

# A Sweet Novel Pharmacist Role – Keeping Sugars Under Control

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## BACKGROUND

Dysglycaemia events in hospital are common and associated with poor patient outcomes. Poorly controlled blood-glucose levels (BGLs), whether or not the reason for admission, may increase risks of hospital-acquired complications and prolong the inpatient stay.

A Melbourne metropolitan hospital study found that 36% (n=351) of inpatients had diabetes and that 72.5% (n=126) of these inpatients were recorded as having dysglycaemia secondary to multiple factors<sup>1</sup>. Trials conducted in similar hospital settings have demonstrated proactive care by an Inpatient Diabetes Service (IDS) decreased hyperglycaemia and hospital-acquired infections.<sup>2</sup>

## OBJECTIVES

To provide optimal diabetes management for inpatients and support safe glycaemia through the implementation of a proactive IDS model.

## ACTION

An innovative proactive IDS was formed including a pharmacist in the team structure, alongside endocrinology consultants, registrars, residents, nurse practitioners and diabetes educators. At the time of formation, Northern was the only network in Australia which has incorporated a pharmacist as part of an IDS. This early intervention service identifies patients experiencing dysglycaemia by analysing hospital-wide blood-glucose levels utilising networked glucose meters (Statstrip: Nova Biomedical & Australasian Medical and Scientific Ltd) and BioConnect® software, rather than reactively responding to clinician referrals.

Patients are then reviewed to identify barriers to glycaemic control both as an inpatient and in the home setting prior to admission. A management plan is created, which aims to prevent future dysglycaemia whilst in hospital and on discharge. Patients are regularly monitored throughout their admission until the point of discharge, where a discharge plan is established in collaboration with the patient and home treating team. The appropriate referrals and follow-up appointments can then be planned to ensure continued outpatient glycaemic control.

