Key messages

A review of telehealth in Scotland

AUDIT SCOTLAND

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Key messages

Background

1. The use of technology in the NHS has the potential to improve the quality, delivery and efficiency of healthcare services. Telehealth is the provision of healthcare to patients at a distance using a range of technologies, such as mobile phones, internet services, digital televisions, video-conferencing and self-monitoring equipment. Examples of telehealth range from a consultation between a patient and a clinician at different locations using video-conferencing; a clinician diagnosing a patient's condition remotely using images transmitted electronically, such as a scan or a digital photograph; and using technology to monitor patients with long-term conditions at home.

2. Telehealth can offer a number of potential benefits to patients and NHS boards, such as reducing the need to travel to outpatient clinics, providing a quicker diagnosis, and avoiding referrals to hospital for diagnosis or treatment.[1] It also has the potential to help NHS boards deliver clinical services more efficiently.

3. Across Scotland, NHS boards are making use of telehealth in a range of clinical specialties, including stroke, dermatology and respiratory medicine. Since 2006, around 70 telehealth initiatives have been introduced in NHS boards but most of these are on a small scale, involving on average 34 patients.[2] Around 40 per cent are pilots and 40 per cent are part of routine services. The remaining 20 per cent are either delivered on an ad hoc basis, are being evaluated, or have been discontinued. Telehealth is most well used in the north of Scotland.

Our audit

4. Our audit looked at the use of telehealth in the 14 territorial NHS boards in Scotland, including:

- the structural, organisational and funding arrangements in place to support the development and delivery of telehealth
- the benefits telehealth can deliver, and the barriers to NHS boards using it more widely
- the potential of telehealth to offer better value for money than more conventional models of patient care.

5. The audit focused on telehealth initiatives that deliver care to patients. It did not examine the use of technology for meetings, education and training, or to manage information such as patient records. The audit did not look at the use of technology provided mainly by local authorities to help people live more independently at home.

6. During the audit, we:

- interviewed staff in three NHS boards and in national bodies (ie, the Scottish Government and NHS 24)
- interviewed NHS board medical directors
- reviewed information on telehealth initiatives from the 14 territorial NHS boards
- reviewed relevant documents
- carried out economic modelling to assess whether telehealth has the potential to achieve savings or free up NHS capacity.

Key messages

1 The NHS in Scotland is facing growing demand for its services and NHS boards need to consider new models of care such as telehealth to help manage current and future demand. Targeted appropriately, telehealth offers the potential to help NHS boards deliver a range of clinical services more efficiently and effectively. NHS boards should consider the use of telehealth when introducing or redesigning clinical services.

7. The NHS faces growing demand for its services as the proportion of older people in Scotland rises. Between 2006 and 2031, the population aged 65 and over is projected to increase by 62 per cent and the population aged 85 and over by 144 per cent.[3] This is likely to lead to greater prevalence of long-term conditions such as diabetes and chronic obstructive pulmonary disease (COPD), which will require ongoing care.[4] NHS budgets are coming under pressure as costs rise at a faster rate than funding increases, and NHS boards are facing a major challenge to continue to provide the same level and quality of services.[5]

8. While the evidence is not yet conclusive, it suggests that telehealth offers the potential to deliver clinical services more efficiently and effectively and to manage increasing demand. For example, it has been shown to reduce hospital admissions and outpatient appointments for some patients. This could help NHS boards avoid the associated costs and increase capacity by freeing up staff time, available appointments and hospital beds to help manage increasing demand.

1 *Review of the Scottish Centre for Telehealth: November 2008 to January 2009*, Scottish Government, October 2009.
2 This is based on information we collected from the 14 territorial NHS boards and NHS 24/SCT up to August 2011. It does not include the routine use of technology, such as video-conferencing facilities, to conduct meetings to discuss patient treatments and conditions.
3 *Financial overview of the NHS in Scotland 2009/10*, Audit Scotland, December 2010.
4 COPD is a serious lung disease which can make it hard to breathe, and includes conditions such as emphysema and chronic bronchitis.
5 Scottish Government funding of the NHS reduced by 0.3 per cent overall (in real terms) between 2010/11 and 2011/12, with territorial NHS boards receiving an average real-terms increase of 1.3 per cent and special health boards receiving an average real-terms reduction of three per cent. *Scotland's public finances: addressing the challenges*, Audit Scotland, August 2011.

