# Reaching the hard-to-reach: Outcomes of the Diabetes Inequalities Outreach Project

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**The need to improve patient outcomes and address health inequalities in the management of diabetes was identified in North East Essex. A pilot project was established in two towns identified as highly socially deprived. Led by a DSN, the project provided care close to home for people from the catchment area with poorly controlled diabetes. Data on the project's impact on glycaemic control, blood pressure and lipid management, clinic attendance and hospital admissions from the first 6 months of the project are reported here.**

The NHS was born out of a wish to provide good healthcare for all, irrespective of personal wealth or postcode. Despite this, poor health outcomes are all too common in the poorest parts of the UK. This is true of people with diabetes, with the National Diabetes Audit reporting that "all complications, apart from eye disease, are more common with increasing deprivation" (NHS Information Centre, 2008).

### The Inequalities Outreach Project

NHS North East Essex established a pilot project, the Inequalities Outreach Project, to reduce health inequalities in diabetes care by making care available closer to, or in, homes, with flexible appointment times, ideally on the day of contact. The initiative involved joint working between primary and secondary care, and public health and local authorities.

A post for an experienced, non-medical prescriber DSN was created to run the project. The project, servicing the towns of Jaywick and Pier Wards, runs for 18 months and commenced in March 2009.

The project's key performance indicators were the improvement in glycaemic control, and blood pressure and lipid management. The first 6 months of data, and the lessons learned through the project, are reported here.

### Setting

Jaywick, a seaside holiday town of the 1930s, has come into permanent residential use without the benefit of the services and facilities expected as part of modern planned developments. Housing is widely in disrepair and the area is characterised by low-quality infrastructure; an unmade private road and footpath network, poor street lighting and extensive surface water drainage problems.

Jaywick is classified as the third most deprived town in England and Wales (Communities and Local Government, 2007). A significant number of households are low-income, and a high number of people of working age receive unemployment benefits (North East Essex PCT, 2007).

**Article points**

1. Healthcare inequalities exist in UK diabetes management; this project aimed to improve diabetes care in two areas of high social deprivation.
2. A DSN was employed to run the pilot project, providing close-to-home care and flexible appointment times.
3. The project DSN saw 85 people with diabetes during the 6 months, with referral pathways more successful from primary than from secondary care.
4. An improvement in glycaemic control and lipid management, and a reduction in hospital admissions, were achieved.

**Key words**

- Care close to home
- Health inequality
- Social deprivation

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**Page points**

1. A significant number of households in the project catchment area are low-income, and a high number of people of working age receive unemployment benefits.
2. North East Essex has a slightly higher incidence of diabetes (4.3%) than the national average (3.9%).
3. Weekly clinics were established in the local area, enabling people with diabetes to access care close to home; home visits were also arranged.

The adjacent coastal town of Pier Ward is ranked 775th most deprived town in England and Wales (Communities and Local Government, 2007). Pier Ward is characterised by a high number of houses of multiple occupation and bed-sit accommodation. Like neighbouring Jaywick, a significant number of households are low-income, and a high number of people of working age receive unemployment benefits (North East Essex PCT, 2007).

North East Essex has a slightly higher incidence of diabetes (4.3%) than the national average (3.9%), and one GP practice in Pier Ward has a diabetes incidence of 7.4% (Diabetes Public Health Intelligence Group, 2009). The Diabetes Service located in North East Essex provides care for those with diabetes in Jaywick and Pier Ward. This service has reported poor clinic attendance.

## Establishing the project

In November 2008, four GP practices were contacted in the Jaywick and Pier Ward areas. Meetings were arranged between the project DSN and each clinic's GP or practice nurse. The meetings identified 24 people who met the project's inclusion criteria:

- Resident of the Jaywick and Pier Ward areas (identified by postcode).
- Diagnosed type 1 or 2 diabetes.
- An $HbA_{1c}$ level >9.0% [>75 mmol/mol] *or* recurrent diabetes-related admission to hospital.

A meeting between the project DSN and staff from the emergency assessment unit at the local acute hospital was also held to decide the most effective way to identify people with diabetes from the project area admitted to, and discharged from, hospital. It was decided that the project DSN would maintain weekly contact with the emergency assessment unit staff via a bleeper.

