An accessible diabetes service for renal transplant recipients

Jo Reed

Renal and diabetes care are both highly specialised areas with high standards; a lack of synchronisation between the two can result in unstructured care for the person with renal failure and diabetes. In this article, the author reports the experience of implementing a DSN service within a renal transplant clinic to provide multidisciplinary care for renal transplant recipients with diabetes. After a period of 1 year, this scheme resulted in improved glycaemic control, improved renal staff awareness of diabetes and earlier diabetes diagnosis and treatment initiation.

Article points

1. At the Imperial College Renal and Transplant Centre there was an influx of referrals from the renal transplant team to the diabetes nurses.
2. It was recommended that a designated DSN should work in collaboration with the renal team in the transplant clinic for 1 day per week rather than contacting them as and when their advice was needed.
3. After 1 year, glycaemic control was improved among those seen by the DSN, with the majority showing a reduction in their HbA_{1c} level.
4. Staff education was also improved, enabling better staff awareness, which resulted in earlier diabetes diagnosis and treatment initiation.

Key words

- Glycaemic control
- Referrals
- Renal transplant

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Chronic kidney disease (CKD) is common in the adult population and the statistics are alarming. It is estimated that one in 10 people in the UK have some degree of kidney disease (National Kidney Foundation, 2006). CKD often coexists with other conditions, for example hypertension and diabetes. It is known to affect some populations far more than others, in particular, south Asian and African Caribbean (Kidney Research UK, 2011). Reports suggest that these groups are three- to five-times more prone to developing CKD, which is similar to the risk of diabetes in terms of ethnicity (Kidney Research UK, 2011).

Diabetic nephropathy is known to be the single largest cause of chronic renal failure. It is estimated that 35% of people new to dialysis have diabetes (International Diabetes Federation, 2003). In addition, in the case of renal transplant recipients, many of the drugs given for immunosuppression are thought to be beta-cell toxic and can therefore cause de novo diabetes or worsen pre-existing diabetes. In general, long-term, poor diabetes control is associated with a poor outcome for both transplant and haemodialysis recipients with diabetes.

Good glycaemic control is central to the management of kidney transplant recipients with diabetes and is difficult to achieve without significant input from a multidisciplinary diabetes service. In addition to the risks of rejection or infection to the new kidney(s), people in this group are particularly susceptible to complications such as foot ulceration (Game et al, 2006) or ischaemic heart disease (Grundy et al, 1999), which can result in prolonged and expensive hospital inpatient admissions. Furthermore, poor glycaemic control reduces survival rates (Revanur et al, 2001) and can lessen the graft's overall function.

For transplant recipients with diabetes, mortality has been reported as 20.8-times higher than for the general population (Davidson et al, 2003). This means that they require good, accessible diabetes services in partnership with their renal treatment. Both renal and diabetes care are highly specialised areas with high standards; a lack of synchronisation between the two can result in unstructured care for the person with renal failure and diabetes.

In this article, the author reports the experience of implementing a DSN service

Table 1. Referrals of transplant recipients to a DSN over 3 months.

Referrals	Months		
	1	2	3
DSN called to the renal clinic (patients seen)	18	29	43
DSN called to the renal ward (patients seen)	59	63	83
DSN phoned/bleeped for advice	2	8	16
Letters requesting referral to DSN	0	11	27

Table 2. Milestones and targets for the new DSN service.

Milestone	Target time
Agreement between renal/diabetes teams to provide the expertise of a DSN with knowledge of renal disease	ASAP
Augmenting a diabetes link-nurse structure and programme	Within 6–12 months
Conduct benchmark audit of mean HbA_{1c} levels prior to appointment of DSN	Within 6 months
1-day week designated DSN input to work in conjunction with renal team in the Imperial College Renal and Transplant Centre	Within 7 months
Follow-up audit of mean HbA_{1c} levels 6 months after the benchmarking audit	12 months
Year 1: establish service numbers	18 months
Review of success criteria and performance	18 months
Year 2–3: broaden DSN involvement to other renal areas	24–36 months

within a renal transplant clinic to provide multidisciplinary care for renal transplant recipients with diabetes.

