

## Reducing Surgical Site Infection (SSI) in patients with head and neck cancers

### BACKGROUND & AIM

Malnutrition is a known complication in patients with head and neck cancers due to mechanical and physiological obstruction and immunosuppression preoperatively. Unintentional weight loss leading to nutritional deficiencies is a life-threatening and complicated clinical concern for patients undergoing curative cancer treatment.

Surgical-related complications can be attributed to nutrition deficiency state combined with tumors effects suppressing immune functions, which contribute to increase postoperative complications and length of hospitalization stay (LOS), which contribute to higher risk of morbidity and mortality. A validated screening tool can detect malnutrition, reduce misdiagnosis and ensure timely and appropriate assessment and treatment for malnutrition. Hence, early preoperative screening and identification of malnutrition are paramount as it provides practitioners with a systematic assessment of the nutritional status of the individual.

The purpose of this study was to evaluate the impact of the Malnutritional Universal Screening Tool (MUST) on effects of postoperative surgical site infection (SSI) and LOS for patients undergoing oncologic resection for head and neck cancers.

### METHOTHOLOGY

The study used a pre-post test intervention design to evaluate effectiveness of the MUST for detection of malnutrition.

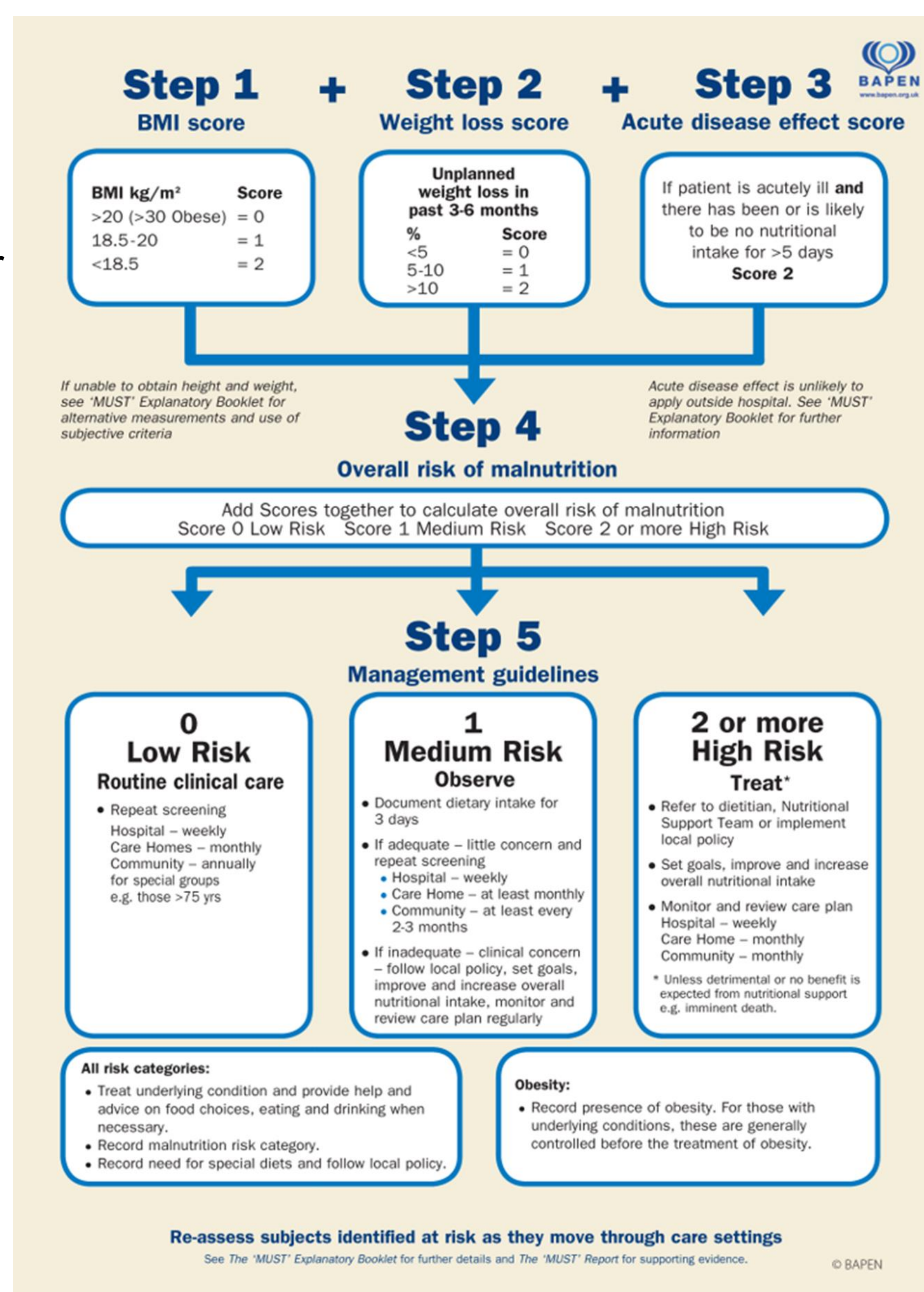
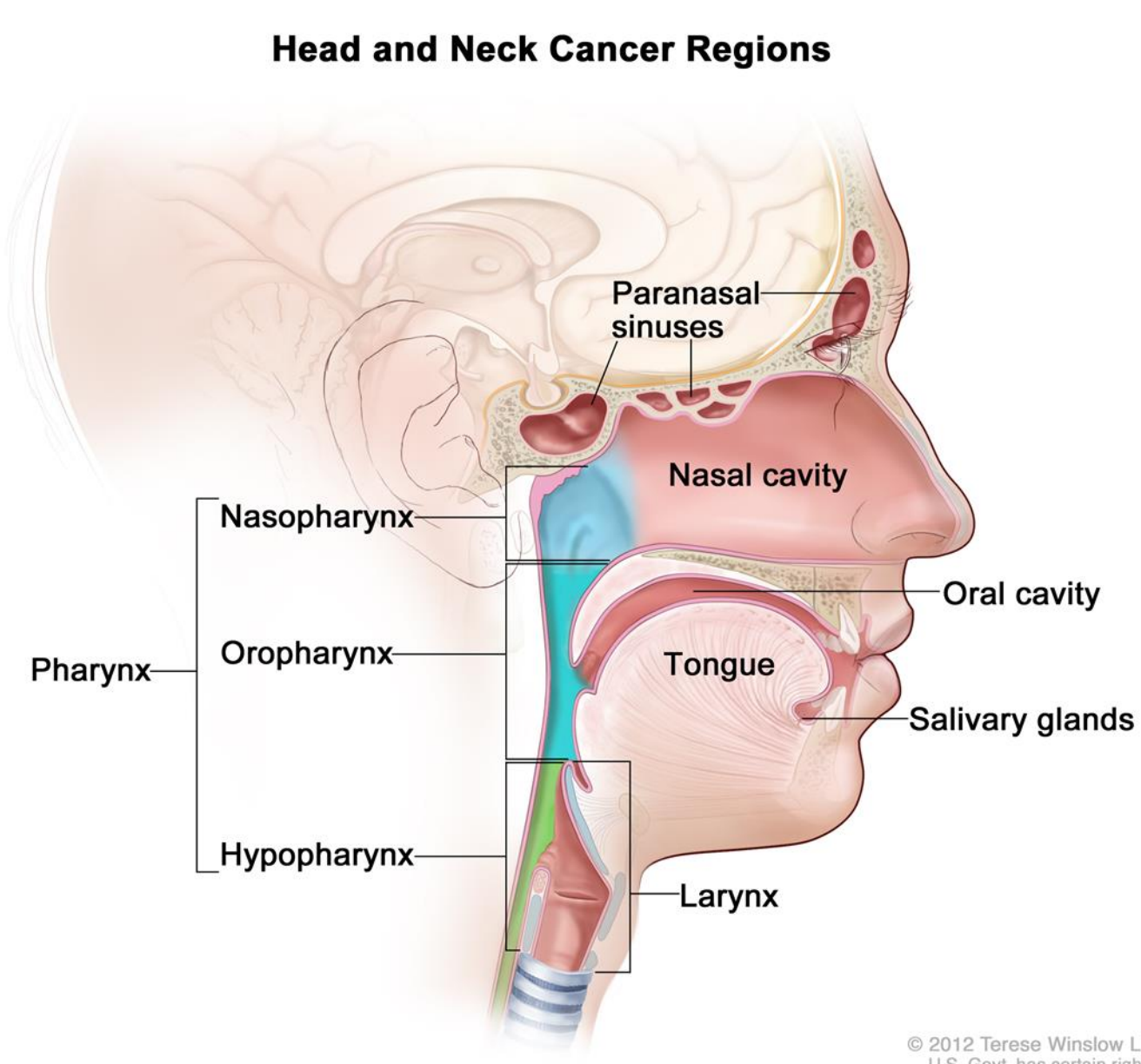
A purposive sampling strategy was used to recruit a total of 74 participants (n=38, pre & n=36, post).

