

Nurse prescribing in diabetes care: a case study

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ARTICLE POINTS

1 There are currently two prescribing options available to nurses: independent and supplementary prescribing.

2 Independent prescribing enables nurses to prescribe from either the district nurses and health visitors formulary or the extended nurse prescribers formulary.

3 Treatments included in the extended formulary focus on minor injuries, minor illness, health promotion and palliative care.

4 Supplementary prescribing allows clinical management of an individual patient within a care plan agreed by an independent prescriber, a supplementary prescriber and the patient.

5 The introduction of supplementary prescribing represents an important landmark for nurses working in diabetes.

KEY WORDS

- Nurse prescribing
- Independent prescribing
- Supplementary prescribing
- Clinical management plan

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Introduction

In 1986, the Cumberlege Report (DHSS, 1986) highlighted the valuable skills of community nurses in selecting appropriate dressings and appliances and the time wasted waiting for general practitioners to sign such prescriptions. As a result it was recommended that suitably qualified community nurses should be able to prescribe from a limited formulary (DoH, 1989) and in 2001, this was extended to include other groups of nurses. There was also an acknowledgement that in other complex conditions such as chronic disease 'supplementary prescribing' within a clinical management plan, agreed by the patient, an independent prescriber (doctor or dentist) and a supplementary prescriber (nurse or pharmacist) would benefit patient care. In March this year, guidelines for the implementation for supplementary prescribing were published (DoH, 2003). This article describes the prescribing options currently available to nurses and evaluates the use of a clinical management plan (supplementary prescribing) in the care of a young patient with type 1 diabetes.

There are currently two prescribing options available to nurses: independent prescribing and supplementary prescribing (see *Figure 1*).

Independent prescribing

In this situation, the nurse prescriber is an independent practitioner who takes responsibility for the initial assessment, diagnosis, clinical management and prescribing for a patient under his or her care.

There are two types of independent nurse prescribers:

- District nurses and health visitors who are able to prescribe from a limited formulary of products focused on their own area of practice e.g. wound care. District nurses and health visitors were the first nurses to be trained for a prescribing role and prescribing is now an integral part of district nurse and health visitor training programmes.
- Extended formulary nurse prescribing enables first level registered nurses to prescribe treatments for a broader range of medical conditions: minor illness, minor injury, health promotion and palliative care. Such nurses are able to prescribe from an extended formulary, including all items listed in the district nurse and

health visitors formulary, all licensed pharmacy medicines, all medicines from the general sales list and around 140 prescription-only medicines including selected antibiotics and antifungals. Training involves attending a 25-day training programme (at level 3) and an additional 12 days learning in clinical practice.

Supplementary prescribing

Supplementary prescribing is the most recent addition to the prescribing options (DoH, 2003) and is defined as 'a voluntary relationship between an independent prescriber (doctor or dentist) and a supplementary prescriber to implement a patient-specific clinical management plan with the patient's agreement' (National Prescribing Centre, 2003). There are no restrictions on the clinical conditions that a supplementary prescriber may treat, and it is anticipated that it will be most useful in managing chronic conditions such as diabetes. Within this prescribing arrangement, the independent prescriber retains the responsibility for the initial clinical assessment and diagnosis and determines the scope of the clinical management plan. Training is based around that for extended prescribing with an

