

Malnutrition and outcome after acute stroke: using the Malnutrition Universal Screening Tool

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Prevalence of malnutrition after acute stroke

- A significant number of stroke patients are already undernourished at the time of hospital admission
- Reported prevalence has varied from 8%¹ to 62%²
- Discrepancy due to patient selection, differences in definition of malnutrition and parameters used to assess

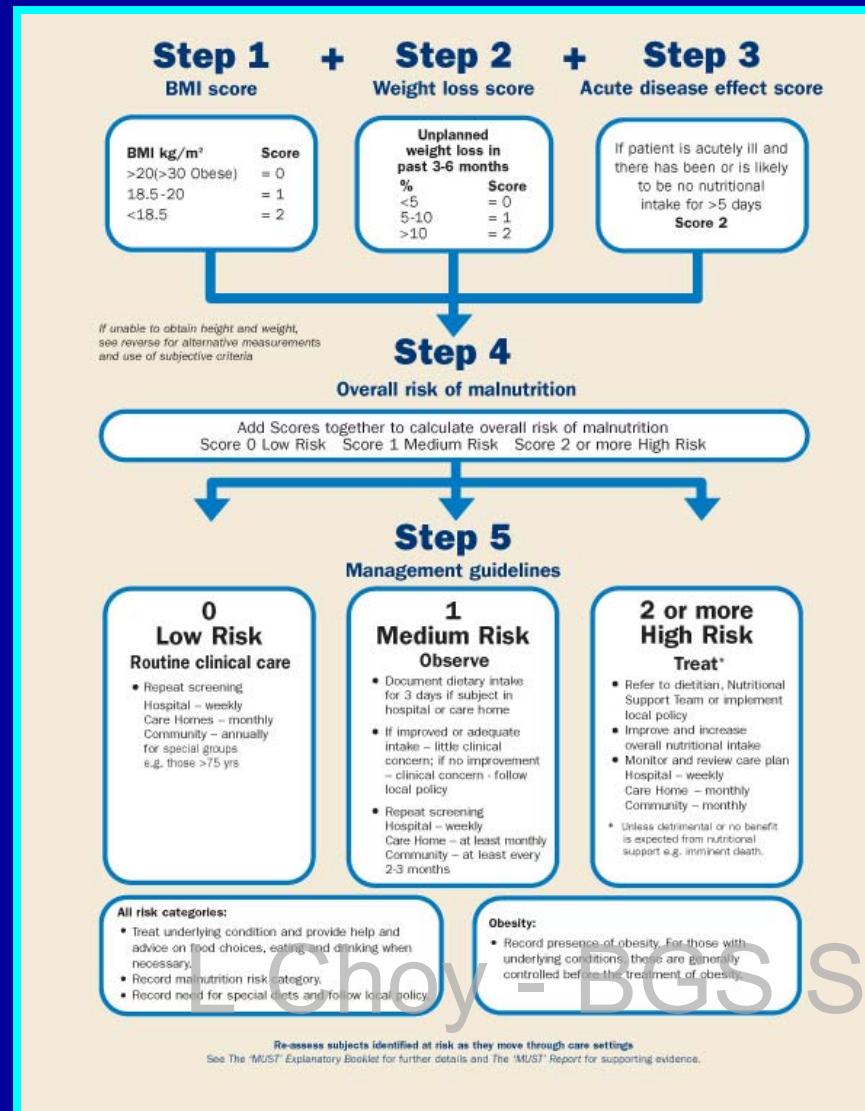
Consequences of poor nutrition after acute stroke

- Good evidence that poor nutritional status at the time of hospital admission is associated with worse outcome^{1, 3-7}
 - Complications during hospital admission
 - Poor functional outcome
 - Increased length of stay
 - Mortality
- FOOD Trial 2003⁶
 - Independent predictor of longterm outcome

Screening for malnutrition in stroke patients

- NICE Guidelines: Nutrition Support in Adults 2006⁸, Stroke 2008⁹
 - All hospital patients should be screened on admission
 - Screening should be repeated on a weekly basis
 - Malnutrition Universal Screening Tool (MUST) suggested as an appropriate tool
- National Stroke Strategy 2007¹⁰
 - All patients on an acute stroke unit should have access to a dietician service which should include nutritional screening

Malnutrition Universal Screening Tool (MUST)



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Aims

- To survey the malnutrition risk of patients admitted with acute stroke using the MUST
- To determine the association between MUST category and outcome

Method

- Prospective study of consecutively admitted acute stroke patients to St Helier Hospital (Nov 07-Mar 08)
- Acute stroke (cerebral infarction or primary intracerebral haemorrhage)
- Patients screened using the MUST within 72 hours of admission
- Followed up until 3 months after acute stroke