In December 2008, a letter of introduction was sent to the first 24 people with diabetes identified as having met the inclusion criteria. Contact details of the project DSN were provided and they were asked if they would like an appointment. The letter also indicated that further contact would be made. Following the initial letter, 10 people with diabetes responded. At this time, 12 people with diabetes already under the care of the Diabetes Service, but who were poor attendees, were added to the project caseload.

Patient information literature on lifestyle interventions and services available was developed. This literature was disseminated by the project DSN during appointments and distributed to local pharmacies.

In March 2009, the first diabetes awareness session was held at the Jaywick Community Centre, having been previously advertised in the local paper. Session attendance was fair, with some eight people participating.

New weekly clinics were established in the Jaywick pharmacy and Clacton Hospital (serving the Pier Ward area). These clinics, or "outreach posts", enabled people with diabetes from the project's catchment area to access care close to home. For those in care homes, non-attendees and those who were unwell, home visits were arranged.

## Project outcomes

Clinical management of the project caseload at any given time required a high level of skill and experience. Many of the participants would not normally be managed within primary care.

### Caseload

The caseload rose month on month. By August 2009, the project had an active caseload of 49 people with diabetes. Throughout the 6 months, the total caseload was approximately twice the number of active cases (*Figure 1*).

The cumulative total of people with diabetes seen by the project DSN during the 6-month period was 65. Of these, four died. In total, 80 people were contacted, 69 made an initial appointment and 65 attended that initial appointment, leaving four who made but did not attend their appointment, and 19 people who were contacted but never engaged.

*Figure 2* shows the monthly number of people identified meeting the inclusion criteria, new contacts made by the project DSN and initial appointments attended. A further 40 people with diabetes identified as fulfilling the inclusion criteria were not contacted due to the project DSN's caseload reaching capacity.

Most of the active caseload in the sixth month had type 2 diabetes (69%, 34/49), while 31% (15/49) had type 1 diabetes. Due to non-attendance, 37% (18/49) of the active caseload had previously been discharged from secondary care services. People with diabetes complicated by comorbidities, including renal disease, mental health problems and morbid obesity, made up 39% (19/49) of the active caseload. Furthermore, 22% (11/49) were at that time housebound.

## Referral pathways

### *Secondary care*

The project's referral pathway from secondary care to the project was not entirely successful. Liaison between the project DSN and emergency assessment unit staff was attempted, but was largely unsuccessful.

The project DSN initially made contact with the local acute hospital's discharge liaison nurse from the diabetes ward. It was agreed that the nurse would inform the DSN of all people with diabetes discharged to the project catchment area, who would then be assessed for their need of specialist intervention and inclusion in the project. This pathway worked well initially, but the referrals discontinued over time.

Three months following initial contact with the discharge liaison nurse, communication with the project DSN ceased. Further contact was made but, due to ward staff shortages, this referral pathway was not continued. Work is ongoing to establish an effective and robust referral pathway from the local acute hospital to the project.

### *Primary care*

The number of referrals from the seven GP practices involved in the project varied. A greater number of referrals were received from the Green Elm Practice than any other involved practice (*Table 1*). This could be attributed to a high prevalence of diabetes and the relatively few staff in that practice compared with other participating practices. The larger number

**Page points**

1. Thirty-nine percent of the project population included people with diabetes complicated by comorbidities, including renal disease, mental health problems and morbid obesity.
2. The project's referral pathway from secondary care to the project was not entirely successful.
3. Work is ongoing to establish an effective and robust referral pathway from the local acute hospital to the project.
4. The number of referrals from the seven GP practices involved in the project varied.

**Page points**

1. A reduction in did-not-attend rate was anecdotally observed, likely the result of the easily accessible outreach posts.
2. As a non-medical prescriber, the project DSN was able to change medication regimens at the time of the appointment.
3. The project DSN was supported by close links with the consultant physicians based at the local acute hospital.
4. Referrals from the project to other services have included structured diabetes education, smoking cessation and weight management.

