

Editorial

Two nations achieve a high level of primary care information technology (IT) interoperability: an introduction to a series comparing Denmark and New Zealand's IT and health care

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We know a great deal about the introduction of complex interventions like new computing systems at the primary care organisation level. The key concepts have been characterised as: interactional workability; relational integration; skill set workability and contextual integration.¹ But what conditions promote the effective adoption of a new national IT infrastructure? This edition of *Informatics in Primary Care* contains the first two of a series of papers by Protti *et al* which will compare and contrast the development of national primary care IT infrastructures in Denmark and New Zealand. Both nations have been shown to compare favourably with other developed countries in terms of new technology adoption.² But what have been the driving forces behind this success? Perhaps more importantly, what lessons can be learned from this experience by other nations which have less well co-ordinated IT?

The introductory paper³ compares the structure of the two countries so that we can begin to understand the conditions for implementation. Essentially, delivery of care is broadly similar: primary care physicians operate as private businesses which reclaim state funds through a mixed system of per capita and fee-for-service payments. However, the countries differ on an organisational level, mainly due to their historical development. In Denmark the current structure has evolved gradually over decades, whereas in New Zealand there has been a radical restructuring in the past ten years.

The size of the nation may play an important part in the success of its implementation of new technology: a small country, both in terms of geography and population, is instinctively likely to be an easier entity to manage in terms of change management and system development. The pre-existing payment mechanisms also lend themselves to automation.

The second paper⁴ delivers insight into the development of primary care computing and highlights many of the driving forces felt to be central to the success of these programmes. As may be expected, this generally mirrors health system development. In Denmark, the starting point was an innovative project set up by enthusiastic doctors. This was subsequently adopted by government and has grown organically in response to perceived need: MedCom is the responsible state body.

In New Zealand, the main precipitant of IT development was radical health policy reform in the 1990s. The cost to the state of New Zealand's technological advances was minimised by early involvement of the private sector: the current main supplier of IT infrastructure is HealthLink. Both IT systems have developed in different ways illustrating that, as in business, there are many routes to success.

Despite these marked differences in development, however, there is the presence in both countries of a single, named organisation responsible for national IT services and, at a local level, the provision of local IT champions. These seem to be key features for guiding development, reacting to innovation and providing support to individual units but are missing in many countries such as the USA and Australia.⁵ Neither Denmark nor New Zealand have reported high levels of government investment to the IT infrastructure programme: using innovation, local enthusiasm and readily available support seems to have been more integral to the projects' success than financial input.

Both Denmark and New Zealand have used money as a driver by introducing incentives. Practitioners have been encouraged, or driven, towards computerised submission of claims for fees: money has provided a similar influence in UK primary care.⁶

The other factor identified in both countries is the sense of competition: of needing to be at the forefront of development. In Denmark, this seems to be a cultural entity whereas in New Zealand it is a real commercial pressure.

The series moves on to discuss the electronic medical record, with both nations taking broadly similar approaches. The widespread use of comparable software facilitates the collection of data but also increases the interoperability of the wider system: this favours the ability to scale up the system.⁷ Later the series will illustrate the development of evaluation methods which will be able to capture and analyse a health system's adoption of IT. While there are some limitations to these methods, it is encouraging that evaluation is evolving alongside technological innovations. As IT provision increases and develops, it becomes increasingly important to understand why systems succeed or fail in order that other groups can learn and develop accordingly.⁸

We are already aware of these two nations' standings internationally in terms of IT interoperability:¹ what other lessons can be learned by making broader comparisons? Neither New Zealand nor Denmark are high spenders on health per head of population when compared with other developed nations – 9.3 and 9.5% respectively, which is close to the international average.⁹ They do, however, rank well when comparing crude markers of national health status, such as life expectancy. In contrast, the USA spends far more on health (approximately 20% of GDP) and does not enjoy similar health status.⁹ Of the developed nations, neither the USA nor Canada have well-developed national health IT systems.² While there is a general understanding that IT implementation may be a factor which helps improve national health status,¹⁰ American health consortia have cited lack of capital as the top barrier to successful system adoption.¹¹ The experience documented by Protti *et al* would seem to suggest that other, sometimes less tangible, factors should provide the focus for implementing change. In a similar vein, research from Canada has suggested supportive roles, such as committed leadership, local champions and adequate training, as being central to successful implementation.¹²

A study of UK IT adoption,⁷ comparing the differential uptake in primary versus secondary care, suggests very similar areas of importance: financial incentives, unified steering groups, small managed units and a structured record system which can be successfully scaled. An evaluation of electronic communications in Scotland highlights the managerial and 'people' issues which are key to an intervention's successful uptake.¹³ Summaries of evaluation studies of the English NHS *Connecting for Health* programme published in this journal suggest that a more socio-technical approach

is needed,¹⁴ and reinforce the need for development of an informatics research infrastructure.¹⁵

There are several key features which seem to promote successful IT interoperability at a national level: leadership and drivers to innovation; carefully targeted financial incentives; scalability; an established primary care service and size of the implementation. These are well illustrated by this series of articles and are replicated in findings from other countries. The articles by Protti *et al* allow us to more closely analyse this success and to learn how to implement successful systems. The series highlights the potential benefits of rigorous evaluation of future IT system implementation in primary care.

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