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Outcome

- Primary outcome measures
 - Mortality
 - Barthel score
 - Non-disabled 15-20
 - Disabled <15
- Secondary outcome measures
 - Complications during inpatient stay
 - Length of stay

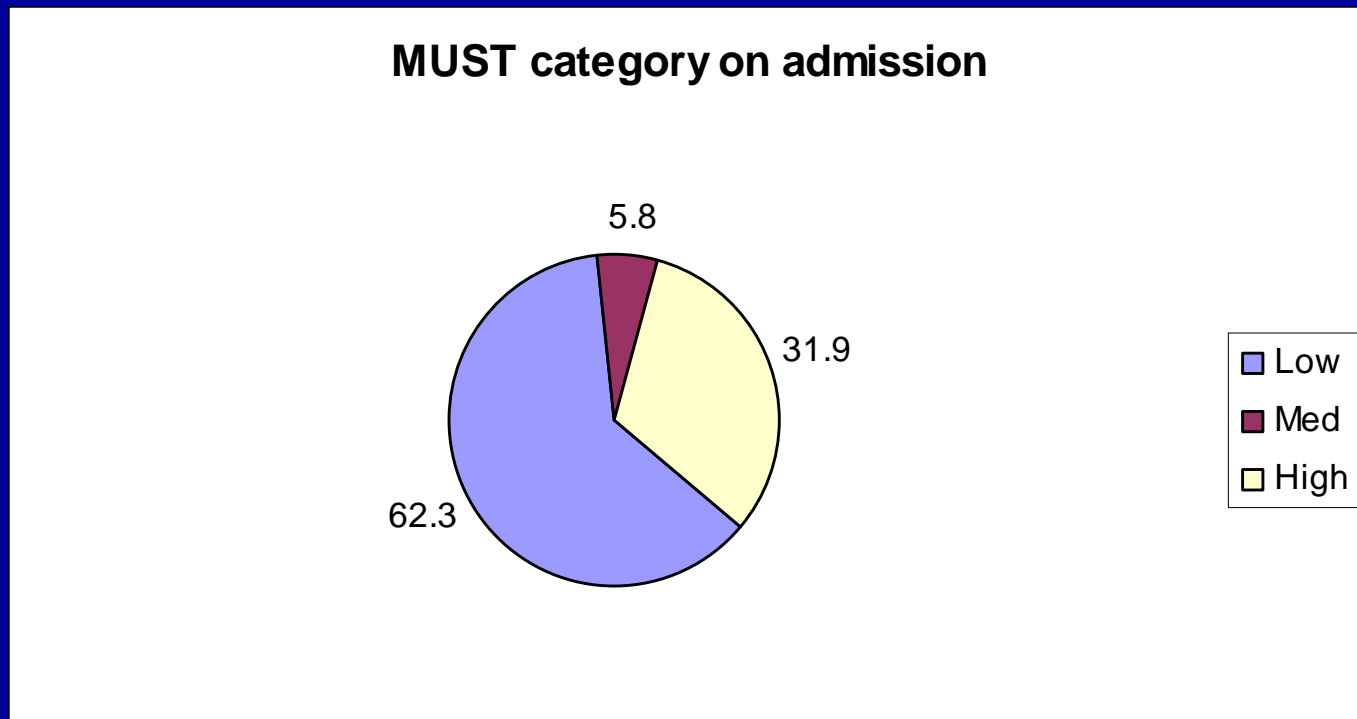
Statistical analysis

- Data from medium and high risk categories combined: Low vs Medium/High risk^{11,12}
- Fisher's test
 - categorical primary/secondary outcomes
- Mann Whitney test
 - length of stay

Results

- 69 patients recruited into the study
- Age range 32-100
- Mean age 79.4 years
- 58% (n=40) were female