*Figure 1. Inequalities Outreach Project DSN caseload (■ active; ■ total) over the project's first 6 months.*

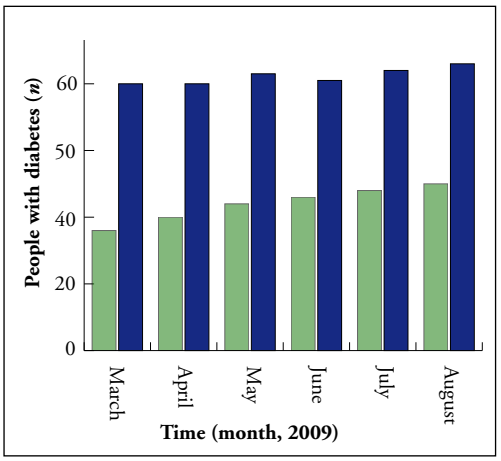
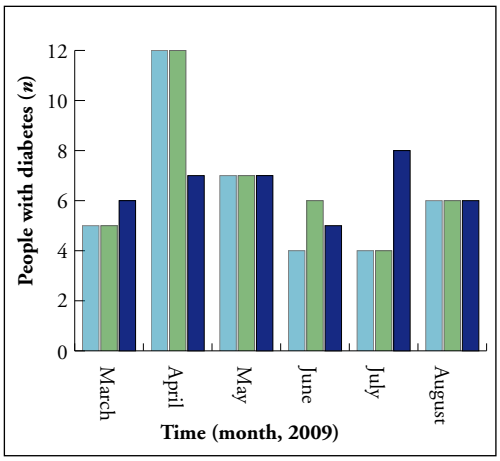



*Figure 2. Number of new people identified (■), new contacts (■) and initial appointments (■), month by month by the DSN.*




of referrals from the Green Elms Practice has resulted in good lines of communication between the project DSN and the practice staff, and joint care planning for the participating people with diabetes.

## Clinical contact

A reduction in did-not-attend rate was anecdotally observed, which was likely the result of the easily accessible outreach posts. Home visits were also undertaken, with 24 made by the project DSN during the 6-month period.

Participants reported that one of the most important issues for them was continuity of care. As a non-medical prescriber, the project DSN was able to change medication regimens at the time of the appointment.

**Table 1. Referrals from GP practices in the Jaywick and Pier Ward areas to the Inequalities Outreach Project between March and August 2009.**

| Practice | *n*=64 |
|---|---|
| Green Elms | 34 |
| East Lynne | 16 |
| Old Road | 4 |
| Ranworth | 2 |
| St James | 5 |
| North Road | 2 |
| Crusader | 1 |

Fifteen insulin initiations were undertaken during the project period. Appropriate dose alteration for those already on insulin to achieve good glycaemic control occurred as necessary. Furthermore, 33 changes to oral antihyperglycaemic drug regimens were made. The rapid medication access and appropriate dose alteration advice provided by the project DSN is likely to be a contributing factor to the improved glycaemic control seen among project participants (*Figure 3*).

The project DSN was supported by close links with the consultant physicians based at the local acute hospital. Contact between the project DSN and consultants was made via telephone for advice on more complex management issues. A reduction in consultant appointments for people with diabetes from the catchment area was anecdotally observed, which was likely the result of care being accessed as part of the project.

## Onward referrals

Referrals from the project to other services have included structured diabetes education, smoking cessation and weight management. *Table 2* provides a breakdown of all onward referrals made by the project DSN.

Some 26% (22/85) of the total caseload were discharged from the diabetes service and referred back to their GP clinic. In general, the more severe the person's diabetes at presentation,

the longer it takes to achieve improvement in their diabetes management. Forty-two project participants required ongoing care and could not be discharged back to their GP practice within the first 6 months of the project.

### Hospital admissions

Of the active caseload (*n*=49), 14 people had one or more previous diabetes-related hospital admissions – a total of 38 admissions – in the 6 months prior to the project's launch. Of these 14 people, only three were readmitted during the project period – a total of five admissions in 6 months.

