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Evaluation of a community diabetes initiative: Integrating diabetes care

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ABSTRACT

Aims: To evaluate the impact of a community diabetes initiative, aiming to improve the efficiency of type 2 diabetes (T2DM) care within the Cardiff and Vale Health Board.
Methods: In 2012, a community diabetes initiative was introduced in Cardiff and Vale. Ten National Health Service (NHS) consultant diabetologists and three nurse specialists supported 69 general practices in this region. Here we evaluate the impact of this initiative by assessing the number and quality of secondary care diabetes clinic referrals before (2011–2012) and after implementation (2013–2014). Referrals pre and post initiative were audited against Cardiff and Vale T2DM referral guidelines in two 6-month periods.
Results: In the 6-months prior to the initiative, 108 referrals were received, 78 of which were in line with local guidance. Approximately one year after embarking on the diabetes initiative (2013–2014) there was a 31% reduction ($p < 0.01$) in the total number of T2DM clinic referrals and a 57% reduction ($p < 0.01$) in referrals outside the guidelines. A decrease in referrals was not seen in the practice noted not to engage with the initiative.
Conclusions: The community diabetes initiative intervention has significantly improved the appropriateness of T2DM referrals from GP practices engaged with the initiative. As a result we advocate a move towards integrated diabetes care within the community.

1. Introduction

Diabetes mellitus (DM) is a chronic condition caused by deficiency or diminished effectiveness of endogenous insulin. This leads to characteristic hyperglycaemia, glycosylation of the vasculature and deranged metabolism, which in turn lead to further pathological problems.

DM is becoming an increasing challenge to the global health infrastructure with 4.4% of the world's population expected to diabetic by 2030 [1]. Due predominantly to the expansion of sedentary lifestyle and increasing life expectancy and the Western obesity epidemic, 90% of DM sufferers will be type 2 (T2DM) [1,2]. In 2013, the prevalence of diabetes in the UK was estimated at 6% [3]. The highest prevalence is in Wales, where ~7% of the population have been

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diagnosed with diabetes [3,4] and in line with the global trend, T2DM is by far the most common type. T2DM prevalence has increased from 3.3% to 4.1% over the 5 years 2004–2009, occasioning an added cost of £649.2million to the NHS in England and Wales [5]. Furthermore, a significant proportion of the population have undiagnosed diabetes [6].

DM and its complications account for 10% of total NHS expenditure today [7], as compared to 6% in 1996 [8]. This increase shows no sign of abating. There is good evidence that early diagnosis and effective management of DM reduces the risk of premature death and complications [9–11]. Given current economic stringency, it is increasingly important that the burden of T2DM and its complications on the NHS are minimised, through patient education and appropriate management. In parallel, the use of existing services must be scrutinised and streamlined, to reduce the strain on already tight purse strings.

The treatment of a patient with diabetes is more cost-effective if it is kept within a community setting. A study from Cardiff and Vale found that the average cost of managing a T2DM patient within secondary care was £1401 compared with £249 in primary care per annum [12]. Therefore, it appears to be a worthwhile strategy to reduce the burden of T2DM on hospitals. There have been several suggestions in the literature including: (1) Expanding the role of specialist nurses in the community [13], (2) introducing health coaching or similar initiatives into primary care [14,15] and (3) restructuring diabetes services [16–18].

Health coaching or motivational interviewing is a relatively recent concept, which aims to encourage positive behaviour change in disease management via one-to-one support by a peer or professional coach. This support can be face-to-face or via telephone. Health coaching has shown to have positive effects on Hba1c [19] and weight control [20]. Integrating professional health coaches into primary care aiming to optimise diabetic control has been shown to be feasible in Canada [14]. This approach is similar to the DESMOND programme in the UK (delivering diabetes education and self-management for ongoing and newly diagnosed). This consists of a number of registered healthcare professionals being trained as educators. They provide six hours of contact time to newly diagnosed T2DM patients. This approach has been shown to be effective and increased the likelihood of T2DM patients giving up smoking and losing weight [15].

Several strategies involving restructuring of diabetes services have attempted to optimise community diabetes care in the UK. The “super six” diabetes care model created a clear distinction between the roles of primary and secondary care professionals in diabetes management [17]. Having six clear reasons (the “super six”) that justify referral to a secondary care clinic. The model also encourages integration between primary and secondary care, offering telephone, email and face-to-face support from diabetologists to GPs in “complex cases” that fall outside of these six criteria. The role of diabetes specialists in educating primary care professionals is also emphasised. Evaluation of the model showed high GP satisfaction with the service, reduction of episodes of diabetic ketoacidosis, a reduction of hypoglycaemic admissions and a reduction of admissions with hyperglycaemic non-ketotic coma [21].

The Derby model consisted of a partnership between primary and secondary care. Two companies were set up equally owned by Derby Hospital NHS Trust and local primary care organisations (two general practice conglomerates). A multidisciplinary clinical board was established for each institution to oversee the provision of diabetes services. The allocation of resources from within a shared primary and secondary care budget allowed services to be streamlined and improved. The Derby initiative appeared to improve glycaemic control, blood pressure and lipid management for T2DM patients [18].

Here, we also blur the traditional boundaries between primary and secondary care, aiming to integrate diabetes care within the community. In this initiative, we combine DSNs with consultant diabetologist support into a novel community diabetes initiative. Diabetes specialist nurses (DSNs) have been shown to be cost effective [22–25] and improve clinical outcomes in the community [26,27]. Community diabetes specialist nurses deliver educational support to healthcare professionals in primary care e.g. teaching on GLP-1 mimetic initiation whilst consultant diabetologists provide support and specialist advice face to face in the community or via email. Locally, this initiative has been referred to as the Diabetes Integrated Care Service (DICS) model.

This study aims to: (1) improve the cost-effectiveness of the diabetes service in the Cardiff and Vale Health Board, (2) improve the quality of referrals to the secondary care diabetes clinics, (3) reduce waiting lists for outpatient diabetes clinics, (4) improve diabetes management in the community and (5) evaluate our community care model, contributing to the evidence-base behind community diabetes management.

We used two outcome measures to establish the effectiveness of our intervention. Both the number and quality of referrals were used as surrogate measures of efficient delivery of diabetes care. If the community initiative was effective, we would expect a higher proportion of referrals in line with local referral guidance and potentially a decrease in the total number of referrals.

Anecdotal evidence suggests that this approach should be effective, however there have been no systemic validations of approaches that combine DSNs and diabetologist e-support with general practice.

2. Methods

2.1. *The initiative*

The first component of the initiative involves linking individual GP practices to individual consultant diabetologists. Sixty-nine general practices in Cardiff and Vale were divided between 10 consultant diabetologists, according to locality. The named diabetologist for his/her practices visits the assigned practices twice per year to discuss complex and interesting patients. As well as optimising management in the community, this initiative aims to educate primary care workers, contributing towards their professional development. Consultants also provide a decision-making support service by email, giving GPs easy access to specialist advice within five working days of receipt of email.

The second component of the initiative comprises the DSNs, who provide educational support to all healthcare