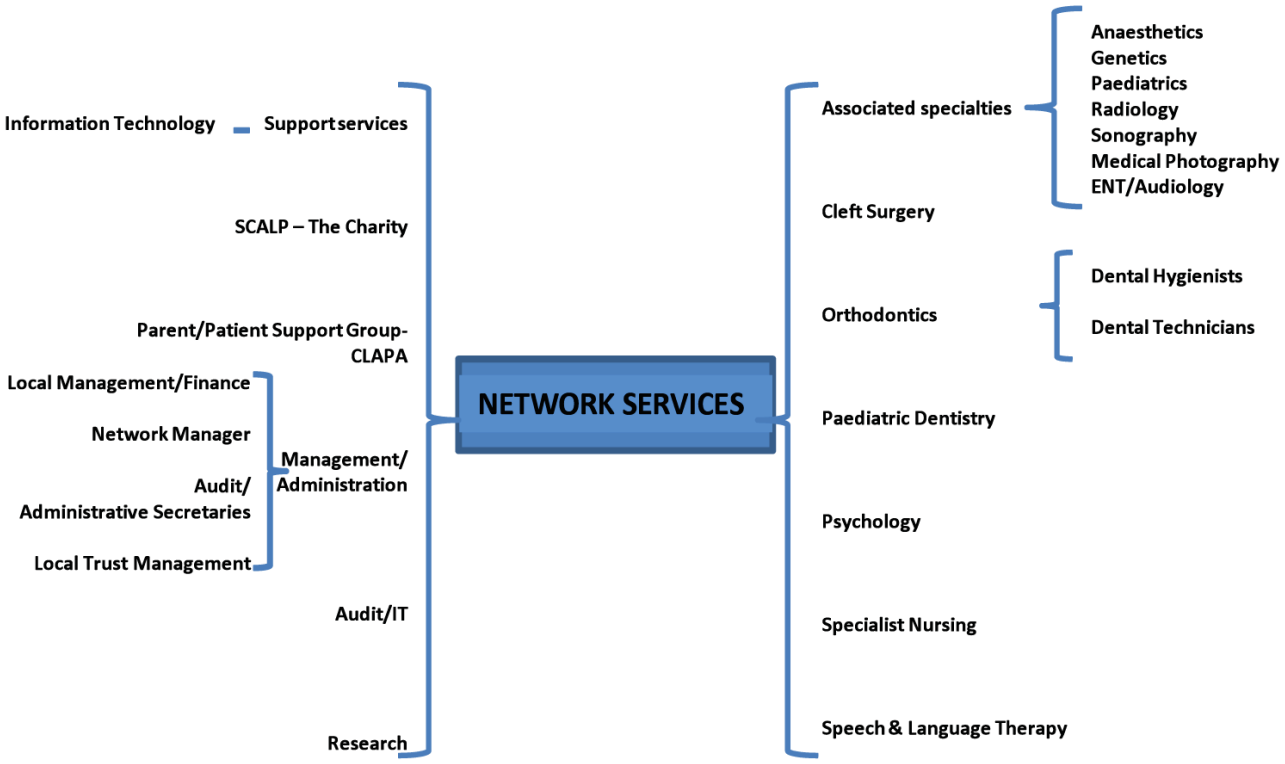

Figure 3. The structure of the cleft service in Scotland (CLEFTSiS) (after Clark, 2007).[9]

The development of MCNs in dentistry

In England, a radical reorganization of the provision of dentistry and the implementation of Options for Change[12] devolved power from central government to primary care trusts to commission the local dental services required. In combination with the Health and Social Care Bill,[13] a new legislative framework created more flexible NHS dental contracting addressing local need. This legislation was crucial in the development of MCNs in orthodontics aimed at addressing inadequate orthodontic provision.