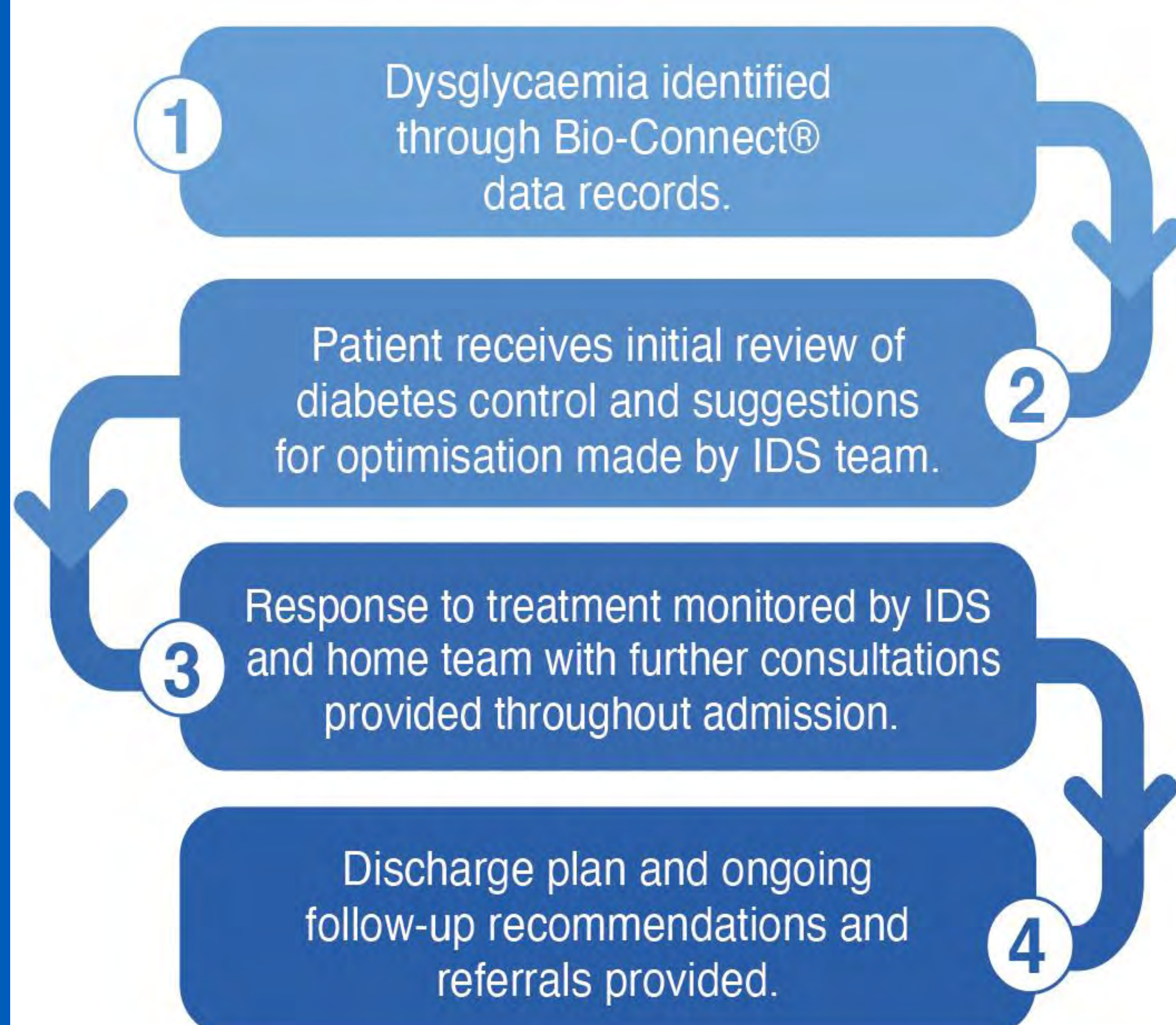


Figure 1. Processes undertaken by the inpatient diabetes service

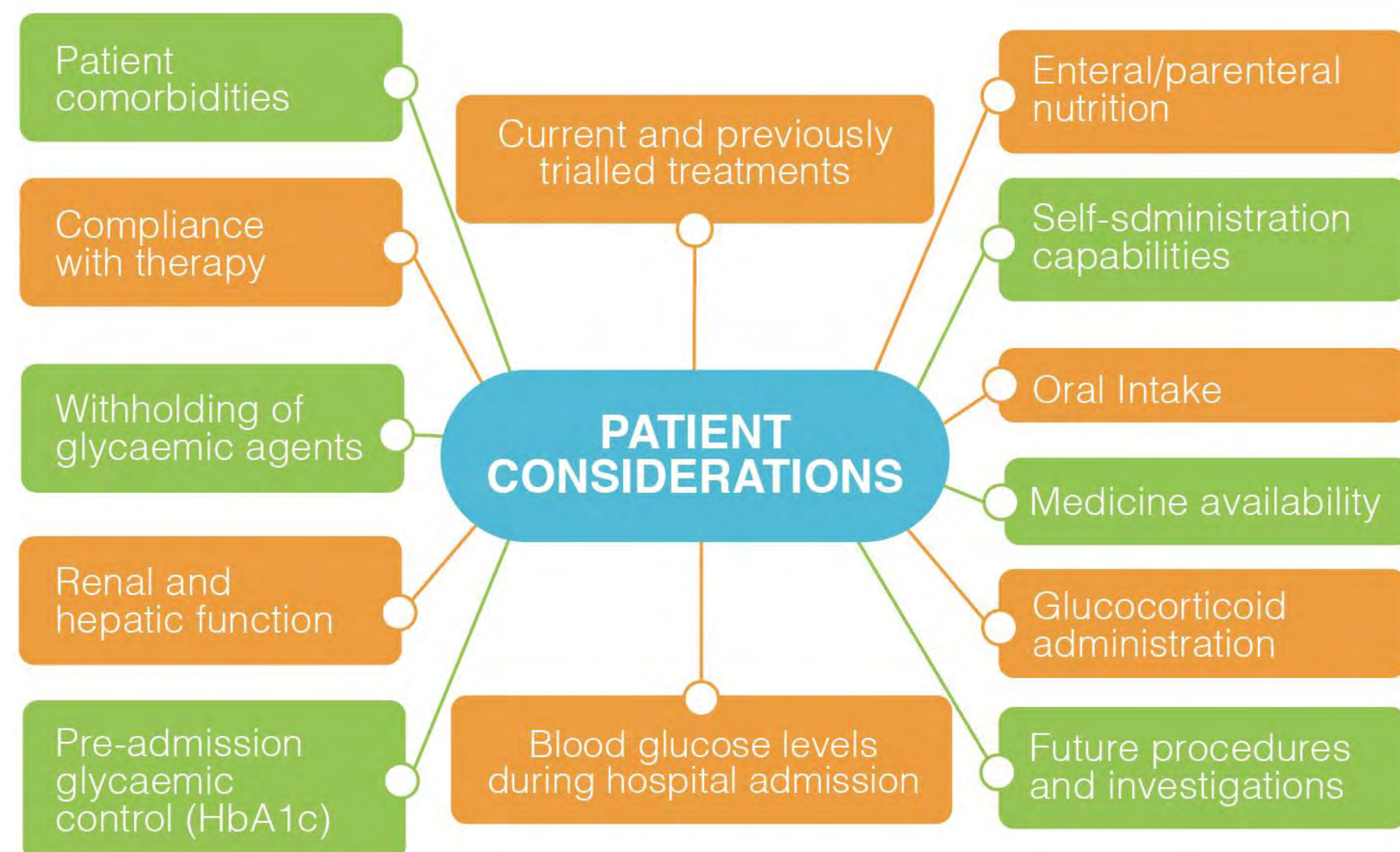


Figure 2. Examples of individual patient factors which are considered when reviewing and developing a glycaemic management plan

## EVALUATION

After establishment of the IDS, patient-days with mean blood glucose levels either >15 mmol/L or <3mmol/L decreased by 30% (n=1343)<sup>1</sup>

## DISCUSSION

The addition of a pharmacist to consultancy services positively impacts patient outcomes by allowing on-the-spot collaboration with specialised doctors and nurses. The pharmacist brings a strong understanding of pharmacokinetic and pharmacodynamic properties of insulin and other diabetes therapies, allowing them to assist with dosing adjustments in renal/liver impairment and obesity. Pharmacists identify patient-specific factors which guide therapeutic choices as well as barriers which may inhibit ongoing treatment upon discharge. Combining these considerations with those of other disciplines, the pharmacist creates individualised plans to control glycaemia both within hospital and on discharge.

Common recommendations made by the service include, but were not limited to:

- Adjustment to diabetic therapy for planned periods of fasting due to procedures or investigations.
- Conversion of an insulin regimen to basal-bolus regimen whilst experiencing variable oral intake.
- Dose adjust and/or rotation of diabetic medicines due to renal impairment.
- Short-term implementation of insulin therapy during courses of glucocorticoids