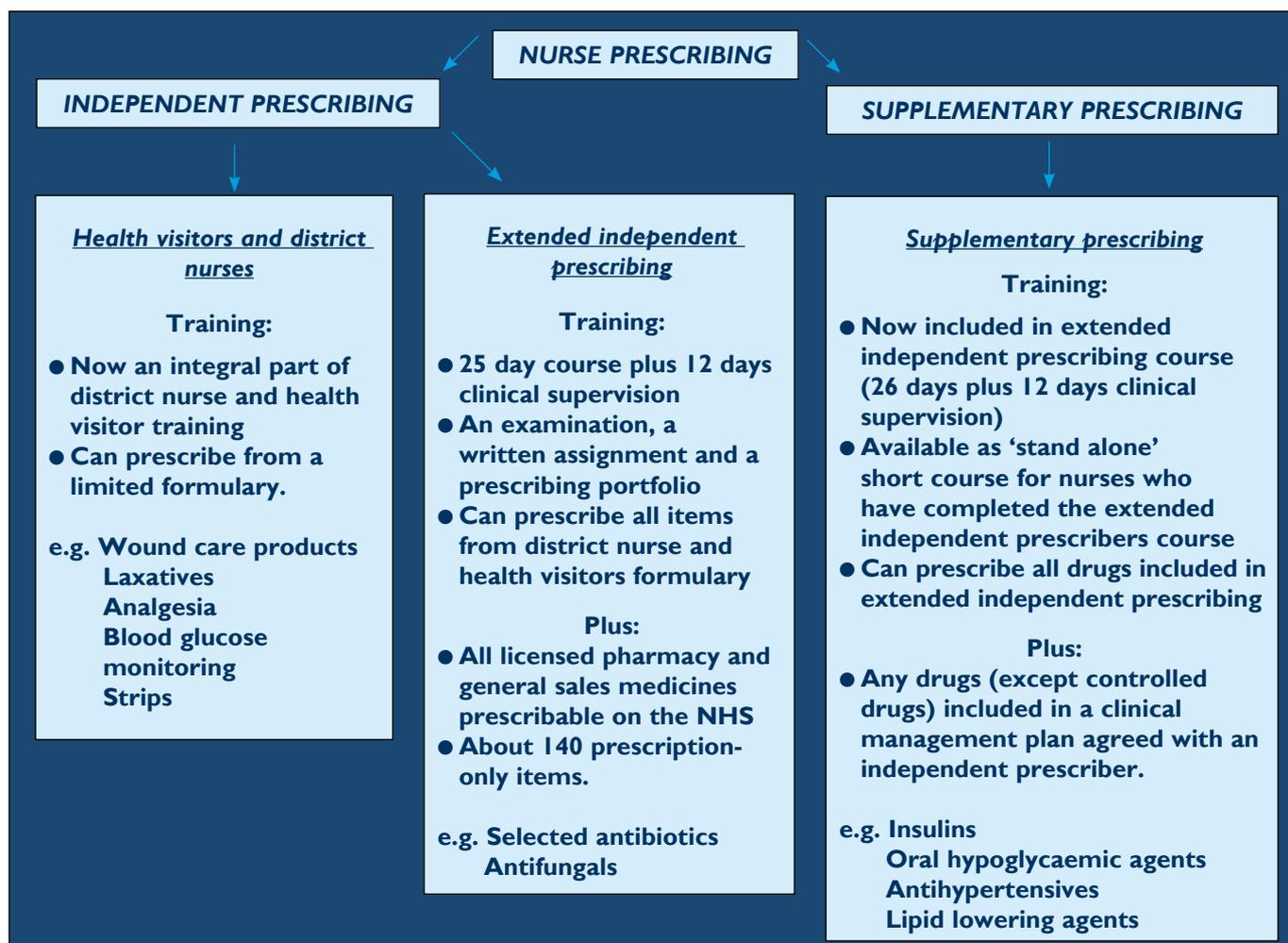


Figure 1. Current options in nurse prescribing

additional 1–2 days relating to the context and scope of supplementary prescribing. Nurses undertaking this training will also be able to prescribe from the nurse prescribers extended formulary.

Supplementary prescribing: a case study

Mr Smith attended the diabetes centre, Aintree Hospitals for an annual review earlier this year. At this clinic attendance, he was reviewed by a consultant diabetologist and found to have poor diabetes control (an HbA_{1c} of 9.9%), raised blood pressure (157/84 mmHg) and an elevated albumin/creatinine ratio indicating the possibility of early diabetic nephropathy. Mr Smith was referred to me for assessment of the above risk factors.

