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Telemonitoring for chronic heart failure: the views of patients and healthcare professionals – a qualitative study

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NHS Lothian CHF telemonitoring service

In 2009, NHS Lothian, Scotland, set-up a CHF telemonitoring* service.

The purpose of the service was threefold, namely to: (i) reduce hospital admissions resulting from unmanaged exacerbations; (ii) improve quality of life for patients; and (iii) foster increased patient self-management.

The telemonitoring service involved use of a device called the Intel® Health Guide (IHG) (Intel®, **2012**). This device enabled patients to undertake a daily self-assessment of symptoms using an online, touch screen questionnaire. A number of peripheral devices were linked to the IHG using Bluetooth® technology to enable patients to undertake physiological measurements. These were: a pulse oximeter to measure pulse rate and oxygen saturation; an electronic sphygmomanometer for blood pressure; and electronic weighing scales. Patients were instructed to take readings using these devices on a daily basis. The IHG also contained educational content (in the form of online video-based content) to support patient self-management. An additional telephone line was installed in the homes of patients participating in the trial to provide broadband internet for the use of the equipment.

Initially, telemonitoring in Lothian was undertaken by one GP with an interest in eHealth who managed a caseload of up to 42 patients. However, in summer 2010, the service arrangement changed. Specialist CHF nurses commenced weekday telemonitoring for the patients in their care and at weekends telemonitoring was carried out by the Lothian Unscheduled Care Service. Telemonitoring responsibilities for professionals involved daily monitoring of data and initiation of contact with patients to address any matters arising related to transmitted data. Telemonitoring data were accessed by professionals via a secure website. An algorithm was used to process data, and a score was attributed to symptoms and physiological measures, which breached preset target levels. High scores were flagged up for clinicians who then contacted the patient.

Patients were encouraged to contact telemonitoring professionals to discuss any concerns or to acquire advice related to telemonitoring and/or their condition. Patients continued to have access to usual care provision during their period of involvement with the telemonitoring service. The service was supported by the health board's E-Health Department, which provided a technical help desk facility to patients and professionals involved with the service.

*In this context, telemonitoring refers to the use of communication technology to enable healthcare professionals to remotely monitor patients' clinical status.

[...]

Discussion

Patients and professionals focussed on the processes involved in managing change and in adjusting to telemonitoring provision, either as recipient or provider. Three aspects were particularly prevalent across the themes identified in analysis: managing patient expectations of service

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provision, managing the expectations of service managers on issues of cost and cost efficiency and envisaging future service development. Each contains challenges to the acceptability and utility of telemonitoring as 'normalised' day-to-day care provision (May et al. 2003).

Great expectations

Patients with CHF expressed a high level of satisfaction with telemonitoring. Many stated that they liked being telemonitored because they felt reassurance in having someone 'watching over them'. Whilst this finding is reflected in similar studies (Mortara et al. 2009), what is particularly novel about it in the context of this study is the faith placed by patients in the value of what was often perceived as constant practitioner surveillance. This faith did not waver despite the high frequency of equipment failure reported by patients. For those harbouring concerns about their state of health, telemonitoring was seen as a lifeline, a virtual safety net that provided peace of mind. Patients placed tremendous trust in the diligence and pro-activity of professionals in responding to transmitted data, with some assuming that monitoring was instant and continuous (despite being given information describing the actual parameters of provision). The misalignment generated by the patients' expectations of the extent and frequency of telemonitoring and the reality of actual monitoring activity undertaken by the professionals providing the service, caused some practitioners concern. In developing telemetric systems, health service managers and professionals face the challenge of managing the expectations of all stakeholders in a way that maximises patient safety and operates within resource constraints.

Issues of cost

In healthcare policy, telemonitoring is often presented as a means of reducing hospital admissions and reducing healthcare costs (UK Department of Health 2011). The professionals operating the telemonitoring service reached the view that expected cost savings in using telemonitoring may be offset by the actual costs of operating such services. Whilst they considered that telemonitoring presented the possibility of a reduction in hospital admissions, they were uncertain whether the perceived cost savings associated with telemonitoring could be achieved given the expense of the technology, which had been purchased for the service, the associated costs of installation, maintenance, training and support and the resource implications of practitioner time spent in undertaking telemonitoring-related work with regard to local service arrangements. Nonetheless, both patients and professionals considered that telemonitoring provided an enhanced quality of patient care. Such perspectives present challenging questions regarding the (economic) viability of the telemetric intervention. Given that telemonitoring was initially conceptualised, in part, as a money-saving proposition, would high costs associated with the introduction and maintenance of such provision be a price worth paying? A key challenge facing the adoption of telemonitoring is whether technologies and services can be introduced, which provide enhancements to the quality of patient care, whilst at the same time operating in a cost-efficient manner. In this study, professionals were not convinced by the arguments that they had heard from managers regarding cost saving further to service re-engineering. Economic analysis is required to support a greater understanding

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of the financial costs of models of telemonitoring provision. However, it is recognised that a long-term strategy to realise the (economic) benefits of telemonitoring may present difficulties in the adoption of innovative interventions, which are expected to deliver cost benefits in the short term.

Envisaging future service development

There is increasing recognition of the importance of project planning and continuous systematic evaluation of eHealth interventions in order to maximise benefit and minimise harm (Catwell & Sheikh 2009a). The telemonitoring service in this study bore an evolutionary approach to service design, contingent on usual care. Patients and professionals described a number of problems relating to service development and implementation, notably with regard to the technology itself, workload management issues and interoperability issues with usual care. Both groups presented many suggestions for service improvement. Professionals stressed the importance of effective leadership and project management in the development of future telemetric service provision. It is important that the development of future telemetric provision retains the active involvement and engagement of stakeholders groups. New ways of working need to be identified that support and foster continuous feedback and evaluation from patients and professionals during the processes of service development and implementation. However, it is recognised that the (re)distribution of power and responsibility in service development presents many challenges (Catwell & Sheikh 2009b).

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