9. NHS boards should consider telehealth as an option when developing or redesigning services. Telehealth may not always be an appropriate way of delivering healthcare, and it may not be suitable for all patients and all specialties. However, NHS boards should assess whether it has the potential to provide a more efficient or better-quality service, or to manage increasing demand. We have developed a list of questions to help NHS boards assess potential opportunities for using telehealth. This is available in our main report (see Appendix 4) and on our website (www.audit-scotland.gov.uk).

2 The Scottish Centre for Telehealth (SCT) was established in 2006 to support NHS boards in developing telehealth. There was a lack of clarity over SCT's role and purpose in its first three years. The combination of the integration of SCT with NHS 24 and a new eHealth strategy provides a much stronger focus to drive the development of telehealth nationally. Although NHS boards are making use of telehealth, development and investment in this area has not been a priority.

10. In 2006, the Scottish Executive established SCT to support NHS boards in developing telehealth.[6] In 2007, the Scottish Government highlighted four priority areas for SCT's work. However, it did not provide specific objectives or timescales for delivery, and there was no coordinated approach to SCT's activity in the first three years. SCT's activity was largely reactive, providing support for existing telehealth initiatives and local pilots in a small number of NHS boards.

11. In late 2008, the Scottish Government reviewed SCT's performance.[7] This highlighted that SCT had successfully implemented projects in some clinical areas (eg, stroke and paediatrics), and that there was support from NHS boards for a national centre for telehealth. However, the review also found a lack of clear strategic direction and confusion over the role and purpose of SCT. It recommended that SCT join NHS 24, the provider of national telehealth services, to help position itself as a national resource.[8] Previously it was a stand-alone body based in NHS Grampian.

12. This integration took place in April 2010. SCT published its first strategic framework later that year, setting out its aim to develop and deliver telehealth across Scotland in four areas (stroke, paediatrics, COPD and mental health).[9] Since April 2010, SCT has focused on delivering programmes in these areas on a national scale. (See paragraphs 19 to 21 in the main report.)

13. In the Scottish Government, responsibility for telehealth lies within the wider remit of eHealth, which covers the use of IT systems and information and records management tools. Telehealth did not feature significantly in the Scottish Government's eHealth Strategy for 2008–11.[10] However, its new strategy for 2011–17 provides a clearer direction for telehealth, in particular identifying the potential role that telehealth can play in supporting people with a range of long-term conditions such as COPD.[11] (See paragraphs 17 and 18 in the main report.)

14. Where telehealth initiatives have been introduced in NHS boards, they have generally been led by enthusiastic clinicians who identified potential roles for telehealth in their clinical areas. This is important as it ensures that there is clinical support and buy-in for telehealth at the outset of any initiative. However, these initiatives are often small scale, developed in isolation and not clearly linked to NHS boards' wider strategic priorities or any long-term financial planning. Greater engagement between senior managers and clinicians is required before telehealth initiatives are introduced, to ensure that the appropriate infrastructure and resources are available to successfully deliver a telehealth service.

15. It is not possible to identify exactly how much NHS boards have spent on developing telehealth in Scotland. We estimate that around £4.7 million has been allocated to telehealth initiatives since 2006, from sources including the Scottish Government, NHS boards and charities. Over a fifth of initiatives were developed using existing resources (eg, equipment and staff) with no specific funding. Around half of medical directors highlighted funding as one of the main barriers to developing telehealth in the future. As NHS 24/SCT develops its strategy to deliver national telehealth programmes, it will need to engage with NHS boards and the Scottish Government to consider how they will be funded. (See paragraphs 26 to 29 in the main report.)

3 Telehealth offers a range of potential benefits for patients such as reducing travel, receiving a quicker diagnosis and avoiding hospital admissions. Patient experience is broadly positive and there are high levels of satisfaction. The experience of NHS staff involved in telehealth initiatives is also positive. However, opportunities for them to gain experience remain limited and more training and education are needed.

16. Where telehealth is being used, it offers a number of advantages to patients, staff and NHS boards (Exhibit 1). Evaluations of telehealth initiatives in Scotland show that patients' experiences are generally positive. (See paragraphs 39 to 45 in the main report.)

