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Perioperative passport: empowering people with diabetes along their surgical journey

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What's new?

- We developed a perioperative passport as a novel approach to help overcome the disempowerment and poor communication that is often experienced by people with diabetes undergoing elective surgery.
- The passport contained essential information pertaining to a surgical inpatient stay and addressed common questions that patients may ask about their care.

- Quantitative and qualitative methods showed that the perioperative passport was effective in involving and informing people with diabetes undergoing elective surgery.
- The perioperative passport has the potential to be widely adopted by other National Health Service Trusts wishing to enhance their perioperative pathway for elective patients with diabetes.

Abstract

Aim To determine whether a handheld 'perioperative passport' could improve the experience of perioperative care for people with diabetes and overcome some of the communication issues commonly identified in inpatient extracts.

Methods Individuals with diabetes undergoing elective surgery requiring at least an overnight stay were identified via a customized information technology system. Those allocated to the passport group were given the perioperative passport before their hospital admission. A 26-item questionnaire was completed after surgery by 50 participants in the passport group (mean age 69 years) and by 35 participants with diabetes who followed the usual surgical pathway (mean age 70 years). In addition, the former group had a structured interview about their experience of the passport.

Results The prevalence of those who reported having received prior information about their expected diabetes care was 35% in the control group vs 92% in the passport group (P<0.001). The passport group found the information given significantly more helpful (P<0.001), including the advice on medication adjustment (P=0.008). Furthermore, those with the passport were more involved in planning their diabetes care (P <0.001), less anxious whilst in hospital (P<0.044) and better prepared to manage their diabetes on discharge ($P\leq$0.001). The

mean length of hospital stay was shorter in the passport group, although the difference did not reach significance (4.4 vs 6.5 days; P<0.058). Content analysis indicated that the passport was well liked and innovative.

Conclusion Our data indicate that the perioperative passport is effective in both informing and involving people in their diabetes care throughout the perioperative period.

Introduction

The Perioperative pathway is often a multi-step process which can be particularly challenging to people with diabetes, with many experiencing anxiety and dissatisfaction with their care [1]. The Joint British Diabetes Societies (JBDS) guidelines state the perioperative process should be seamless and that the patient should be involved in planning at all stages [2], yet failure of communication is often identified as a common issue in inpatient experiences [3] along with difficulty in identifying high-risk patients prior to surgery [2]. Primary care referrals often lack detail about diabetes, such as the patient's recent HbA_{1c} concentration or their glucose medication, and some fail to make mention of diabetes at all in the referral letter [4]

It is known that people's ability to self-manage is integral to successful diabetes management [5]. People undergoing elective surgery who manage their diabetes every day in the community often find it disempowering when hospital staff, many of whom have little diabetes experience, prevent them taking decisions about their diabetes management [2]. In one Dutch study conducted in six hospitals, only half the participants reported that they had received information about perioperative diabetes treatment and only one-third of the participants received any information about the effect of surgery on blood glucose. Most

participants were unaware of their diabetes perioperative caregiver or of who to contact in case of diabetes-related problems during their hospital stay. Half felt able to ask questions and only one third felt involved in the decision-making regarding their diabetes treatment [6].

The JBDS perioperative guidance has tried to address many of the issues experienced by people with diabetes undergoing surgery, but many health trusts report difficulty introducing this guidance or in achieving successful improvements. A study in the Netherlands looked at implementing a multifaceted improvement strategy across six hospitals but found that this had limited impact on the quality of perioperative diabetes care [7].

These difficulties prompted us to consider a new strategy in which people with diabetes are empowered through their perioperative journey. We took the definition of empowerment as being a patient-centred, collaborative approach tailored to match the fundamental realities of diabetes care [8].

To empower patients we came up with the concept of a handheld 'perioperative passport' containing essential information pertaining to a surgical inpatient stay and questions that patients may wish to ask about their care. The 'passport' was put together by a working group of diabetes specialists, surgical healthcare professionals and the Ipswich Hospital Diabetes Patient User Group. The passport was also approved by the hospital reading group to make sure it was set at a suitable reading age.

The passport was designed for the patient to take to each of the stages in the perioperative journey and to be used as a collaborative tool for patients and healthcare professionals. The passport was broken down into the stages of the perioperative journey. It included

information for the patient to fill in about their diabetes care, information for healthcare professionals to fill in to inform the patient of aspects of their preadmission care and information about what to expect in terms of diabetes care whilst in hospital. Pages relating to each of the three aspects of care were colour-coded for ease of identification (Fig. 1 and Appendix S1).

We aimed to determine whether the passport would help people with diabetes undergoing elective surgery feel better informed and more involved in their diabetes care at various stages of the perioperative process.

Participants and Methods

Study design

This comparative study was carried out at Ipswich Hospital NHS Trust and compared the experience of patients undergoing usual diabetes elective care with those who were also given a perioperative diabetes passport. Usual care included being given pre-printed instructions produced by the diabetes team at the pre-assessment clinic specifically addressing preadmission eating and drinking and diabetes medication adjustment and being prescribed a bedside snack by the diabetes inpatient specialist nurses on admission. The diabetes inpatient nurses were available to patients in both groups during their admission.

