**BACKGROUND**

1. Malnutrition occurs in 20%–50% of hospital inpatients and adversely affects patients’ outcomes.1,2
2. Nutrition screening identifies patients at risk of malnutrition to facilitate early nutritional intervention.3
3. Early nutritional intervention is crucial in reducing readmission, length of hospital stay, mortality and healthcare cost.4
4. Overseas studies have reported incompleteness and error rates of 30-90% for a range of commonly-used screening tools.5
5. In 2008 and 2009, audits involving a total of 1,133 patients in NUH revealed nutrition screening error rates of 33% and 31% respectively, while turnaround time (TAT) from screening to referral to dietetics took up to 7.5 days, with 10% not referred at all.

**AIMS**

The objectives of the project were to achieve reductions in:

1. Nutrition screening error rates from 33% to 15% (better than world benchmark), and
2. Turnaround time (TAT) for referral to dietetics from an average of 4 days to 1 day.

**METHODOLGY**

The Plan Do Check Act (PDCA) cycle was applied in this project. Performance gaps were identified and addressed through a combination of these ‘Lean’ tools:

1. Root cause analysis (RCA) – Figure 1
2. Value stream mapping (VSM) – Figure 2a

**RESULTS**

1. After the direct online referral system was established for nurses, the maximum TAT time from nutrition screening to referral to dietetics for nutritional intervention was reduced by 92% from 7.5 days to 14 hours, and mean TAT improved significantly from 4.3 ± 1.8 days to 0.3 ± 0.4 days (p < 0.001), with a reduction in drop-referral rate from 10% to 3%. The post-implementation VSM is presented in Figure 2b.

2. Nutrition screening error rates were reduced from 33% (2008) to 15% (2011) and subsequently to 7% and 5% in 2012 and 2013 (Figure 3).

3. The proportion of blank or missing forms decreased from 5% and 8% in 2008 and 2009 respectively, to 1% in 2010 - with the 1% rate sustained for the last 3 years (Figure 3).

**CONCLUSION & FOLLOW-UP**

Quality improvement initiatives were effective in reducing the incompletion and error rates of nutrition screening and led to sustainable improvements in the referral process of patients at nutritional risk. The hospital continues to conduct annual audits to track screening errors. To sustain the results, the new screening protocol, closed-loop feedback and ongoing orientation and training has been incorporated into hospital policy.

**REFERENCES**