Problems identified within the renal transplant clinic

The Imperial College Renal and Transplant Centre (ICRTC), London, currently treats approximately 3000 people with end-stage renal failure, including approximately 1500 renal transplant recipients. The renal transplant clinics are notably large, seeing approximately 2000 people per month, a third of whom have diabetes. These individuals have undergone a kidney transplant and are being monitored by the transplant team. It is difficult to meet the needs of so many people and, furthermore, the numbers of individuals cared for by ICRTC increases each year.

At the ICRTC, transplant recipients need to attend hospital at frequent intervals, sometimes up to three times per week, and this may contribute to a reduced standard of diabetes follow-up care. Traditional lines of communicating may be lost or unnecessarily inconvenient for these individuals who juggle their time between specialists and primary

and secondary care. Prior to this study, there had been no formal or regular input from a member of the diabetes team. A need for change was identified after it was noticed that there seemed to be an influx of referrals from the renal transplant team to the diabetes nurses.

Clinical analysis of referrals of renal transplant recipients to the diabetes team

The number of referrals were captured over a 2-month period to validate this assumption. Referrals received were mainly for specialist advice regarding optimisation of glycaemic control, new diabetes diagnoses and overall management of diabetes. It was acknowledged that 2 months is a short assessment period. However, the analysis illustrated the trend of referrals and confirmed the view that the numbers were indeed growing (*Table 1*).

In view of the findings outlined above it was proposed that an appointment of a DSN with an interest in renal care to the ICRTC could assist in bridging the gap for these transplant recipients with diabetes.

Implementing a combined service of renal and diabetes care

It was believed that to employ a DSN in the transplant clinic on a regular basis would be of value and more beneficial than trying to contact a DSN as and when their advice was needed. As a result, a business plan was written, outlining the agreed milestones and targets for this new service (*Table 2*).

The initial recommendation was that a designated DSN would work in collaboration with the renal team in the transplant clinic for 1 day per week. One of the main emphases was the importance of working in a collaborative fashion, as required by the *National Service Framework for Renal Services* (Department of Health, 2005).

The cost to the renal team would be the cost of that DSN for 7.5 hours per week and would be a cross-transfer to the diabetes team. There were no other indirect costs.

The immediate benefits with diabetes management are not always visible, as is true for the management of many other chronic conditions. However, it was anticipated that if the appropriate treatment was commenced earlier, a reduction in HbA_{1c} level should result. It was also expected that there would be a reduction in long-term treatment costs and that risks of complications may be mitigated.

Involving a member of the diabetes team in this clinic would generally raise diabetes awareness with the other clinicians and provide the opportunity to educate and involve patients in their diabetes care on a regular basis.