This study was deemed to be an assessment of service improvement and not research by the Trust's Research and Governance Committee. Approval to conduct the study was thus sought from and given by the Hospital's Audit Committee.

Participants

To be included in the study, participants had to be undergoing elective general, orthopaedic or spinal surgery and require at least an overnight stay. Participants were identified using a customized information technology system when listed for surgery and were randomly allocated to a group via simple random allocation using computer software. Those who no longer required surgery or who opted to not proceed with surgery were then excluded. More patients in the passport group went on to have surgery, resulting in 53 participants in the passport group and 39 in the non-passport group being given the questionnaire.

Procedures

The passport group received an introductory telephone call from the diabetes nurse team before receiving the passport in the post. The passport was explained to them and they were asked to fill out the relevant sections in the passport and bring this to all appointments and the admission. Before its implementation, preoperative staff, relevant ward nurses, junior doctors and consultants were made aware of the passport at *ad hoc* briefing sessions.

We could find no standard validated measure to evaluate the various aspects of care associated with the diabetes passport. The team generated a number of questions which, after discussion and feedback from patients, were finalised at 26 items. The questions comprised some dichotomous items, while the majority required the participants to rate various aspects of care on a 10-point scale. The items were presented to participants in the form of a three-part questionnaire, as follows: 1) experience before coming to hospital; 2) experiences whilst in hospital; and 3) experiences of discharge (Appendix S2). On discharge, both groups were given this questionnaire which was returned via post, thus minimizing the interpersonal

contact between researcher and participant. Participants in the passport group were given the option to take part in a structured telephone interview once they had completed the questionnaire. Fifteen participants opted to do this.

Analyses

The quantitative data from the questionnaire items requiring participants to respond on a 10-point scale were analysed using ANOVA and data presented as means and SD values. Categorical data were analysed using chi-squared tests. The interview data were analysed by a psychologist (S.J.) using content analysis with an implicit coding structure.

Results

The two groups were similar in age (passport group: 68.6 ± 10.4 years; usual care group: 70.3± 12.8 years) and in gender split (passport group: 42% women; usual care group 41% women). Loss to follow-up rate was 6% in the passport group and 10% in the usual care group. Loss to follow-up included those not returning the questionnaire or who opted to no longer participate

Experiences before coming into hospital

There was no difference between the groups in how well informed they felt about the actual surgical procedure (9.5±0.99 vs 9.0±1.6; *P*=0.11), but the passport group reported being better informed of the importance of having good diabetes control in the weeks prior to surgery (9.4 ±1.5 vs 4.6±3.7; *P*=0.0001). More participants in the passport group reported

receiving information about their expected diabetes care prior to their surgery (92% vs 35%; *P*<0.0001). The passport group gave a higher rating to the value of the information given (8.9±1.7 vs 4.6±3.7; *P*<0.0001), including the information on pre-surgery medication adjustments (9.4±1.5 vs 8.1±2.5; *P*=0.008) and on what they could eat or drink in the hours before surgery (9.4±1.2 vs 8.7±1.9; *P*=0.036).

Experiences during time in hospital

Those given the passport felt more involved in planning their diabetes care (8.3±2.4 vs 5.0±3.3; *P*<0.0001) and less anxious whilst in hospital (1.8 vs 2.8; *P* =0.0437). The majority of participants were allowed to monitor their own blood glucose whilst in hospital if they opted to, but two participants in the passport group and four in the usual care group were prevented from doing so. There was just one participant in each group who wished to but was not allowed to give their own insulin, although two participants in the usual care group were unsure if they were able to. Of those who were on insulin, 86% were able to decide their own dose in the passport group and 81% in the usual care group (*P*=0.791). Of those in the passport group, 8% received an i.v. infusion compared with 14% of those receiving usual care (*P*=0.353). Those who did have an i.v. infusion felt better informed of its purpose in the passport group, although this difference was not significant (8.7± 1.5 vs 5.8±4.4; *P*=0.243)

Participants in the passport group were more aware of the inpatient diabetes team (76% vs 40%; *P*=0.0008), but there was no difference in visits made by the inpatient diabetes team to the two groups.

One issue identified by some participants during the interviews was that some ward nurses were not aware of the passport.

Experiences after discharge

Participants in the passport group felt better prepared to manage their diabetes care on discharge (9.2±1.6 vs 7.0±3.3; *P*=0.0015). The mean length of hospital stay in the passport group, although shorter, was not significantly different (4.4±2.6 days vs 6.5±7.1; *P*=0.059). There was no significant difference in how satisfied the participants were with their overall care (9 ±1.9 vs 8.4±2.2) or in the likelihood that they would recommend the hospital to family or friends (9±2.1 vs 8.7±1.7).

Content analysis indicated that the passport was well liked by 100% of the participants, met their needs and was easy to fill in. All interviewed said they would use it again. Users of the passport also reported they felt more prepared for surgery and that the passport answered all of their questions. Feedback also included that it may be of less use for expert patients who are very assertive and confident, but very useful for people with diabetes going into hospital for the first time, or those who have been recently diagnosed or who have poor control of their diabetes.