Using the data from the 6 months prior to the project launch as a benchmark, the project achieved a reduction of 33 hospital admissions in the same time period. Furthermore, four people with diabetes were referred to the diabetes service, as part of the project, requiring urgent intervention. These four were seen on the same day, and possible hospital admissions were avoided.

*Patients At Risk of Re-hospitalisation* (PARR; The King's Fund, 2009) is a software tool that uses a patient's recent hospital admissions data (up to 4 years) to calculate the likelihood of re-admission over the next 12 months. Taking into account factors including diagnoses and socio-demographic information, PARR has shown high predictive accuracy (The King's Fund, 2009).

The project DSN found the PARR tool (version PARR++) useful in identifying at-risk people with diabetes. However, using the tool proved to be time-consuming and a task that could be completed by an experienced administration assistant, rather than a busy clinician.

## Clinical outcomes

The project aim was to improve clinical outcomes for people with diabetes in the catchment area. The three central clinical measures taken were $HbA_{1c}$ level, blood pressure and cholesterol.

### Glycaemic control

To improve the glycaemic control of participants required both a reduction in $HbA_{1c}$ level and a stabilisation of glycaemia to prevent periods of hypoglycaemia. $HbA_{1c}$ levels were available for 25 participants, both at presentation and 6-month follow-up. The $HbA_{1c}$ change for this group is represented graphically in *Figure 3*. Of the 25 for whom data are available, 21 had reduced their $HbA_{1c}$ at 6-month follow-up.

**Table 2. Inequalities Outreach Project participant onward referrals from between March and August 2009.**

| Referral | *n*=85 |
|---|---|
| Back to GP practice | 22† |
| Lifestyle interventions | 25 |
| Weight management programmes | 1 |
| Smoking cessation | 2 |
| Structured diabetes education | 5 |
| Exercise programme | 8 |

†A further 42 people required ongoing support and could not be referred back to their GP.

### Blood pressure management

Blood pressure data were difficult to collect, and measurements taken in the clinic may not be a true reflection of blood pressure. The project DSN was not able to accesses information on current hypotension medications for participants. Therefore, if a participant's

**Page points**

1. The project achieved a reduction of 33 hospital admissions in a 6-month period.
2. The project DSN found the *Patients At Risk of Re-hospitalisation* software tool useful in identifying at-risk people with diabetes, but time-consuming.
3. Of the 25 project participatns for whom data are available, 21 had reduced their $HbA_{1c}$ level at 6-month follow-up.

