

Background:

Hypoglycemia is a common complication in hospitalized patients with diabetes (DM). It can lead to adverse clinical outcomes like increased length of stay and mortality.

Aim:

This project aims to achieve a 30% reduction in the percentage of hypoglycemia amongst inpatients with DM.

Method:

This project was piloted in Surgical and Orthopedic patients in Wards 85 and 86. An audit was conducted to collect the baseline prevalence of inpatient hypoglycemia amongst inpatients with DM in March to April 2015. From this audit, common causes of hypoglycemia identified were renal impairment, change in nutritional status and mismatch of timing between insulin administration and meals.

Several initiatives, targeting these common causes, were introduced.

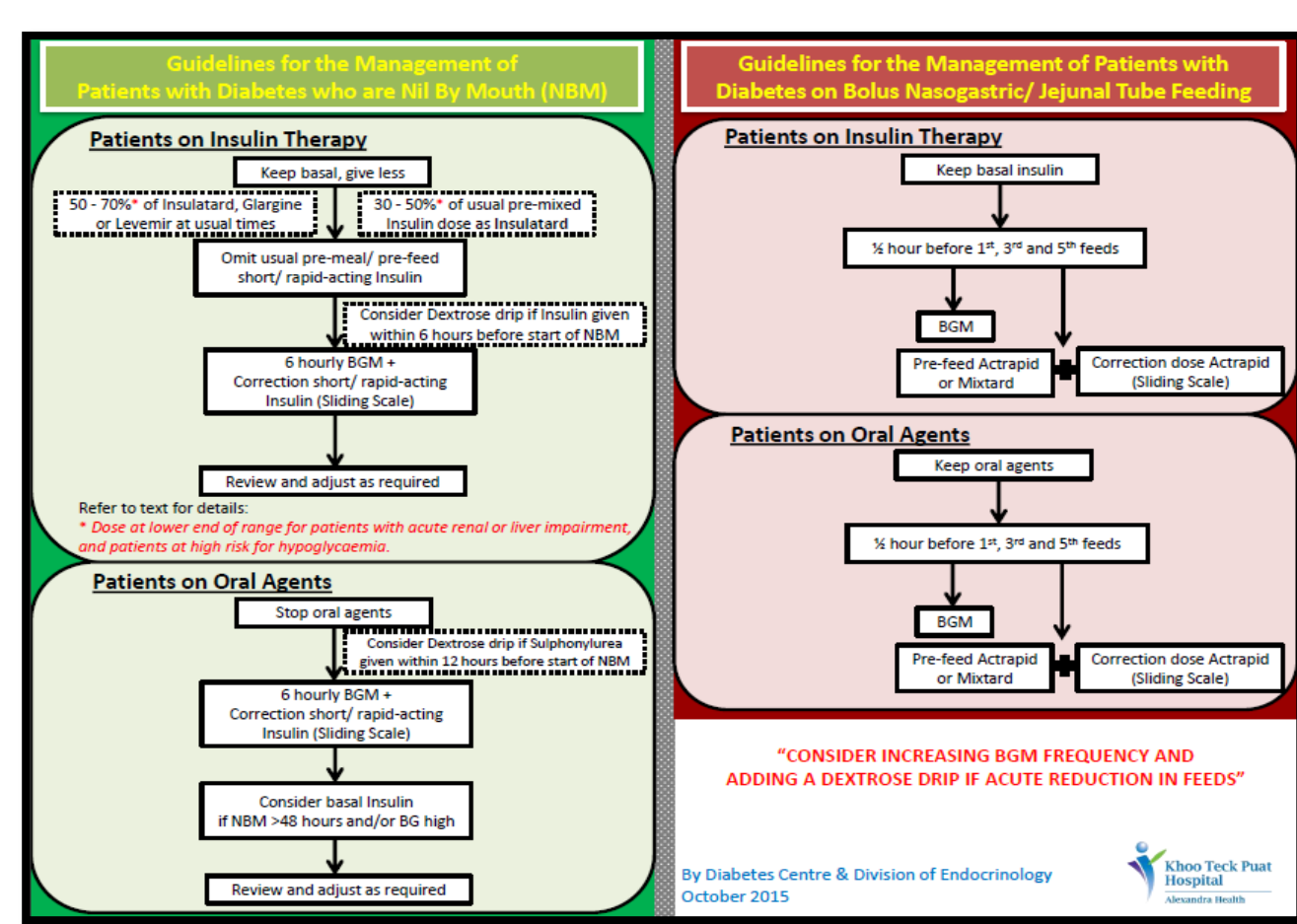


Figure 1: DM Protocols

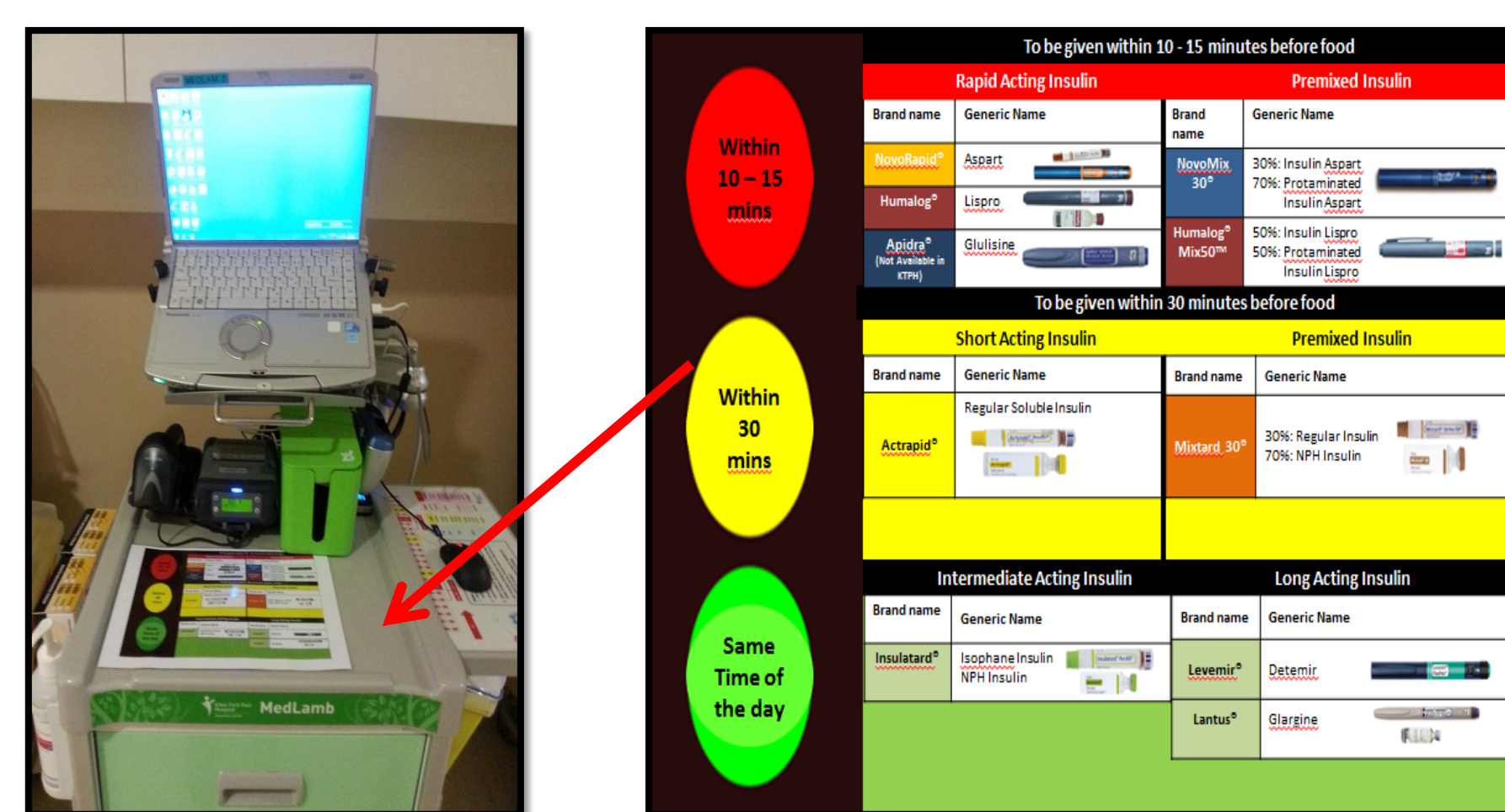


Figure 2: Insulin "Traffic Light System" on medication trolley

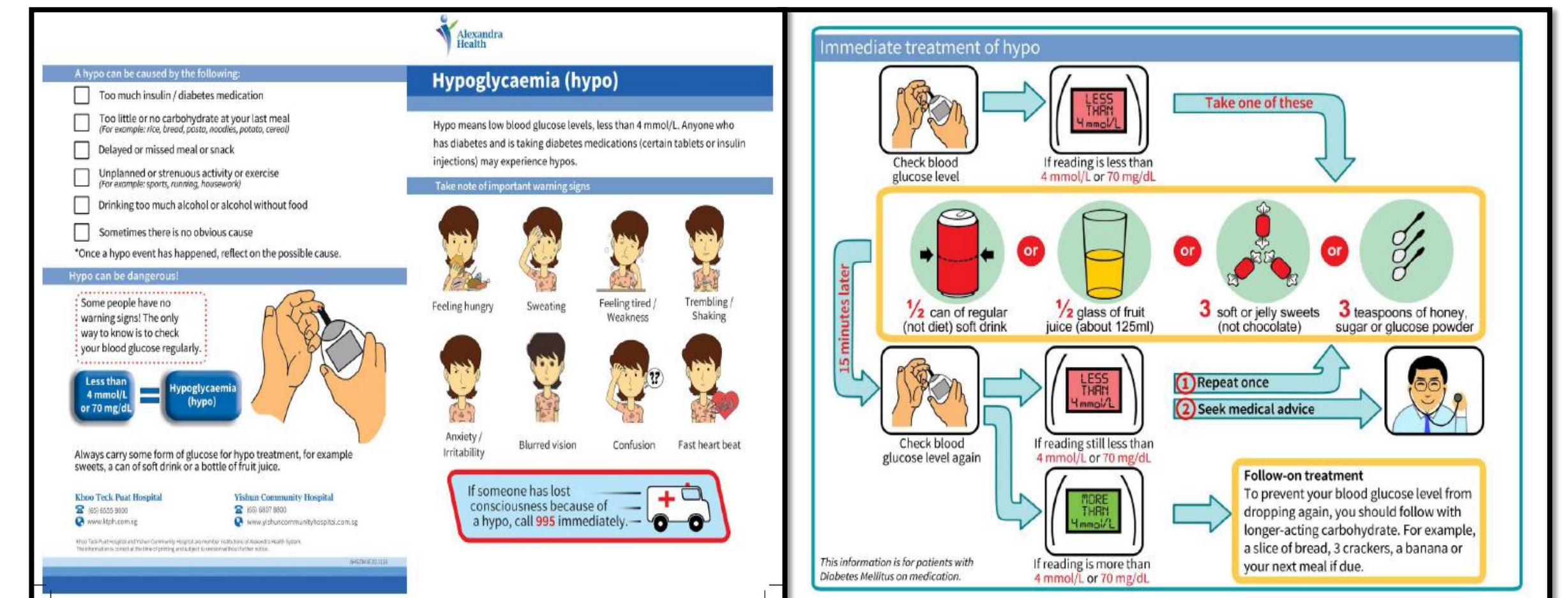


Figure 3: Hypoglycemia Patient Education Pamphlet

Inpatient DM Protocols, accessible on the Intranet were revised to address patients with renal impairment (Figure 1). These protocols were placed in doctors' work rooms for easy access. An E-learning module and quiz on Inpatient DM management focusing on case management of DM and use of DM protocols for house officers and medical officers were introduced. This enabled a more efficient means of disseminating knowledge and information to them. An