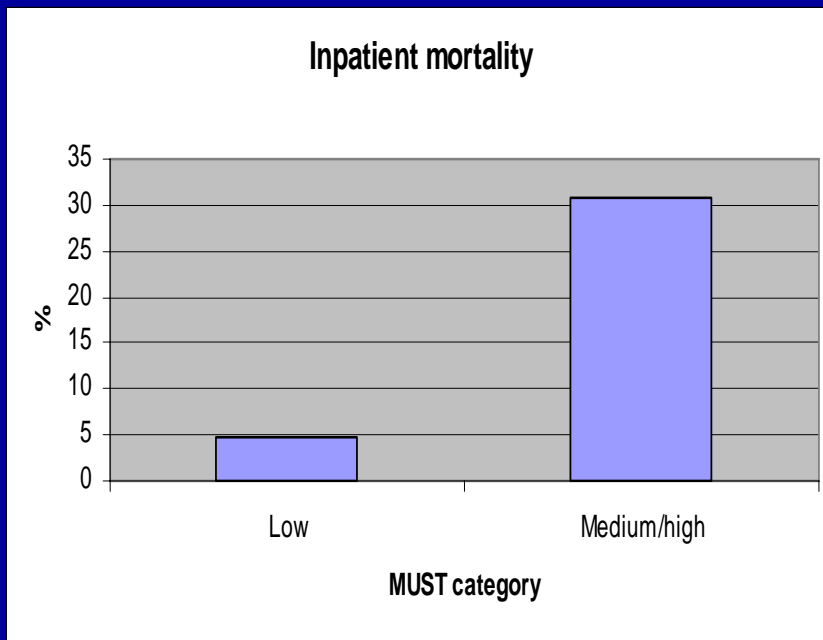
Malnutrition risk on admission



Low risk vs Medium/High risk

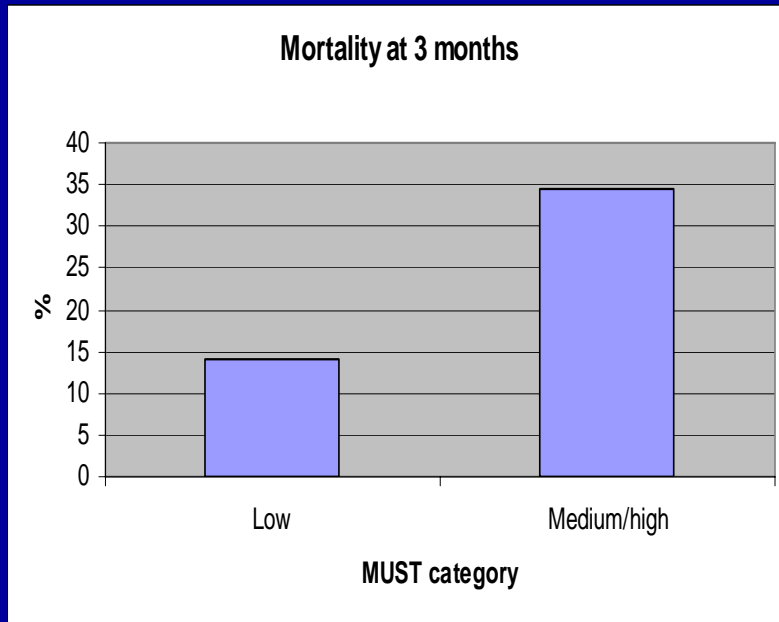
- No significant difference between MUST category and...
 - Age ($p=0.12$)
 - Sex ($p=0.45$)
 - Co-morbidity
 - Pre stroke Barthel ($p=0.72$)
- However medium/high risk patients significantly more likely to have
 - Higher NIHSS ($p<0.01$)
 - Dysphagia ($p<0.01$)

Inpatient mortality



- Significantly higher inpatient mortality in medium/high risk patients 30.8% vs 4.7% in low risk patients
- $p < 0.01$

Mortality at 3 months

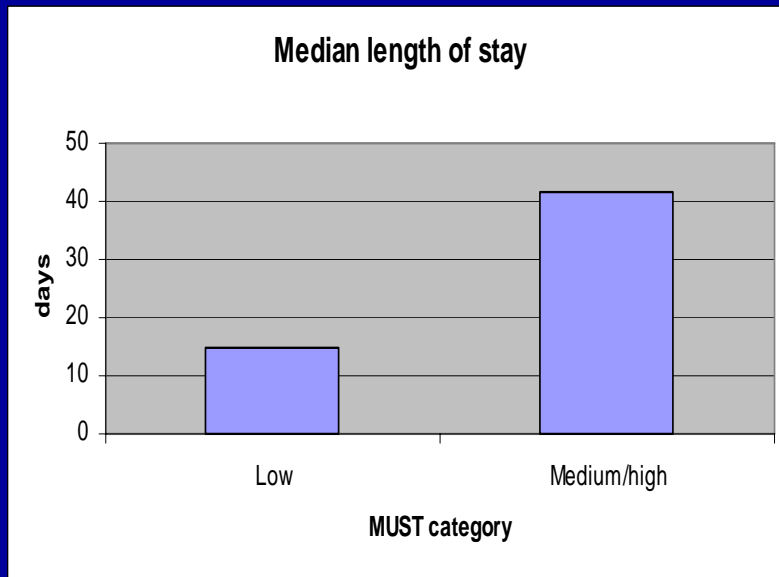


- Significantly higher mortality at 3 month follow up in medium/high risk patients
- $p < 0.05$