The consultation

Effective consultation requires two-way communication between the healthcare

professional and the patient, with an emphasis on listening and understanding the patient's perspective (Pendleton et al, 2003, Gask et al, 2002). Several consultation models have been described (Pendleton et al, 2003; Gask et al 2002; Neighbour, 1987) and in this case a 'three function' model was utilised (Cole and Bird, 2000). The model breaks the consultation down into three main areas:

- Building the relationship
- Collecting the data
- Agreeing the management plan.

This model was chosen for its simplicity and because it reflects current practice in the diabetes centre.

Building the relationship

Mr Smith, aged 30 years, had been attending the diabetes centre for over 10 years since type 1 diabetes was diagnosed. I had not seen him in recent years but I had met him on many occasions

PAGE POINTS

1 Partnership with the patients is a key element in the development of management plans.

2 In order to define the clinical problem, a history must be obtained which considers the physical, psychological and social aspects of well being.

3 The first line management of poor diabetes control in patients with established type 1 diabetes is lifestyle modification, and therefore a lifestyle assessment was indicated in this patient.

4 Adherence with treatment is a particular problem in chronic disease and in diabetes; non-adherence rates as high as 30% have been reported.

in the past. This previous contact formed the basis for the partnership which was to develop over the next few months. Partnership with the patient is a key element in the development of management plans and features heavily in both the supplementary prescribing implementation document (DoH, 2003) and the National Service Framework for Diabetes: Delivery Strategy (DoH, 2002). Important attributes of successful partnerships include power sharing and negotiation with the ultimate aim of empowering the patient to be the prime driver of his own healthcare needs (Gallant et al, 2002).

Collecting the data

To help define the clinical problem, it is essential to obtain a history considering physical, psychological and social aspects of well being. Mr Smith is married with two children and he is an office worker. He has had type 1 diabetes for 10 years and has attended the diabetes centre on a regular basis for follow-up care. His diabetes control has always been indifferent or poor (HbA_{1c} 8–11%). His urinary albumin: creatinine ratio was raised on two occasions at 4.2 and 8.8 mg/mmol this year (normal range <2.5 mg/mmol), suggesting early diabetic renal disease (NICE Guidelines, 2002).

In addition, his blood pressure was raised at his last clinic appointment. This year at eye screening, Mr Smith was found to have early background retinopathy. His current weight is 92 kg (BMI 31) and his blood lipid profile is: total cholesterol 4.4 mmol/l, HDL 1.3 mmol/l, LDL 2.8 mmol/l, triglycerides 1.6 mmol/l. He is a lifelong non-smoker and drinks 25 units of alcohol per week. He has no other significant medical history.

Mr Smith's current medication is: 8 units of soluble insulin pre-breakfast, 6 units pre-lunch and 12 units pre-tea and 24 units of isophane insulin at bedtime. Mr Smith has a family history of cardiovascular disease; his father died prematurely (aged 42 years) from a myocardial infarction having had a stroke in his late 30's. Two uncles had also died at an early age from cardiovascular causes.

Assessment

As part of the assessment, Mr Smith's blood pressure was measured using the British Hypertension Society's guidelines (Ramsey et al, 1999). A mean of three recordings, in the sitting position, revealed a blood pressure of 152/82 mmHg. This falls outside the target level for blood pressure (<130/80 mmHg) in patients with type 1 diabetes and microalbuminuria (European Diabetes Policy Group, 1999).

Mr Smith's glycaemic control is poor with a HbA_{1c} of 9.9% (target levels <7.5%, European Diabetes Policy Group 1999). The first line management of poor diabetes control in patients with established type 1 diabetes is lifestyle modification, and therefore a lifestyle assessment was indicated. Mr Smith reported that his diet was high in saturated fat (diary products and chips), his meals were regular and included carbohydrate foods. He is physically inactive and does not achieve the minimum level of activity recommended by Diabetes UK (2003; 30 minutes of physical exercise on a least 5 days per week).