The development of MCNs in orthodontics

Managed clinical networks in orthodontics have been developing at different rates across the United Kingdom. The only example described as an excellent model by the British Orthodontic Society (BOS) is the Tayside Orthodontic MCN.[14] They should be built on trust and partnership aiming to simplify the patient pathway. Professional organizations may perceive the blurring of boundaries across primary and secondary care as a threat,[4] as is evident in the MCN models suggested by the British Orthodontic Society.[15]

Historically, the provision of orthodontic care in the United Kingdom has been delivered in a variety of settings. O'Brien[16] identified that the distribution of orthodontic manpower under state control failed to offset the distribution of specialist practitioners, which is influenced by market forces. One recommendation of an unpublished draft report of an Expert Working Party[17] highlighted the need for manpower planning. The report suggested pilot studies to evaluate the possible clinical and economic benefits that could arise from closer co-ordination of orthodontic resources by the general dental, community and hospital-based dental services. The report was not acted upon by the Department of Health and perhaps an early opportunity was lost to develop the concept of integrated care in orthodontics.

Primary and secondary care interface

Integration relies heavily upon the primary and secondary care interface. Managed clinical networks link groups of professionals and organizations from primary, secondary and tertiary care.[4]

The interface between primary and secondary care is different in dentistry when compared to medicine since, in dentistry, the majority of care is provided in a primary care setting through a variety of business models, including self employed practitioners, the salaried services and corporate bodies. An ideal interface has been described as equitable, seamless, efficient and effective.[18] The nature of this interface has weaknesses on either side. However, health service development depends upon both sectors working together, although a resistance to change in secondary care has been highlighted.[19] To have an effective role in primary care groups, structural, organizational and psychological changes for the dental profession have been recommended.[20]

Orthodontic need and demand

A new dental contract was implemented in 2006 in England and Wales (in Scotland and Northern Ireland the remuneration system

Document	Source material	Need cited
Department of Health (Reference Number 7105 2006)	2003 National Child Dental Health Survey (Chestnutt *et al*[24])	35% of 12-year-olds plus 8% in treatment Total **43%**
Report of the Orthodontic Workforce Survey Of The United Kingdom 2005 (Robinson *et al*[22])	a)Stephens[17] b)Todd and Dodd[23] Children's dental health in the United Kingdom	a) Stephens Formula b) **46%**
British Orthodontic Society 2008 *The justification for Orthodontic Treatment*	Holmes[21]	**36.3%**

Table 1. The justification for orthodontic need in 12-year-olds in the United Kingdom.

	Core Principles
1	There must be clarity about the management arrangements and the production of an annual report available to the public.
2	There must be a defined structure which sets out the points at which the service is to be delivered, and the connections between them.
3	There must be an annual work plan and clear statements should be made of the clinical and service improvements patients can expect.
4	The MCN must use a documented evidence base.
5	It must be multi-disciplinary and multi-professional, in keeping with the nature of the Network.
6	It should include representation by service users and the voluntary sector in its management arrangements.
7	There must be a quality assurance programme.
8	The educational and training potential should be used to the full.
9	There must be evidence that the potential for networks to generate better value for money has been explored.

Table 2. Summary of the core principles of an MCN as outlined in HDL (2007).[27]

is currently on an item of service basis, together with continuing care payments and various grants and allowances). Whereas previously there were no constraints on the number of patients treated in primary care, this number became limited by the design of the contract and the use of units of orthodontic activity (UOAs) as means of calculating remuneration. Only patients deemed to have a severe enough malocclusion could qualify for NHS treatment based on the Index of Orthodontic Treatment Need (IOTN).

The current theoretical justification for orthodontic need varies according to different sources (Table 1).[17, 21–24]

The Department of Health's advice to commissioners in 2006[25] cited evidence from the National Child Dental Health Survey 2003.[24]

The number of children requiring orthodontic treatment in a local population needs to be measured if NHS resources are to be used appropriately. Access to orthodontic care is governed by the referring dental practitioners who act as gatekeepers but the number of referrals can also be influenced by local access to NHS dentistry. Although studies have measured the theoretical orthodontic need in a population, currently no study in the United Kingdom has compared theoretical need with actual outcomes in a local setting.

Integrated data collection through the vehicle of an MCN, allowing a more accurate assessment of orthodontic need in a referred population, could be of considerable value when allocating resources and in workforce planning.

