King's College Hospital NHS
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Validation of the Nutrition Impact Symptoms (NIS) score for malnutrition risk screening in renal inpatients

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Introduction

• Patients admitted to nephrology wards are at high risk of malnutrition.
• General nutrition screening tools are not sensitive enough at predicting malnutrition risk in patients with kidney disease
• The Nutrition Impact Symptoms (NIS) score (Table 1) – a component of the Patient Generated Subjective Global Assessment (PG-SGA) – is an additive score of symptoms impacting upon nutrition status

Score = 1	Score = 2	Score = 3
Nausea	Mouth sores	No appetite, just did not feel like eating
Constipation	Problems swallowing	Vomiting
Things taste funny or have no taste		Diarrhoea
Dry mouth		
Smells bother me		
Feel full quickly		
Fatigue		
Other (e.g. depression, finances, dental issues)		

Aim

• To assess the validity and reliability of the Nutrition Impact Symptoms (NIS) score as a nutritional screening tool for hospital patients admitted to nephrology wards.

Methods

• NIS score and nutritional status (SGA) were measured prospectively on 2 renal wards at 3 time points during 2013-2015
• Concurrent validity of NIS score was assessed again gold standard method SGA using ROC curve analysis
• Predictive validity was examined against length of hospital stay (LOS) in unplanned admissions using poisson regression
• Inter-rater reliability was determined with repeated NIS scoring in a subgroup of patients and intra-class correlation calculated

Results

• 143 patients (90M, 53F) aged 57.8 (SD 15.8) years underwent nutrition screening and assessment
• 38% (54/143) were classified as malnourished using SGA (rating B or C)
• 55% (79/143) were classified as at risk of malnutrition with an NIS score of 3 or greater (Figure 1)

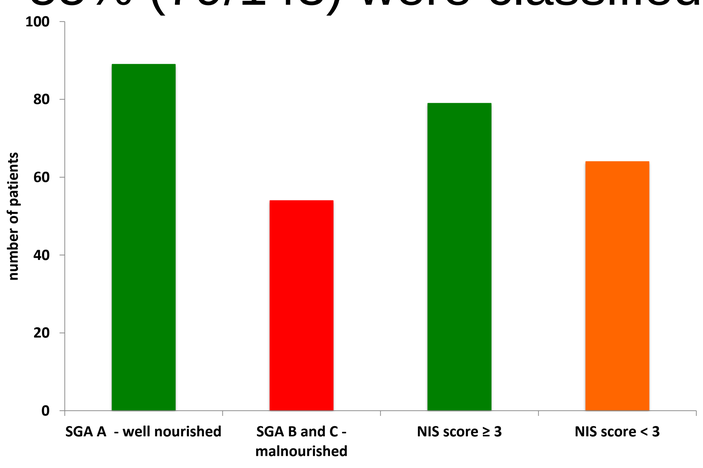

Figure 1: Malnutrition by assessment (SGA) and risk of malnutrition by nutrition screening (NIS) in adult inpatients on nephrology wards

CONCURRENT VALIDITY
–
NIS score ≥3 predicts SGA with
89% Sensitivity and
65% Specificity (Fig 2)

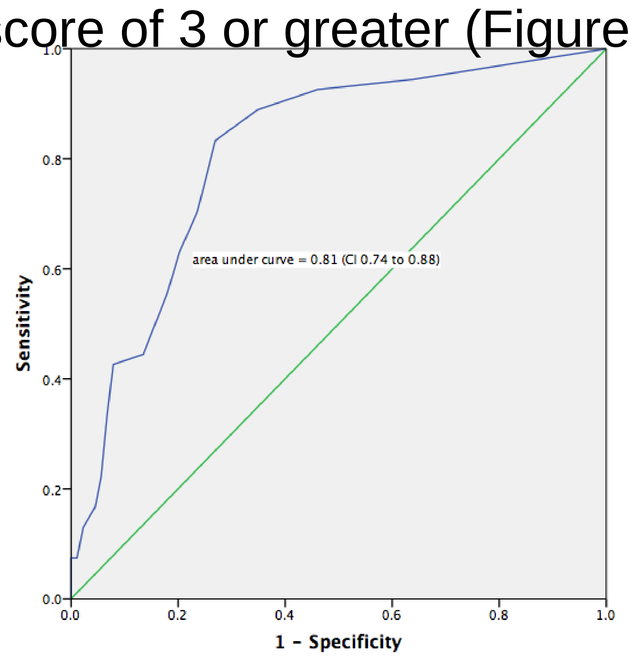

Figure 2: ROC curve for validity of NIS nutrition screening to predict nutrition risk, as assessed by SGA nutritional status

PREDICTIVE VALIDITY – with NIS score ≥ 3, risk of LOS increasing is 32% higher than with NIS score = 0 after correcting for albumin and CRP (p <0.001; CI 15.3 to 51.1%)
RELIABILITY – inter-rater reliability of the NIS score was moderate; mean difference -0.53; Intra-class correlation (ICC) 0.74 (95% CI 0.57-0.85)

Conclusions

NIS score is a valid malnutrition risk screening tool in renal inpatients, demonstrating concurrent validity and an association with length of hospital stay. Reliability may potentially be improved with tailored competency based training.

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