His injection technique is excellent, he rotates his insulin sites on a regular basis and there is no evidence of lipohypertrophy. Poor injection technique and lipohypertrophy is associated with poor diabetes control (Kordonouri et al 2002; Teft, 2002). Mr Smith reported forgetting his insulin injections only occasionally and then making sensible corrections with the next insulin injection.

Adherence with treatment is a particular problem in chronic disease and in diabetes; non-adherence rates as high as 30% have been reported (Morris et al, 1997; Donnan et al, 2002). I was unable to assess Mr Smith's blood glucose monitoring technique because he did not have his machine with him. Ensuring an accurate technique and performing regular quality control of the machine are important when teaching patients to alter insulin dose. Mr Smith felt generally well and did not report any osmotic symptoms. He reported occasional episodes of nocturnal hypoglycaemia. His home blood glucose monitoring records, although sporadic, revealed fasting blood glucose levels of 10–12 mmol/l, with levels rising to over 15 mmol/l during the day.

The following issues were identified:

- Poor glycaemic control
- Hypertension
- Probable diabetic nephropathy and background retinopathy.
- Obesity

Mr Smith's hypertension and microalbuminuria had not been previously diagnosed, therefore I approached my clinical supervisor/independent prescriber to confirm the diagnosis and agree a clinical management plan (see *Figure 2*). In line with the DoH guidelines for supplementary prescribing (DoH 2003), the independent prescriber is responsible for diagnosis and setting the parameters of the clinical management plan, however, the supplementary prescriber remains accountable for their own actions (Nursing and Midwifery Council, 2002).

Gaining agreement and engaging the patient in the process are important elements of supplementary prescribing. Mr Smith had several risk factors to address and he was happy to work within a management plan.

Agreeing a management plan

We started by discussing the risk factor issues and how they could impact on Mr Smith's future health and well being. His main concern was his family history of cardiovascular disease and the measures he could take to reduce his risk. He was a teenager when his father died and had great concerns for his own children. Mr Smith acknowledged the potential for lifestyle changes. He takes very little exercise and his alcohol intake, although within recommended safe limits, is greater than he would like.

We discussed strategies to reduce weight, such as reducing fat and alcohol intake and increasing physical activity. Mr Smith felt that he has difficulty finding time to take formal exercise and we discussed building some activity into his everyday routine and acknowledged that this would be a gradual process. In agreement with the patient a referral was made to the dietitian. We also discussed the possibility of pharmacological treatments such as orlistat and sibutramine.

Following a discussion about blood glucose levels and insulin doses, Mr Smith

opted not to increase his insulin dose but concentrate on lifestyle changes. However, as his blood sugars did rise during the day and he was having nocturnal hypoglycaemia 2–3 times weekly, it was agreed (on the patient's suggestion) to change his isophane insulin to twice daily: 12 units with breakfast and 12 units at bedtime. We discussed the future possibility of changing the basal insulin to glargine (NICE Guidelines, 2002a) and this was built into the clinical management plan.

During discussion with my clinical supervisor we decided that Mr Smith should have a 24 h urine collection. Microalbuminuria was confirmed and he was started on an angiotensin-converting enzyme (ACE) inhibitor. The basis for this decision was:

- ACE inhibitors have been shown to be renoprotective in type I diabetes, delaying the progression from microalbuminuria to overt nephropathy in many patients (ACE Inhibitors Trialist Group 2001; Lovell, 2000; EUCLID Study Group, 1997).
- Mr Smith's blood pressure is outside the target range and the antihypertensive of choice would be an ACE inhibitor due to its additional renal protective effects (Ramsay et al, 1999; Bakris et al, 2000; NICE Guidelines, 2002; European Diabetes Policy Group, 1999).
- There are no contraindications to ACE inhibitors in this patient.