Clinical Networks have been described as 'virtual organizations' and that anyone searching for an evidence-based health service policy will be disappointed.[26] The Scottish Executive (now Scottish Government) have demonstrated their commitment to the development of MCNs in describing 'core principles' put in place to promote consistency and quality of service throughout the care pathway.[27] They are dynamic systems and their outputs evolve over time but proposals must meet all the core principles from the outset in order to be recognized as a network and, in addition, must demonstrate the ongoing achievement of the core principles to maintain MCN status.[27]

In 2007, nine core principles were used by the Scottish Executive to describe the requirements of an MCN[27] and these principles, summarized in Table 2, provide a means of reviewing the existing orthodontic MCNs.

The Tayside Managed Clinical Network in Orthodontics: a local managed clinical network in Scotland

There are seven specialist centres in Tayside located in Arbroath, Dundee and Perth. The network encompasses primary and secondary care settings and the scope of practice for each setting is clearly defined on the website.

The core principles of the Tayside Managed Clinical Network in Orthodontics are clearly laid out, with specific achievements and protocols,[28] but there is currently no central waiting list or triage process. The new dental

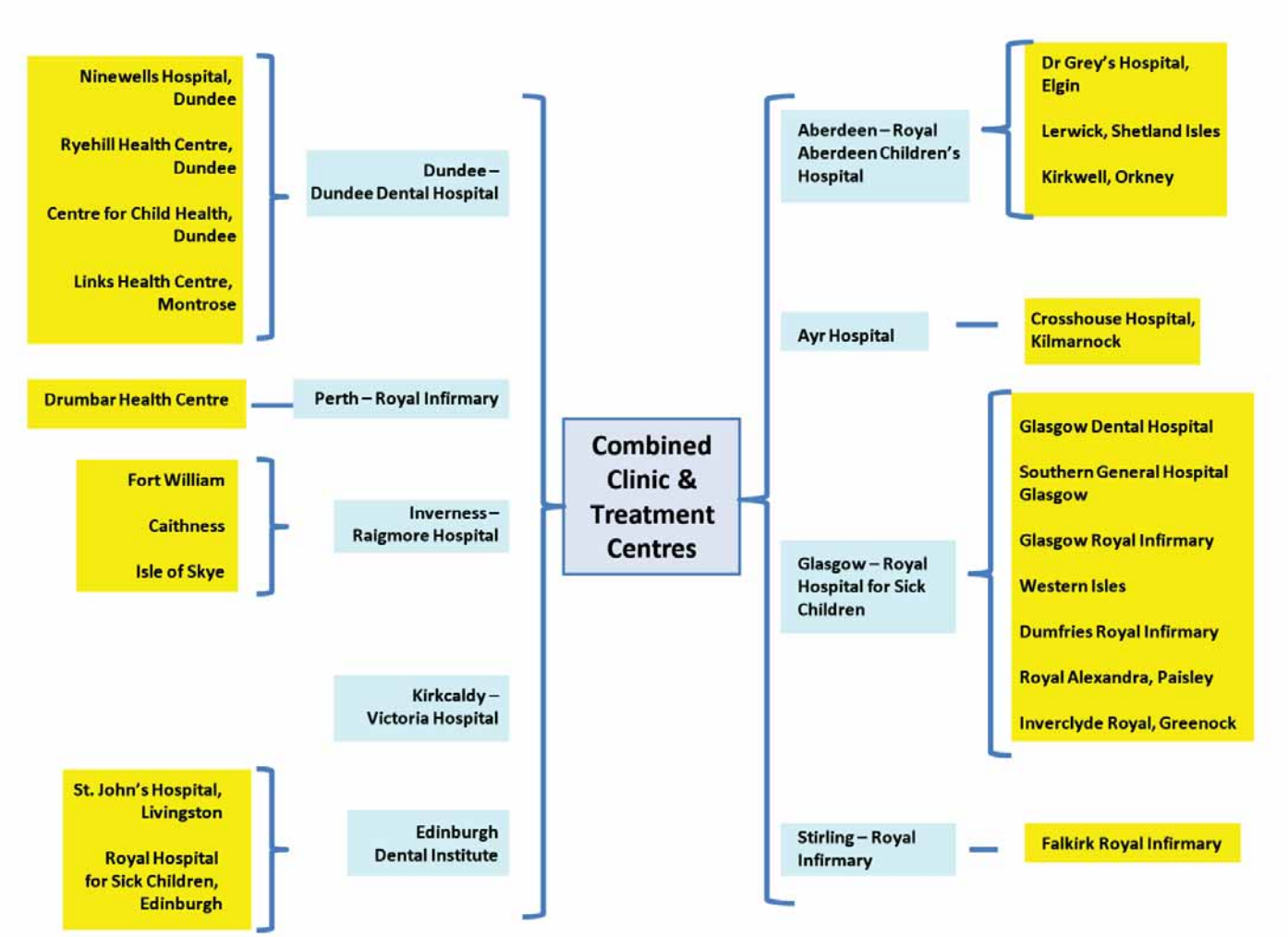

Figure 4. The structure of the cleft service in Scotland (CLEFTSiS) (after Clark, 2007).[9] (Combined-Cleft Clinic Sites - blue; other Clinic/Treatment Sites – yellow).

contract for England and Wales was not introduced in Scotland and, currently, orthodontists are not limited to the number of cases they may start in a year. This may be the reason why there is some reticence about central triaging. The network is overseen by a steering group who meet at least three times a year to discuss issues and plan the way forward. The network is still underfunded and, although there is some interest from secondary care in trialing electronic referrals via the NHS N3 intranet, this has yet to be initiated.

The Cleft Service in Scotland: a national MCN

This was the first national MCN in Scotland, established in 2000, which now meets the Scottish Executive 2007 core principles described on the cleft service website.[29] Improved outcomes were the motivation behind creating this service, in accordance with the recommendations of the Clinical Standards Advisory Group (CSAG) in 1998,[30] although the annual reports do not document service progression against these core principles. This service provides a good example of the 'hub and spoke' MCN (Figure 4).