Page points

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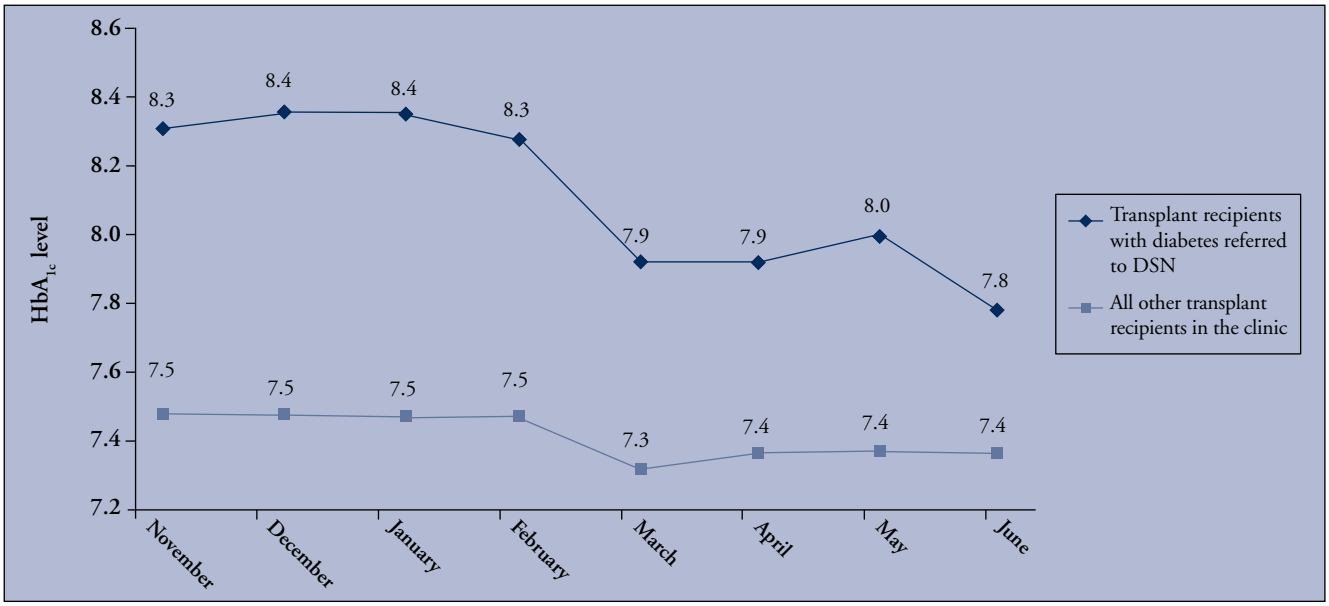
Table 3. Benefit summary.

Current provision/potential obstacles	Proposed provision
Convoluted process	One-stop centre
Involves numerous people	Streamline approach
Ad hoc service	Better use of patients' time/same day
No follow-up	Better use of consultants time
Not always seen	Earlier treatment
Time delay, i.e. needs referral by GP	Decrease unnecessary administration
Treatment – not always the appropriate	Appropriate/quicker treatment or improved outcomes
Individuals seen at numerous centres and therefore missed appointments were commonplace	Consistent messages to patients plus as above – single point of contact
No ongoing diabetes education	Diabetes education
No member of diabetes team available within the clinic	Specific diabetes knowledge from an experienced diabetes nurse

Figure 1. A record of progress in HbA_{1c} level over the first 6 months.



The business case was submitted to the renal management team and was authorised and approved. The plan was for a DSN to provide a diabetes service for 1 day per week, which would be reviewed after 1 year.

Results

The outcomes of implementing this diabetes service in the renal transplant clinic included earlier clinical diagnosis of new-onset diabetes after transplantation, which led to the earlier commencement of treatment. Glycaemic control was optimised among those seen by the DSN in the first 6 months of the new scheme. The majority (70%) had reduced HbA_{1c} levels; the mean HbA_{1c} level was reduced from 8.4% to 7.8% (68 to 62 mmol/mol; $P<0.0001$; *Figures 1 and 2*). This translates to a risk reduction of approximately a third of diabetes-related complications among this population (UKPDS [UK Prospective Diabetes Study] Group, 1998). Interestingly, it was noted that in the general group of renal transplant recipients (i.e. those not specifically seen by the DSN), a reduction in mean HbA_{1c} level was also seen (from 7.5% to 7.4% [58 to 57 mmol/mol]; *Figure 1*), probably as a result of an increased awareness and knowledge of diabetes within the transplant clinic team. The DSN was regularly used as a resource for the wider team in the clinic setting.

Staff education was improved through the implementation of two renal diabetes link-nurse days, a foot audit, ward-based teaching sessions and tutoring in the junior doctor education programme.

The DSN caseload increased over time: 63 patients in the first 6 months, increasing to >100 in the second 6-month period.