Functional outcome

- No significant difference between MUST category and disability on discharge or at 3 months
- In patients who were not disabled pre-stroke (Barthel > 15), MUST category was significantly associated with disability on discharge ($p < 0.05$) but not at 3 months ($p = 0.33$)

Length of stay (LOS)



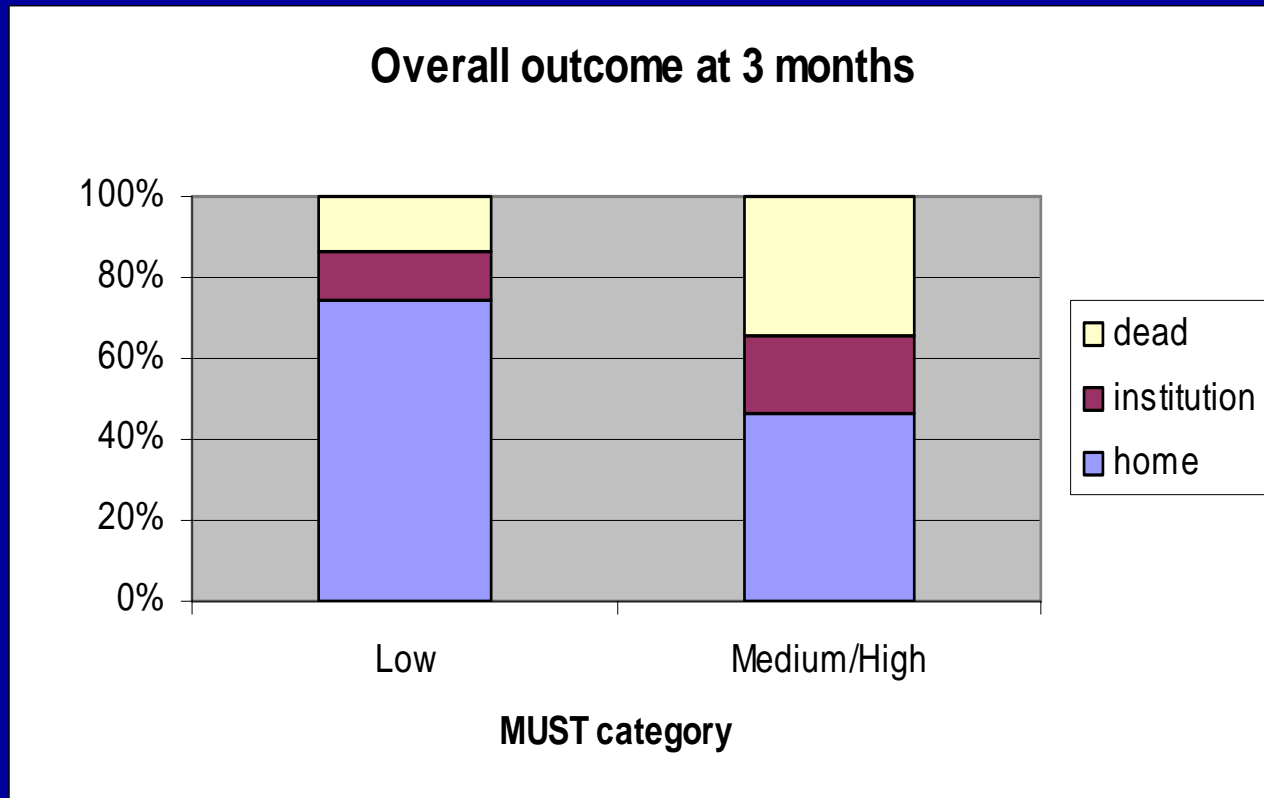
In those patients who survived to discharge

- Low risk: median LOS = 15 days
- Medium/high risk: median LOS = 41.5 days
- $p < 0.01$

Post stroke infections

- 57.7% of medium/high risk patients developed pneumonia compared to 25.6% of low risk patients ($p < 0.05$)
- No difference between MUST category and UTIs ($p = 0.58$)

Overall outcome at 3 months



Summary of findings

- A high proportion (37.7%) of stroke patients were at risk of malnutrition
- Malnutrition risk significantly associated with
 - Increased length of stay
 - Pneumonia
 - Worse functional outcome at discharge
 - Higher mortality

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Limitations of the study

- Medium/high risk patients were significantly more likely to have
 - Longer length of stay
 - Dysphagia
 - More severe strokes (higher NIHSS)
- Dysphagia and stroke severity are predictors of poor outcome¹³⁻¹⁵
- Due to small study size unable to control for these factors

Conclusions

- A high proportion of acute stroke patients are at risk of malnutrition on hospital admission
- Significant association between MUST category and poor outcome
- Study highlights the importance of malnutrition screening in all stroke patients
- Supports the recommendations made by NICE

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