There is a clear distinction between a 'National Service' (low volume/high cost) and an MCN where a specialized service is provided on a number of different sites, all ensuring uniformity of standards.[27] The improvements made by the MCN have previously been highlighted by Clark.[9] With the development of an electronic patient record (EPR) across the service, it now contains records of over 1400 patients.[31] Communication between clinicians has improved significantly and has helped reduce delays in treatment.

The Spires Cleft Centre: a regional MCN in England

The Spires Cleft Network[32] serves the Central and South Coast Strategic Health Authority in Southern England. It has a population base of 4–4.5 million and is a good example of a regional 'hub and spoke' model of MCN (Figure 2). It is one of the nine cleft centres in England and Wales and was first established in 2004, following the Clinical Standards Advisory Group (CSAG) report in 1998, which led to a restructuring of national cleft services. It is clear from the 2009 annual report that the core principles of MCNs are inherent in the service. All surgery is centralized at the main hub, with a specialized multidisciplinary team including nursing, psychology, speech therapy and orthodontics, with some care provided at the spoke units under the guidance of the lead specialists. The annual report describes an ongoing commitment to improving treatment outcomes through national and regional collaborative audit. Also described are a

MCN structure with a network board, patient involvement, education and training programmes and research.

The Isle of Wight Orthodontic Service: a local MCN in England

The Isle of Wight Orthodontic service (IOWOS) was developed as a new service in response to increasing demand, limited manpower, the new dental contract in 2006 and the prospect of a government target of an 18-week waiting list. The low level of orthodontic provision on the Isle of Wight was highlighted in the UK Orthodontic Manpower report.[22] A review of NHS Dental services in April 2004[33] recommended that all children on the Island should have the opportunity to receive NHS dentistry, including orthodontics. Although the existing provision was described as well integrated, local dentists voiced their concern about the lack of shared planning across primary and secondary care.

One of the key objectives of the IOWOS was to create an integrated service and measure the outcomes and, ultimately, the current orthodontic need on the Isle of Wight. This information would in turn inform commissioners and would allow more accurate manpower planning thus improving equitable access for patients.

