

# DAWN: Diabetes Appointments via Webcam in Newham

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## Abstract

The diabetes service at Newham, East London, exemplifies challenges faced in the National Health Service with increasing demand, pressure to improve efficiency, high non-attendance rates and poor health outcomes, reflecting the complex lives of many patients with long-term illness. Perceived lack of control, poor engagement with inflexible services and poor self-management are common with these patients. Early evidence from our work so far suggests that web-based appointments can be used as part of outpatient services to improve patient experience and provide better access to effective care, with the potential to improve longer-term efficiency. By using readily available video conferencing software (Skype), our service model can be easily replicable across the majority of outpatient care. Further work is now being done to explore the impact of online consultations on improving patient self-management, particularly for those patients labelled "hard to reach".

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**Key words:** diabetes, Newham, Skype, self-management, online

## Background

The traditional model of routine follow-up outpatient care is recognised to be inefficient in many ways and often ineffective as it fails to be flexible and reliably provide responsive care when patients need intervention. Current models of service provision are also inadequate for meeting rising demands, particularly for people with a long-term illness like diabetes. In 2013/2014 alone, National Health Service (NHS) expenditure for diabetes (excluding general practice expenditure) was over £1000 million, with rising costs of outpatient care.

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**Table 1** Rate of broadband use in Newham from the 2010 London Borough of Newham survey (1000 households)

Age group (Years)	Have broadband at home (%)
16–24	86
25–34	83
35–44	73
45–54	66
55–64	63
≥65	21
Broad ethnicity	Have broadband at home (%)
Asian	74
Black	68
White	65

Newham exemplifies the challenges faced in many places. More than 70% of the local population is from BME groups, with high levels of socio-economic deprivation. This leads to a high and rising prevalence of type 2 diabetes (5–6 times the national average), placing increasing demands on busy services. It also has the youngest population of any borough in the UK, on average, with 40% of the population under 25 years of age. Consequently, we have a rising prevalence of type 2 diabetes in young people.<sup>1</sup>

A population survey conducted by Ipsos MORI in 2009 showed that perceived lack of control, poor engagement with services and the lack of flexibility of services contributed to poor self-management with poor clinical outcomes and did-not-attend (DNA) rates for appointments. It was widely accepted that the diabetes service locally would be both unaffordable and undeliverable, given workforce and financial restrictions, unless new ways of delivering care could be found.<sup>1</sup>

Since 2003, the local diabetes service has worked with a range of local partners, including primary care, to create an integrated care pathway. However, the service continued to have particularly high DNA rates (33–50% depending on age groups), reflecting the access challenges faced by many local patients. In 2010, we carried out a small proof-of-concept study exploring the role of online follow-up, which was very well received by the participating staff and service users. The project also highlighted the high rates of broadband use in Newham (Table 1), indicating wide access to

the internet over varying ages and with little difference related to ethnicity. On average, 70% of the population have access to broadband at home, compared with the national average of 63%, as reported by the Office for National Statistics (2009).

### Aims and objectives

This project aimed to provide more accessible and cost-effective diabetes care by replacing routine follow-up outpatient appointments for patients not requiring physical examination with web-based consultations, using readily available technology. We hoped that this would improve the general efficiency of the outpatient process, enhance patient self-management skills and prove to be cost effective.

It was anticipated that the project would:

1. Reduce the cost per outpatient contact, by reducing the number of DNAs.
2. Demonstrate an improvement in health outcomes, over time, due to a more proactive approach to self-management with a possible reduction in emergency attendance and use of out-of-hours services.
3. Reduce costs for patients having to travel and take time off work or other commitments.
4. Reduce over time the cost per outpatient contact by reducing overhead costs and the need for staff to travel, except when this offers real benefit.

Replacing routine face-to-face outpatient follow-up with remotely accessible web-appointments alters fundamentally a model of care that (with the exception of small pilots) has remained largely unchanged for decades. We were hopeful that using readily available web-based technology which was familiar to most patients would make the intervention significantly simpler and more replicable than many other tele-health projects.

### The intervention

All patients attending follow-up appointments with one consultant and one diabetes nurse were routinely offered online appointments where clinically appropriate. Patients were also actively encouraged to initiate online contact with the clinical staff if help or advice was required with clinical management. They were, however, advised that staff may not be able to respond immediately at all times, and the service was not to be used for emergency or out-of-hours management.

We commenced the work using Adobe-based videoconferencing software as the web platform, but we started using Skype at the suggestion of patients, as most patients and clinical staff were familiar with this. Using Skype also improved user access, as patients used it on phones and other hand-held devices. Using widely-used software also made it more acceptable to patients and avoided the technology becoming redundant or the process becoming technology-focused.

Our project coincided with the publication of NHS guidance on the use of Skype and other remote technology.<sup>2</sup> The Trust IT department approved both systems from a security point of view. Changes to existing outpatient support infrastructure were minimised, ensuring limited changes were required to embed.

Working with the Trust appointments team, changes were made to the outpatient appointment letters to reflect the replacement of face-to-face appointments with the new web-based consultations. Modifications were also made to the Trust electronic patient records (Cerner Millennium EPR) and the local diabetes database (DIAMOND/HICOM) to allow capture of all information related to online appointments, thus ensuring accurate recording of information for future commissioning.

Patient information sheets were designed and sent electronically to all patients who agreed to try online care. This has required updating of patient details to include email addresses and mobile phone numbers.