6 Prior to September 2007, the Scottish Administration was referred to as the Scottish Executive. It is now called the Scottish Government. When dealing with the earlier period this report refers to the Scottish Executive but in all other instances it refers to the Scottish Government.
7 *Review of the Scottish Centre for Telehealth: November 2008 to January 2009,* Scottish Government, October 2009.
8 NHS 24 is a Scotland-wide telephone-based service which provides health advice and information and offers clinical assessments by qualified health professionals over the telephone.
9 *Scottish Centre for Telehealth Strategic Framework 2010-12,* NHS 24, April 2010.
10 *eHealth Strategy 2008–11,* Scottish Government, June 2008.
11 *eHealth Strategy 2011–17,* Scottish Government, September 2011.

17. Opportunities for clinical staff to gain practical experience of telehealth are limited, as the initiatives remain small-scale. A survey of nurses by the Royal College of Nursing (RCN) in 2010 identified that 76 per cent of respondents in Scotland have no experience of using telehealth.[12] However, 90 per cent of those who had used it rated their experience as positive.[13] Clinical staff whom we interviewed were all positive about their experience of telehealth and the benefits it delivers for both them and their patients.

18. Staff need the skills to manage new and more sophisticated technologies, and to support changes to roles and working practices.[14] NHS 24/SCT has recently developed an education and training programme that includes guidance on using telehealth equipment.[15] A competency framework for medical staff involved in telehealth initiatives has also been published, and the RCN has introduced an online learning resource on telehealth.[16, 17] (See paragraph 51 in the main report.)

Exhibit 1

Potential benefits of telehealth for patients, staff and NHS boards

There are several potential benefits from using telehealth.

Before telehealth	Using telehealth	Potential benefits of telehealth
In NHS Borders, Fife, Forth Valley and Dumfries and Galloway, patients who suffered a **stroke** were only offered thrombolysis (clot-busting treatment) if they could reach a hospital with the appropriate scanning equipment, be seen by a stroke consultant on-site, and receive thrombolysis within 4.5 hours, in line with best practice guidance.	Patients suffering a stroke are taken to the nearest hospital with scanning equipment. An on-call stroke consultant based in NHS Lothian assesses the brain scan image electronically from their office or home, consults with the patient via video-conferencing, and then decides whether thrombolysis should be offered. Thrombolysis is then given to the patient by staff locally within 4.5 hours.	• Thrombolysis may reduce a patient's length of stay in hospital and reduce the need for stroke rehabilitation services, improving the outcome for the patient and potentially reducing costs for the NHS board. • Patients receive a treatment they may not have previously been offered.
Children in the Western Isles requiring a **paediatric** surgical consultation were transferred from their local hospital to one of the four children's hospitals in Scotland. This could involve a long journey and delay diagnosis of the child's condition.	Staff at the local hospital use video-conferencing equipment to speak to a consultant paediatric surgeon at the Royal Hospital for Sick Children (Yorkhill) in Glasgow. The consultant assesses the child's condition, looks at X-rays, and discusses the case with staff at the local hospital and the child's parents. The consultant makes a diagnosis and advises on the best course of treatment.	• Patients do not need to travel as far to access the services of a specialist consultant. • Patients receive a quicker diagnosis, reducing any delay in treatment. • Local NHS staff can get a second opinion from a specialist consultant which can contribute to staff development. • Lower greenhouse gas emissions through reduced travel.
In NHS Tayside, patients with **COPD** living in Pitlochry had to travel to Perth Royal Infirmary (a 50 mile round trip) twice a week for eight weeks to attend a pulmonary rehabilitation programme.	Patients with COPD living in Pitlochry attend a pulmonary rehabilitation programme at the local community hospital. Using video-conferencing, patients participate in a programme led by a respiratory physiotherapist and nurse at Perth Royal Infirmary, and are supported by a physiotherapy assistant at the community hospital.	• Patients do not need to travel as far, so those who cannot cope with a long journey can participate in the programme. • Provides a development opportunity for NHS staff in the community hospital. • Lower greenhouse gas emissions through reduced travel.

Source: Audit Scotland

12 *eHealth survey 2010: report*, Royal College of Nursing, June 2011.
13 Ibid.
14 *Healthcare without walls: a framework for delivering telehealth at scale*, 2020health, November 2010.
15 *A strategy for education and training 2010-2012*, Joint Improvement Team and Scottish Centre for Telehealth, March 2010.
16 *eHealth competency framework: defining the role of the expert clinician*, Academy of Medical Royal Colleges and the Scottish Government, June 2011.
17 Telehealth explained, RCN Learning Zone, Royal College of Nursing website, www.rcn.org.uk

4 Better-quality evaluations are required to provide reliable evidence on the overall effectiveness of telehealth and whether it offers better value for money than traditional patient care. Our economic modelling work suggests that using telehealth to monitor patients with COPD at home has the potential to help NHS boards avoid costs of around £1,000 per patient per year.