Inclusion criteria included:

- Newly diagnosed HNN patients planned for surgical interventions
- Aged 21 years and above
- Willing to comply with nutrition interventions

Data was collected over 8 weeks each for both the pre- and post intervention. All participants in the post-intervention group were screened using the MUST and nutritional supplements were given for at least 5 days after evaluation by the Dietician using the PG-SGA assessment tool. All participants (N=74) were monitored postoperatively for infection rates and LOS.

Approval from the Quality Department Management of the tertiary cancer center was obtained for the study.



### RESULTS

Demographics	Preintervention	Postintervention	p-value
Gender	Male =23 (60.5%) Female =15 (39.5%)	Male =17 (47.2%) Female =19 (52.8%)	0.351
Age	Mean: 63.86 (SD= 9.94)	Mean: 60.85 (SD=12.11)	0.275
Educational Level	Primary: 17 (44.7%) Secondary: 14 (36.8%) Tertiary: 7 (18.4%)	Primary: 19 (52.8%) Secondary: 6 (16.7%) Tertiary: 11 (30.6%)	0.126
Smoker	Yes: 19 (50%) No: 19 (50%)	Yes: 24 (66.7%) No: 12 (15.1%)	0.165

Clinical Outcomes	Preintervention	Postintervention	p-value
Diagnosis	Oral cavity: 25 (65.8%) Hypopharynx: 3 (7.9%) Oropharynx: 1 (2.6%) Larynx: 3 (7.9%) Others: 6 (15.8%)	Oral cavity: 32 (88.9%) Hypopharynx: 0 Oropharynx: 0 Larynx: 1 (1.9%) Others: 3 (8.3%)	0.146
Diabetics Mellitus	Yes: 15 (39.5%) No: 23 (60.5%)	Yes: 8 (11.2%) No: 28 (77.8%)	0.053
Type of closure	No reconstruction: 16 (42.1%) With reconstruction: 22 (57.9%)	No reconstruction: 16 (44.45) With reconstruction: 20 (55.6%)	0.999
Surgical SSI (Surgical Site Infection)	Yes: 19 (50%) No: 19 (50%)	Yes: 8 (22.2%) No: 28 (77.8%)	0.017
LOS (Length of hospitalization stay)	Mean: 28.74 (SD=23.14)	Mean: 17.83 (SD=12.30)	0.014
BMI (Body Mass Index)	Mean: 22.16 (SD=3.56)	Mean: 22.01 (SD=4.45)	0.871

- No statistical significance between the demographic data of pre & post implementation groups (N=74). Post hoc power analysis of our sample size was 90%.
- Postoperative complications (SSI) reduced from 50% to 28% after intervention,  $p=.017$
- LOS reduced from 28 days to 18 days,  $p=.014$
- Concordance achieved between MUST screening tool and SGA assessment tool,  $p=.999$

### DISCUSSION

- Preoperative nutritional intervention demonstrated beneficial outcomes in terms of postoperative complication (SSI),  $p=.017$
- DM is associated with delayed wound healing, our sample demonstrated only a marginally significance,  $p=.053$ .
- Tobacco use is the primary risk factors for delayed wound healing, 63% of our participants who were smokers developed SSI,  $p=.006$
- Participants without reconstruction and non-smokers were 80% ( $p=.007$ ) & 75% ( $p=.010$ ) less likely to develop postoperative SSI respectively after adjusting for DM & type of surgical closure
- Early nutritional interventions from preoperative screening demonstrated reduction on LOS. Participants who were non-smokers and underwent primary wound closure after surgery were related to decreased LOS,  $p=.014$
- Smoking status ( $p=.198$ ) and type of surgical closure ( $p=.001$ ) explained 18.8% of the variance of LOS

### CONCLUSION

Substantial support established from preoperative nutritional screening & intervention, showed promising outcomes when introduced at a timely point before the start of cancer-related treatment.

### FUTURE DIRECTIONS

- System-wide screening for malnutrition for all patients undergoing cancer-related treatments (e.g. chemotherapy and radiation)
- Encourage smoking cessation program and optimised DM control before surgery
- Future research on other determinants such as QOL, culture and effects of comorbidities on nutrition.