### Results

#### Uptake of online appointments by patients

Overall uptake was 62% of those approached (Table 2). There was little variation with age until patients were over 50 years and it wasn't until patients were over 60 years that the uptake rate dropped off significantly (Table 2). We also demonstrated uptake from a wide range of ethnicities. The main reasons given for declining the offer of a webcam appointment were no access to the internet at home (52%); just 'prefer face to face' (18.5%); not confident with the internet / computer (9%).

**Table 2** Participation by age group (excluding those considered clinically unsuitable)

Age (years)	Agreed to participate (%)
<50	82%
50–59	64%
60–69	29%
70–79	11%
Total	62%

#### Diabetes control

The number of patients using web-based follow-up routinely is still small, and a relatively small number of patients have been using this routinely for the past one or two years. It would therefore be difficult to attribute significant changes to blood glucose control after only one or two online appointments. We have, however, noticed some promising findings in those who have had more than two consecutive web-based follow-up appointments, where the average reduction in HbA<sub>1c</sub> was 1.65% (DCCT aligned). We speculate this reduction is most likely related to improved compliance with medication, and suggests better self-management in this group.

#### Did not attend rates

We have so far carried out 380 appointments from 96 patients with an overall DNA rate of 13% for scheduled appointments (the baseline DNA rate for the same patients was 25%).

## Patient feedback

Key themes identified from 28 completed online questionnaires, 34 interviews (19 in-depth and 15 face-to-face) and 5 focus groups were:

1. **Convenience with savings (time and costs of attending appointments):** this was particularly useful for people at work or in education (as it avoided taking time off to attend appointments); those having to travel at short notice; and during the fasting period of Ramadan for some of our patients
2. **Improved accessibility and greater flexibility**
3. **A change in the dynamics of the clinician-patient relationship:** patients reported feeling comfortable and more capable of discussing sensitive issues that they would find difficult to discuss in the outpatient clinic. They also reported getting the undivided attention of clinical staff during an online consultation, in comparison to a face-to-face consultation where staff were thought to be often distracted by notes or the computer!
4. **Patients felt "more in control" of the consultation process:** most patients reported that the quality of care was no different with web consultations, and most said they were more likely to keep an online appointment. All of our patients appreciated the need for an appropriate combination of webcam and face-to-face appointments.

## Conclusions

There has been increasing interest in initiatives that support self-management, particularly in patients with a long-term illness like diabetes.<sup>3-9</sup> The £31 million Department of Health Whole Systems Demonstrator trial suggested that tele-health was associated with a statistically significant reduction in morbidity, mortality and use of conventional health services, if used correctly with appropriate staffing and organisational infrastructure, although this study has been criticised for 'pro-innovation bias' and failing to engage effectively with the social and psychological aspects of the use of technology in chronic illness care.<sup>10</sup> Conventional methods for improving self-management have often been personnel-intensive, e.g. virtual wards/visiting nurses/clinically staffed telemedicine services; these demonstrated mixed results and were expensive and difficult to scale up. Maintaining engagement is difficult in patients with long-term illness: for example, a large multi-centre trial of telemonitoring for heart failure showed that 14% did not use it and more than half lost interest over time.<sup>11</sup> There is now considerable interest in the promise around use of everyday technology in helping health professionals to connect with everyday lives.

Diabetes services face rising costs with increasing disease prevalence, inadequate patient self-management and high DNA rates. This project aimed to provide more accessible and cost-effective diabetes care by replacing routine follow-up outpatient appointments for patients not requiring physical examination with web-based consultations evaluated using qualitative and quantitative methods. Uniquely, this project utilised everyday technology available in people's homes (rather than expensive pieces of kit), included patients of all ages and from ethnically



## Key messages

- Online or virtual tele-health consultations are a practical, accessible and acceptable reality for many patients with chronic health conditions
- Webcam appointments are aimed at increasing flexibility for the individual, reducing the inconvenience of attending clinic and (hopefully) reducing non-attendance rates
- They are inexpensive to set up and patient satisfaction with them has been high
- IT governance is an essential component and can be integrated into practice through a clear protocol

diverse communities and was conducted in an urban environment where face-to-face care remained a viable option. Patients reported that, compared with face-to-face appointments, web consultations saved them time, were far more convenient and were cheaper; the patients preferred them and would be more likely to attend them (this has clear implications for DNA rates). Staff and patients reported that the quality of care over webcam was at least as good as that provided face-to-face. There was quite powerful qualitative data supporting a change in the nature of the clinician-patient relationship during online contact, with the potential to improve patient engagement and self-management.

We require more time to verify the quantitative findings. However, current trends support the qualitative data: so far, patients who have had several webcam appointments had decreased HbA<sub>1c</sub> and there have been fewer attendances at Accident and Emergency departments. Initial savings are modest, and achieved through increased productivity; however, more substantial savings could follow with an increased volume of online contact.

**Conflict of interest** None

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## ERRATUM

## Erratum to 'Rehabilitation of pioglitazone'

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### Ryder:

REJR has received speaker fees, consultancy fees and/or educational sponsorships from Bristol-Myers Squibb/AstraZeneca Alliance, Eli Lilly, GlaxoSmithKline, Janssen, Novo Nordisk, Sanofi-Aventis and Takeda.

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- all contributors will be listed in publications arising from data submission