Lisinopril 5 mg was prescribed. This drug is sometimes associated with a dry cough and the patient was informed of this. ACE inhibitors can cause deterioration of renal function and therefore blood urea, creatinine and electrolytes should be checked 7–10 days after starting this class of drug and then after every dose increase. Lisinopril was chosen as it is included in the hospital formulary, we have had considerable experience with it, it is licensed for diabetic nephropathy (British National Formulary, 2003) and is available in a non-proprietary form. The cost for 5 mg daily would be £7.86 per month. As drugs expenditure is increasing across the health economy, cost effectiveness must always be considered

Most patients with diabetes

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CLINICAL MANAGEMENT PLAN				
Name of patient: John Smith		Patient medication sensitivities/allergies: Nil		
Patient identification e.g. ID number, date of birth: 0000001				
Independent prescriber(s): Dr Ian MacFarlane		Supplementary prescriber(s): Maureen Wallymahmed		
Condition(s) to be treated: Type I diabetes Hypertension Microalbuminuria		Aim of treatment: 1. To reduce nocturnal hypoglycaemia 2. Reduce the risk of complications 3. Target HbA _{1c} < 7.5% 4. Target BP < 130/80 mmHg		
Treatment plan: <ul style="list-style-type: none"> ● Lifestyle assessment and modifications: strategies to reduce weight and alcohol intake and increase physical exercise ● Referral to dietitian ● Review insulin regimen ● Commence antihypertensive therapy and add additional agents as indicated ● Consider concomitant medication, interactions and side-effects. 				
Indication: Type I diabetes	Preparation: Soluble insulin Isophane insulin Glargine (if nocturnal hypoglycaemia persists)	Dose schedule: Dose increases / decreases of up to 20% of total dose.	Referral back to the independent prescriber: Insulin dose exceeds 1 unit/kg	
Hypertension	Lisinopril Amlodipine Atenolol Bendrofluazide	2.5–20 mg 5–10 mg 25–50 mg 2.5 mg	If serum potassium rises above normal range/side-effects If side-effects If BP not in target range on three agents	
Review and monitoring				
Supplementary prescriber Monthly until BP on target		Supplementary and independent prescriber 6 months or as indicated		
Process for reporting adverse drug reactions: Yellow card system, discussion with independent prescriber, record in case notes, inform pharmacy				
Documentation and record keeping. All lifestyle modifications to be agreed with the patient and documented in patient case notes. Changes to medication to be documented in the case notes and GP to be informed by letter. Clinical management plan to be kept in the patient's notes.				
Guidelines supporting supplementary prescriber's treatment plan: NICE Guidelines (2002) Management of type 2 diabetes. Renal disease – prevention and early management NICE Guidelines (2002) Insulin glargine European Diabetes Policy Group (1999) Guidelines for the management of type I diabetes University Hospital Aintree – Flowchart for the management of hypertension for type I diabetes				
Name and agreement of independent prescriber	Date	Name and agreement of supplementary prescriber	Date	Date agreed with patient/carer
Dr Ian MacFarlane		Maureen Wallymahmed		June 2003

Figure 2. Clinical management plan

Essential elements of the clinical management plan (CMP)

The CMP must contain:

- The name of the individual patient to whom it relates
- The conditions which may be treated by the supplementary prescriber
- The date from which it takes effect and when it is to be reviewed by the independent prescriber
- A description of the medicines or appliances which may be prescribed under the plan
- Any restrictions or limitations to the strength or dose of any medication included in the plan
- Details of known sensitivities or adverse reactions to particular medicines or appliances
- The arrangements for reporting adverse events related to medicines or appliances included in the plan
- The circumstances in which the supplementary prescriber should refer back to the independent prescriber.

Figure 3. Essential elements of the clinical management plan.

and hypertension require several antihypertensive agents (Hansson et al 1998, UKPDS 1998) and this was built into the clinical management plan.