Discussion

The perioperative passport was found to be effective in both informing and involving people undergoing elective surgery about their diabetes care throughout the perioperative period in comparison with existing pathways. Those receiving the passport reported being significantly better informed pre-operatively of the importance of having good diabetes control before surgery. People who have good diabetes control before surgery are less likely to develop postoperative complications, so it seems imperative that this is communicated clearly to patients early on in the pathway. This is of even more importance when we take into account that such information is not always communicated fully during the general practitioner referral process.

There was a vast difference between the groups in those who reported having received information about their diabetes perioperative care. This is not to say that those in the non-passport group did not receive any information; indeed, the perioperative information sheets they had been given were produced by the diabetes team, but the fact that the majority could not recall receiving such information would suggest that this format is not effective. Furthermore, when comparing those who did recall receiving prior information, participants with the passport found the information more helpful as it included essential information on medication adjustment and eating and drinking before surgery. Without such information patients are at risk of adverse events, cancellation and delayed procedures.

When in hospital the results seem to suggest that participants in the passport group had a better understanding of their diabetes management. Those participants who had an i.v. infusion in the passport group rated the understanding of the purpose behind it as higher, although this difference did not reach significance. The awareness of the inpatient team was significantly higher in the passport group, although this did not seem to have an influence on the frequency of visits

The results also indicate that the passport can be helpful in establishing a more collaborative approach in perioperative diabetes management, with patients feeling more involved in their diabetes care, less anxious whilst in hospital and better prepared to manage their diabetes on discharge. The results are noteworthy when coupled with the knowledge that when people are involved in their own healthcare the decisions made are often better, health outcomes improve, and resources are allocated more efficiently [9].

Although we did not set out to measure direct health outcomes, it was noticeable that the length of stay was shorter in the passport cohort, albeit not significantly. Larger numbers may be able to determine whether the passport can also have an effect on important outcomes such as cancellation rates, length of stay, readmissions and diabetes-related harms.

Strengths of the present study include the integration of the intervention into routine clinical care. The passport did not require staff to make big changes to routine care pathways, but instead empowered the patient to take back some control of their perioperative diabetes care. Further strengths include the recruitment from multiple diverse surgical disciplines and the method of randomization of participants will have helped to reduce selection and allocation bias.

It could be argued that one of the limitations of the study is the lack of validation of the questionnaire; however, as we were reporting results by each item and not by calculating the questionnaire total, and the same questions were used for both groups, this should not have an effect on the validity of the study. A further limitation is that the results may have been influenced by hospital staff's enthusiasm with regard to the intervention tool rather than the use of the passport *per se*. We tried to minimize this by posting out the passport direct from the diabetes centre so that staff contact with the passport on admission was initiated by the patient. In fact we have evidence from the interview data that staff enthusiasm was even lacking at times as it was identified that some ward staff did not always engage with the passport. We believe this lack of engagement is largely attributable to not being able to introduce the passport to all ward staff because of shift patterns and agency staff who may have therefore not been aware of its content or purpose.

Loss to follow-up was slightly higher in the usual care group and this, along with the difference in group size, may have introduced bias. The groups became unbalanced because more patients in the usual care group did not proceed to surgery. There was a necessity for randomization to take place before exclusion because the passport needed to be sent out as soon as patients were listed for surgery, but it was not known at that point who would and would not go on to have surgery after listing.

In summary, the perioperative passport achieved its aims of helping people with diabetes undergoing elective surgery feel better informed, better communicated with, more involved, less anxious and more empowered in their diabetes care throughout the perioperative process. Crucially the passport was well liked by participants and deemed easy to use, important factors in patients' engagement with the passport. We plan to roll out the passport within other surgical departments at Ipswich Hospital to further enhance the diabetes perioperative pathway and to conduct a larger study to measure clinical outcomes and evaluate the cost effectiveness of the passport. We believe that the passport has the potential to be widely adopted by other NHS Trusts wishing to enhance their perioperative pathway for people with diabetes.

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Competing interests

None declared.

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Supporting information

Additional Supporting Information may be found in the online version of this article:

Appendix S1.

Appendix S2.

FIGURE 1 Colour-coded pages of the perioperative passport.

FIGURE 1

Box 1-Colour coded pages of the passport

Referral:

- Usual diabetes care,
- Normal medication regime
- Injection sites
- History of hypoglycaemia
- Other medical history
- Dietary patterns

Preoperative Care:

- Type of diabetes
- HbA1c
- BMI and BP reading
- Fasting advice
- Medication advice
- Referrals

Hospital Admission:

- What to bring into hospital
- Diabetes self-care
- Preventing hypoglycaemia
- IV insulin infusions
- Managing your continuous subcutaneous insulin pump in hospital
- Foot care
- The Diabetes Inpatient Team

Discharge:

- Diabetes discharge checklist
- Copy of discharge summary

Yellow= patients fill out, green= health professionals fill out, Blue=information pages