Integration of primary and secondary care and a central referral triage has created data for all referrals and outcomes to the service. Whilst this approach nationally has not always met with approval,[34] the results provide useful information. The service protocols and processes developed by the IOWOS were similar to those outlined by Baker[3] in Figure 1.

This service is still in development and, although it does not currently meet the stringent conditions to gain the status of an MCN in Scotland, it has developed over the last three years and continues to work towards the Scottish MCN structure and core principles.

Discussion

Woods[26] described in 2001 how, internationally, the greater integration of healthcare is being actively pursued in a wide variety of settings and that reconfiguration of services ultimately should improve patient care. Key indicators of success are often measures of waiting time or waiting list size. If politicians are to retain the support of their electorates, they must be able to demonstrate that partnership and integration deliver tangible improvements in access.[26] Managed Clinical Networks are well established in the provision of cleft care in the UK. National and regional models show ongoing commitment to the core principles laid out by the Scottish Executive in 2007.[27] There are lessons to be learnt from the development of cleft services if orthodontic networks are to evolve. Collaboration and co-operation between primary and secondary care encompassing the unique, independent status of specialist orthodontic practitioners may require more than 'mutual trust' between clinicians and commissioners if local models are to be successful.

National policy has led to the development of different services in Scotland and England. Orthodontic treatment is produced by a variety of business models. The Tayside MCN in Scotland and the IOWOS network in England have some similarities. They both engage primary and secondary care services encompassing salaried and self-employed practitioners aiming to improve access and patient outcomes. The British Orthodontic Society describes the Tayside orthodontic MCN as an excellent model, however, it does not strictly function as an MCN as it has only a theoretical framework. One of the most important differences between the IOW and Tayside is the impact the central referral triage has had on equity and access on the IOW. Although the IOWOS MCN does not yet fully meet all the core principles described above, access can now be measured and manpower can be more accurately planned.

In addition, another important difference between these networks is the effect of the new dental contract in 2006.This has optimized access in England, whilst Scottish orthodontists in primary care may continue to expand or reduce lists independent of local demand. It has been suggested that the development of a central referral service can be a negative step in service provision, with concerns that patient choice might suffer and be counterproductive in terms of enabling better care or purchasing.[35] However, the implementation of central triage and the development of an MCN measured against core principles provides a strong argument to be made for investment in MCNs as an ingredient in any recipe for integrated healthcare.[26]

The development of clinical networks in dentistry is complex. This is partly due to the nature of the business models providing the service. Development relies heavily upon key individuals and an atmosphere of trust amongst commissioners, providers in both primary and secondary care and the Department of Health and tensions between stakeholders have been highlighted.[20,30] The viability of high street specialist practice may be threatened by centralized data collection and the true assessment of orthodontic need, leading to a possible redistribution of the workforce. However, the development of an MCN governed by core principles can lead to the true integration of primary and secondary care and a co-ordinated approach to improve access can be achieved by reorganizing the service.

After 2009, dental funding was no longer 'ring fenced', with dentistry having to compete with other services for NHS funding. The delivery of equitable oral health services through an MCN may be an advantage in the case of dentistry and subsequent funding.[36] Good epidemiological information about the incidence and prevalence of disease is important in the calculation of health needs.[30] A comparison of the IOWOS outcomes with the current justification for orthodontic need cited in the literature is currently being made.

The patient journey may be improved 'bottom up' by reorganizing services as an MCN,[9] however, the power over the development of policy and strategic direction is exerted in a 'top down' manner by government.[37] If the policy makers' dream of healthcare collaboration is to become a reality, MCNs need 'to establish an important enough role to be able to resist or debate central decisions'.[2] The predictions of the orthodontic working party[17] clearly demonstrate that professional input in planning services should not be overlooked in the future. If organizations are to thrive in the post-white paper world, they will need far better information about what they are

spending and what they are getting for their money.[31] With the decision of the new coalition government to abolish Primary Care Trusts and Strategic Health Authorities, strong clinical leadership is needed to stabilize emerging networks in uncertain times and drive development forward, aiming to support future commissioning and improve patient care.

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