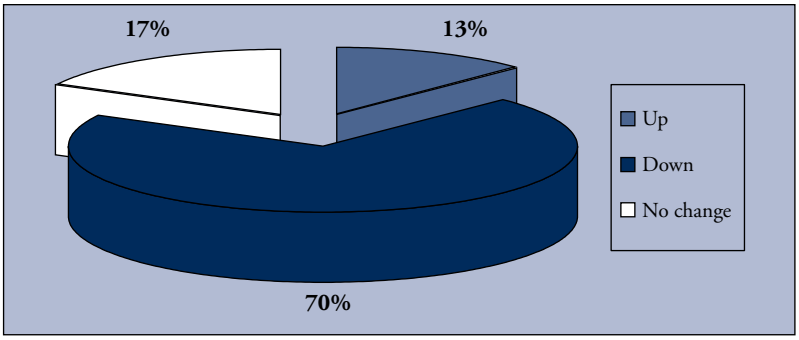


Figure 2. A breakdown of the changes in HbA_{1c} levels of the targeted patients.

Limitations of the service

With the increasing DSN caseload observed, it was apparent that this service would be difficult to maintain for just 1 day per week. Only a fraction of the existing transplant recipients with diabetes were being seen by the DSN, but a continued rise in transplant numbers meant that demand too would increase. This

was coupled with the increased expectations of both staff and transplant recipients to have ready access to the DSN expertise and support. However, the concern was that the additional workload meant that effectiveness was reduced by being "spread too thin" and that other intended initiatives, such as staff education, were becoming difficult to fulfil.

The reduction in HbA_{1c} levels demonstrated that outcomes had improved because of better glycaemic control, but this service was not currently identifying "at-risk" individuals.

Another limitation of the service was that it was difficult to accommodate additional education sessions. As the long-term aim was to develop a structured diabetes education service for renal transplant recipients with diabetes as well as a more formal education programme for renal link nurses, the expected service delivery was reduced.

At the end of the first year, a second proposal was written with the aim to widen this service by broadening the scope of the DSN, i.e. by extending to more than just the renal transplant recipients. A few months later, the 1-day/week DSN service was extended to full-time.

As follow-up to the implementation of this service, a patient satisfaction survey was distributed and completed with positive results. The survey explored how satisfied individuals were with the service provided by the DSN, and the person's understanding of their condition and of consistency of advice provided to further improve the quality of the future service. Some feedback comments are cited below:

> ***"Very good liaison noted between DSN and nursing/medical team, which gives better efficiency for patient care and an opportunity for early intervention when necessary."***

> ***"I find the availability of the diabetes nurse at the transplant clinic is an excellent idea and the fact that she is available for advice is a very valuable service. I find the nurse very approachable and her advice very useful."***

Conclusion

The experience of initiating a DSN service in conjunction with the renal transplant team at the ICRTC has highlighted a number of positive outcomes. First, multidisciplinary services can be beneficial for both people with diabetes and staff alike, not only in terms of clinical outcomes but also patient and staff satisfaction. Second, the overall risks of long-term complications among individuals with diabetes have been shown to have decreased.

The DSN now works in the renal transplant clinic 2 days per week with the other 3 days designated to the renal wards. Other initiatives aimed at progressing from a reactive to a proactive service have also been successfully been implemented, these include:

- Upskilling the renal diabetes link nurses in planned monthly teaching sessions and providing them with clinical support on the wards and dialysis units.
- Regularly teaching junior doctors and representing the trust and the ICRTC in wider diabetes/renal study days.
- Clinically supporting the eight dialysis satellite centres with regard to any diabetes issues as well as contributing to audit in these areas.

Renal transplant recipients with diabetes are a complex group with many challenges to overcome, thus working together as health professionals can streamline and ease their care pathway. A more consistent service now exist for transplant recipients and all staff involved.

Future plans

The coming year will be an important one in terms of moving this service further forward and fulfilling the proposal as the number of the transplant clinic's DSN caseload now exceeds 200 and is ever-growing. The service is not as yet proactive, but hopefully that will change in the future by developing other areas such as evolving structured education for people with diabetes and a competence framework for clinicians.

The key is to deliver a streamlined approach that enables better use of time for both people with diabetes and clinicians, which in turn provides the benefits of earlier treatment and improved patient outcomes. ■

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