- Commencement of oral diabetic agents to benefit concurrent co-morbidities.

Post implementation of the IDS, 37% (n=139) of patients with diabetes were prescribed insulin as part of their treatment regimen, compared with 31% (n=126) prior to program implementation. Regular review by the IDS allowed for increased supervision and more attentive use of this high risk medication, as the specialised team was able to provide regular feedback and recommendations of dosage adjustments, with the aim to reduce dysglycaemia due to incorrect insulin orders. Regular IDS reviews allowed for proper correctional and/or supplemental insulin to be prescribed, meaning for those patients who do experience hyperglycaemia, they can be treated appropriately.

## CONCLUSION

The pharmacist plays an essential role in the IDS team promoting the safe and judicious use of glycaemic control therapies. This novel concept should be considered to improve and support the safe use of diabetes medicines, leading to improved patient outcomes.

## REFERENCES

1. Van K. Proactive Inpatient Diabetes Service decreases severe hyperglycaemia and hypoglycaemia: repeated cross-sectional study [abstract]. Proceedings of the Australasian Diabetes Congress; 2021 Aug 11-13; Virtual Event. ADS Clinical Orals: Acute and Chronic Complications.
2. Kyi, M., Colman, P., Wraight, P., Reid, J., Gorelik, A., Galligan, A., et al. Early Intervention for Diabetes in Medical and Surgical Inpatients Decreases Hyperglycaemia and Hospital-Acquired Infections: A Cluster Randomized Trial. *Diabetes Care* 2019; 42: 832-840.