insulin "Traffic Light System" was designed and pasted on medication serving trolleys, to serve as a reminder to nursing staff to reduce the mismatch of timing between diet and insulin (Figure 2). Collaboration with Food Services enabled labelling of food trays for patients on rapid-acting insulin to be arranged on the top of the food trolley in order to prioritise delivery of meals to these patients. Patient education leaflets on hypoglycaemia was revised (Figure 3). It included a section on reflection on the causes of hypoglycaemia. Audits on compliance to the above process measures were performed. Outcome measures are the percentage of hypoglycemia in DM patients receiving insulin or oral hypoglycemic agents.

Results:

After the introduction of SHINe initiatives, there was a 23.1% reduction in hypoglycaemia (CBG <4 mmol/l) events from baseline 22.5% (N=43/191) to 17.3% (N=241/1392), p=0.150; and a significant 57.3% reduction in severe hypoglycaemia events (CBG <3 mmol/l) from 4.7% (N=9/191) to 2.0% (N=28/1392), p=0.025.

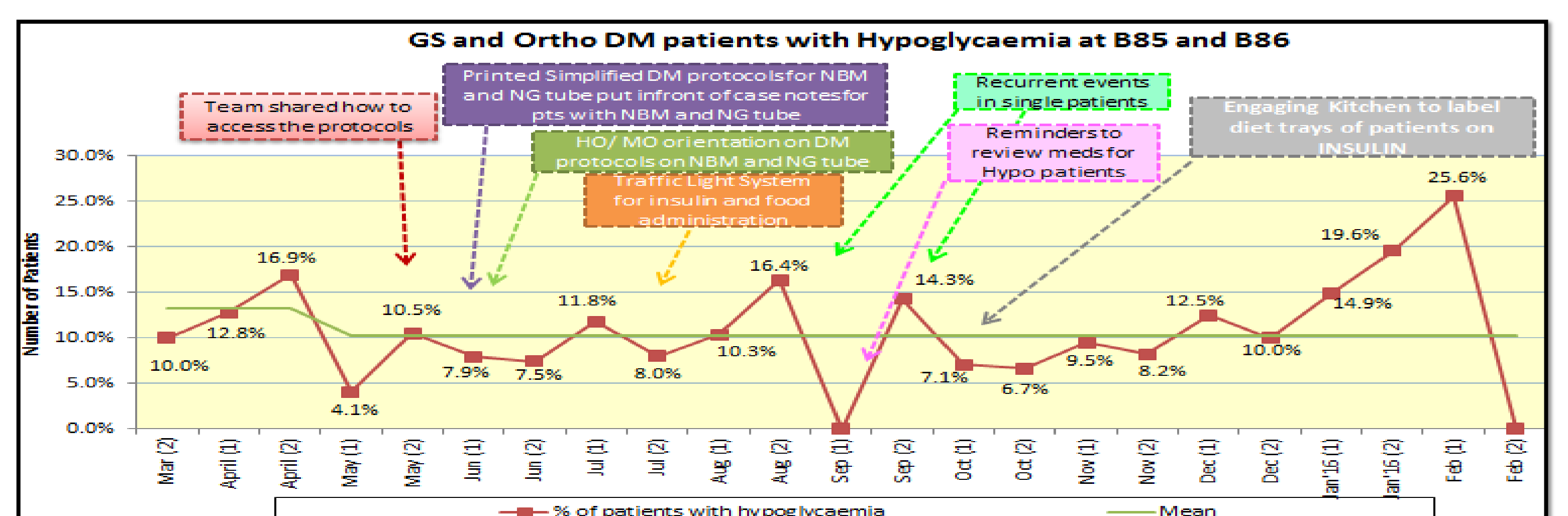


Figure 4: Percentage of DM patients with hypoglycemia in General Surgery and Orthopedic wards

Conclusion:

Significant reductions in hypoglycemia amongst inpatients with DM were achieved through a multidisciplinary team approach along with implementation of new initiatives. Many more initiatives and further inter-disciplinary collaboration are needed to improve the quality of care to inpatients with DM.