Mr Smith left the diabetes centre with many issues to consider. It is sometimes necessary to prioritise the problems and deal with one at a time. However, this patient's problems were all inter-related and he was asking many relevant questions. He appeared happy with the management plan and we had set realistic goals particularly relating to increased activity. Whilst I was unable to reassure Mr. Smith about future outcomes I was able to provide support and discuss the treatment options available to reduce the risks. The ultimate aim is for the patient to be able to make informed decisions about their overall management.

Follow-up appointments

Mr Smith's progress was reviewed on a monthly basis. To achieve target blood

pressure levels his dose of lisinopril was gradually titrated to 15 mg and amlodipine was added to this treatment plan and titrated up to 10 mg. Combination therapy is often needed to achieve target blood pressure levels and drugs from a different class often have an additive effect (Ramsay et al, 1999). Mr Smith gradually increased his insulin dose to soluble insulin 12 units pre-breakfast, 12 units pre-lunch and 12 units pre-tea and isophane insulin 16 units pre-breakfast and 16 units pre-tea. His diabetes control, although still not within the target range, improved to 8.8% and his weight remained steady. He did not report any troublesome hypoglycaemia. Improvements in diabetes control have been shown to reduce the risk of microvascular complications in patients with type 1 diabetes (DCCT, 1993). In addition, for primary prevention of cardiovascular disease, aspirin 75 mg daily was prescribed when blood pressure was below 150/90 mmHg.

Evaluation of clinical management plan

The clinical management plan is a legal requirement without which supplementary prescribing cannot take place. It should be drawn up and agreed by the patient, the independent prescriber and the supplementary prescriber and has the benefit of enabling the supplementary prescriber to manage the treatment of individual patients (National Prescribing Centre 2003). Information that must be included in the clinical management plan is shown in *Figure 3*.

This case study demonstrates how a combination of lifestyle modifications and pharmacological interventions can have beneficial effects on blood pressure and glycaemic control. Working within a clinical management plan has encouraged partnership and patient participation aiding the delivery of individualised structured care.

Views of the independent prescriber

In the past few years, many health visitors and district nurses have become independent prescribers and are able to prescribe from a limited formulary e.g.

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wound dressings and appliances, devices and blood glucose monitoring equipment. Clearly this has been of considerable benefit to patients. The nurse with intimate knowledge of the patient and familiarity with the products is usually best placed to prescribe appropriately. The introduction of extended independent and supplementary nurse prescribing allows specialist nurses (without a community qualification) to also be involved in the prescribing process. After a prolonged training course (25–26 days) plus 12 days supervised practice, specialist nurses are able to prescribe from an independent formulary or within a clinical management plan. It is vital, however, that supplementary prescribing occurs in partnership with the patient and the independent prescriber (in diabetes care, usually a consultant diabetologist or general practitioner) and with an agreed clinical management plan. The clinical management plan is of course a set of guidelines which no doubt would have been constructed from the current views of ‘experts’ – from evidence filtered through opinion. Guidelines are, however, not the law and are to be applied according to circumstances e.g. age, motivation and adherence of the patient (Hampton, 2003).

The care of the patient with diabetes must be a partnership between the new nurse prescriber and the patient’s physician. A constant dialogue should occur and wise specialist/practice nurses will know when the management plan is not appropriate and when to seek further advice.

Conclusion

The introduction of supplementary prescribing represents an important landmark for nurses working in diabetes. Clinical management plans can be utilised to cover a variety of different treatment areas including glycaemic control, cardiovascular risk factor management and the management of complications such as painful neuropathy. In addition extended prescribing enables nurses to prescribe not only devices and needles but also to prescribe, for example, antifungals to patients suffering symptoms of poor glycaemic control.

The NHS plan (DoH, 2000) highlights the

need for service modernisation and defines new roles for nurses and prescribing is one of these roles. New roles will inevitably lead to greater demands and increased accountability and responsibility. Nurses must ensure that they have the skills to carry out these new roles and must continue to work within the code of professional conduct (Nursing and Midwifery Council, 2002). ■

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