19. Only around 40 per cent of the telehealth initiatives introduced in Scotland to date have been evaluated. The evaluations have been based on small numbers of participants and contain incomplete cost information, limiting the overall reliability of the results and preventing any analysis of cost-effectiveness. The lack of consistency in the approach taken to evaluation can make it difficult to compare similar initiatives across different NHS boards and identify any common themes in terms of value for money or measures of effectiveness. One of the core objectives of NHS 24/SCT is to support NHS boards in evaluating telehealth initiatives, but it needs to be more proactive in promoting good practice in this area. (See paragraphs 61 to 64 in the main report.)

20. The evidence base on telehealth will be strengthened by three large-scale projects currently under way or being developed in the UK:

- The Lothian Telescot programme is evaluating home monitoring of people with long-term conditions. It will involve more than 1,000 patients and funding of around £1.9 million to date has been provided from a range of sources. The findings are due in late 2012. (See Case study 4 in the main report.)
- The Delivering Assisted Living Lifestyles at Scale programme, beginning in April 2012, aims to deliver telehealth services to at least 10,000 patients in Scotland to help improve the quality of life of older people and people living with long-term conditions. Funding of £10 million over three years (2012–15) will be provided.[18]
- In England, the Department of Health has made £31 million available for the Whole Systems Demonstrator programme. This covers more than 6,000 people and three long-term conditions, and the results are due in late 2011.

21. As part of our audit, we carried out economic modelling to compare telehealth intervention with conventional care for managing people with COPD at home. The aim of this work was to assess whether telehealth could help NHS boards provide services more efficiently or manage increasing demand for services. A separate report providing detailed information on the modelling work is available on our website (www.audit-scotland.gov.uk).[19]

22. For this work, we drew on information from recent evaluations of COPD telehealth pilots and other published data. However, the evaluations covered small numbers of patients and each was carried out differently. It was not feasible to pool the data from the evaluations, and instead we modelled the costs of two individual initiatives.[20]

23. While there are a number of uncertainties, our modelling work suggests that telehealth has the potential to help NHS boards reduce activity, potentially avoiding costs and/or freeing up resources. We estimate that telehealth management of COPD patients at home might help NHS boards avoid costs of around £1,000 per patient per year, mainly from lower hospital admission rates. This may not equate to cost savings unless the telehealth initiative is on a large enough scale to reduce hospital capacity, but it is a way of freeing up capacity in the service to help manage increasing demand. (See paragraphs 71 to 78 in the main report.)

24. The current financial pressures within the NHS emphasise the need to identify opportunities to achieve the most benefit from telehealth. Business cases for initiatives should demonstrate the potential long-term clinical, organisational and cost benefits to a NHS board.

Summary of key recommendations

NHS 24/SCT should:

- ensure that its new strategic framework, to be developed in 2012, contains specific and measurable objectives for developing telehealth, and is supported by a delivery plan which sets out a clear timetable for implementation
- continue to work with the Scottish Government and NHS boards to identify how the implementation of national telehealth programmes will be funded
- promote good practice in NHS boards in evaluating telehealth initiatives, including cost-effectiveness, and routinely analyse and share completed evaluations among NHS boards.

NHS boards should:

- ensure that telehealth initiatives are supported by business cases that consider the long-term clinical, organisational and cost benefits resulting from the use of telehealth
- use Appendix 4 of the main report to assess potential opportunities for using telehealth when services are either introduced or redesigned.

18 Funding will be provided by the Technology Strategy Board (£5 million), the Scottish Government (£3.9 million), Highlands and Islands Enterprise (£0.8 million) and Scottish Enterprise (£0.3 million). The Technology Strategy Board is a UK-wide agency which aims to accelerate economic growth by stimulating and supporting business-led innovation.

19 *Modelling telehealth: chronic obstructive pulmonary disease*, Audit Scotland, October 2011.

20 These initiatives were in NHS Lanarkshire (evaluation data for 38 patients) and Inverclyde Community Health Partnership (data for 15 patients). The cost information in other evaluations was either too incomplete or too unreliable to be used in the modelling process.

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