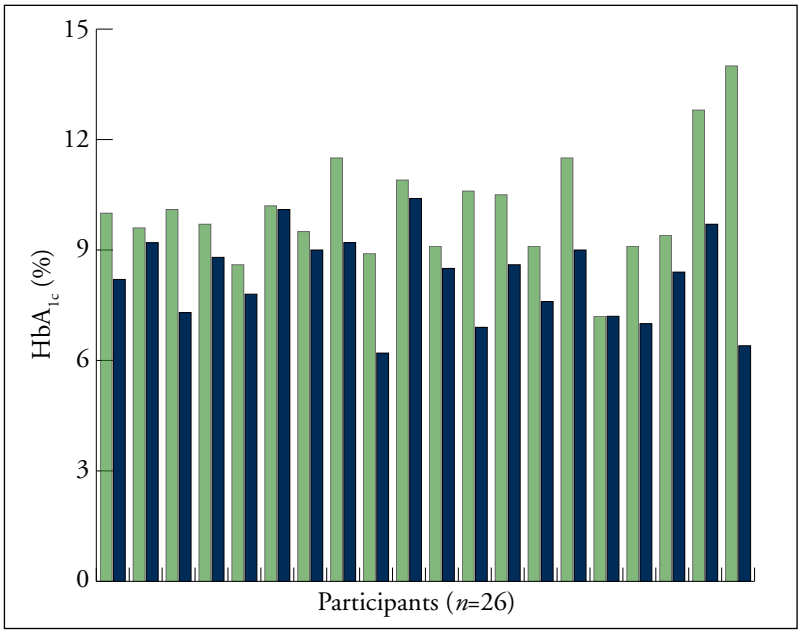
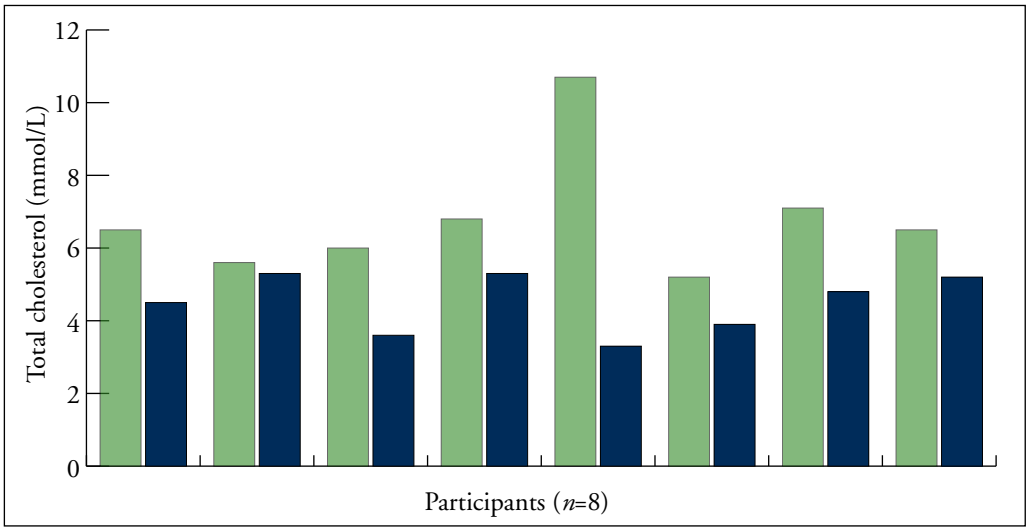



*Figure 3. $HbA_{1c}$ level at presentation (■) and 6 months later (■) for 25 project participants. By 6 months, 21 of the 26 people had achieved an improvement in their $HbA_{1c}$ level.*

***"Auditing and evaluation of the activities undertaken as part of the project will ensure that the service is meeting the needs of the target population and delivering a high standard of care."***

*Figure 4. Change in cholesterol level for eight participants who were identified as having a reading >4.5 mmol/L at presentation (■). By 3 months (■), all had reduced their cholesterol level.*




blood pressure was found to be elevated (>140/80 mmHg) it was necessary to refer them back to their GP practice for treatment.

In total, 85 participants had their blood pressure recorded during the first 6 months of the project. Sixty-two participants were receiving antihypertensive medication and 26 were referred to their GP practice for treatment.

## Lipid management

Ten participants were identified as having poor cholesterol control (total cholesterol >4.5 mmol/L) at presentation to the project DSN. Following drug and lifestyle interventions, all 10 showed a reduction in their cholesterol measures within 3 months. Changes over time in total cholesterol for the eight participants for whom presentation and 6-month follow-up data were available are shown in *Figure 4*.

## Conclusion

A truly universal healthcare system can only be achieved when the whole population can access high quality medical care, irrespective of personal wealth or postcode. The first 6 months of data from this pilot project show that, with planned interventions, health outcomes in socially disadvantaged areas can be positively affected.

The key to the success of this project was flexibility of appointment times (ideally on the day of contact) and location (home visits, alternative consulting rooms). The leadership of an experienced DSN allowed for instant changes to medication regimens and continuity of care. Furthermore, the DSN had access to immediate support and information from GPs, practice nurses and consultants. The care given by the well-supported project DSN aided in gaining the trust of people with diabetes returning to the healthcare system.

Further work is required to ensure that appropriate referral pathways from secondary care to the project DSN are established and sustained. The use of PARR to identify previous admissions and high risk groups needs to be continued and streamlined. Good lines of communication between primary and secondary care and community agencies need to be maintained. Auditing and evaluation of the activities undertaken as part of the project will ensure that the service is meeting the needs of the target population and delivering a high standard of care.

It has been proposed that the project be rolled-out to other areas of social deprivation to reproduce the successes reported here. An expansion of the project would require an increase in DSN time and administrative support. ■

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