MALNUTRITION QUALITY IMPROVEMENT INITIATIVE

Welcome to Today's Expert Webinar for the 2019 MQii Learning Collaborative:

"Importance of Evaluating and Implementing Malnutrition Screening Tools"

December 10, 2019

We will start promptly at 12:00 PM ET

(1:00 PM CT; 12:00 PM MT; 11:00 AM PT)

All phone lines have been muted

The Malnutrition Quality Improvement Initiative (MQii) is a project of the Academy of Nutrition and Dietetics, Avalere Health, and other stakeholders who provided guidance and expertise through a collaborative partnership. Support provided by Abbott.

Today's Agenda

Agenda Item	Presenter(s)
Welcome and Introduction to the Webinar	Christina Badaracco, MPH, RD *Research Scientist at Avalere Health*
Implementation of Malnutrition Screening Tools	Rebecca Edwards, MS, RD, LD, CNSC Paul Blakeslee, RD-AP, LD, CNSC *Senior Clinical Dietitians at Maine Medical Center*
Selection and Evaluation of Malnutrition Screening Tools	Jennifer Doley, MBA, RD, CNSC, FAND *Regional Clinical Nutrition Manager and Dietetic Internship Director at Carondelet St. Mary's Hospital*
Questions – 15 min	

MALNUTRITION QUALITY IMPROVEMENT INITIATIVE

Rebecca Edwards, MS, RD, LD, CNSC
Paul Blakeslee, RD-AP, LD, CNSC
Senior Clinical Dietitians
Maine Medical Center

- Review of validated screening tools
- Process of selection
- Best practices for implementation

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Maine Medical Center

MMC is a 637-bed tertiary care teaching hospital located in Portland, Maine. It is a level 1 trauma center and received its 3rd Magnet Designation in 2017.

Our Clinical Nutrition Program consists of 14 Registered Dietitians and 5 dietetic technicians. Our Nutrition Support Team consists of 1 attending physician, 2 nutrition support dietitians, and a board-certified nutrition support pharmacist.

FULL TEXT ARTICLE

Evaluating Efficacy of a Recently Implemented Malnutrition Screening Tool

R. Edwards and P. Blakeslee

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Purpose

The purpose of this Quality Improvement initiative was to track outcomes following the implementation of a the Malnutrition Screening Tool (MST) in the acute care setting in an efficient way utilizing embedded features in the electronic medical record (EMR) and the expertise of data analysts in an effort to capture more referrals for the patients deemed to be at nutritional risk.

Relevance

At a tertiary care hospital, a one-day audit was completed by the registered dietitian nutritionists (RDNs) via chart review in February of 2018. Results showed that 12% of patients were identified to have a nutritional risk factor on admission screen but were not referred to the RDN.

Background

A validated nutrition screening tool was implemented in January 2019 to be completed on admission. The MST was selected based on the available evidence as it was shown to be both valid and reliable. A Best Practice Advisory (BPA), which is an alert built into the EMR, prompted nursing staff to enter a nutrition consult, if indicated.

Validated Tools

- Review of the evidence
  - The Academy's Evidence Analysis Library
    - Comprehensive section on various screening tools

- Questions to consider:
  - How complex is the tool?
  - What is your patient population?
  - Who will be completing the screening?
  - How will the tool be incorporated into workflow?
  - What happens after the screening is completed?

Validated Malnutrition Screening Tools

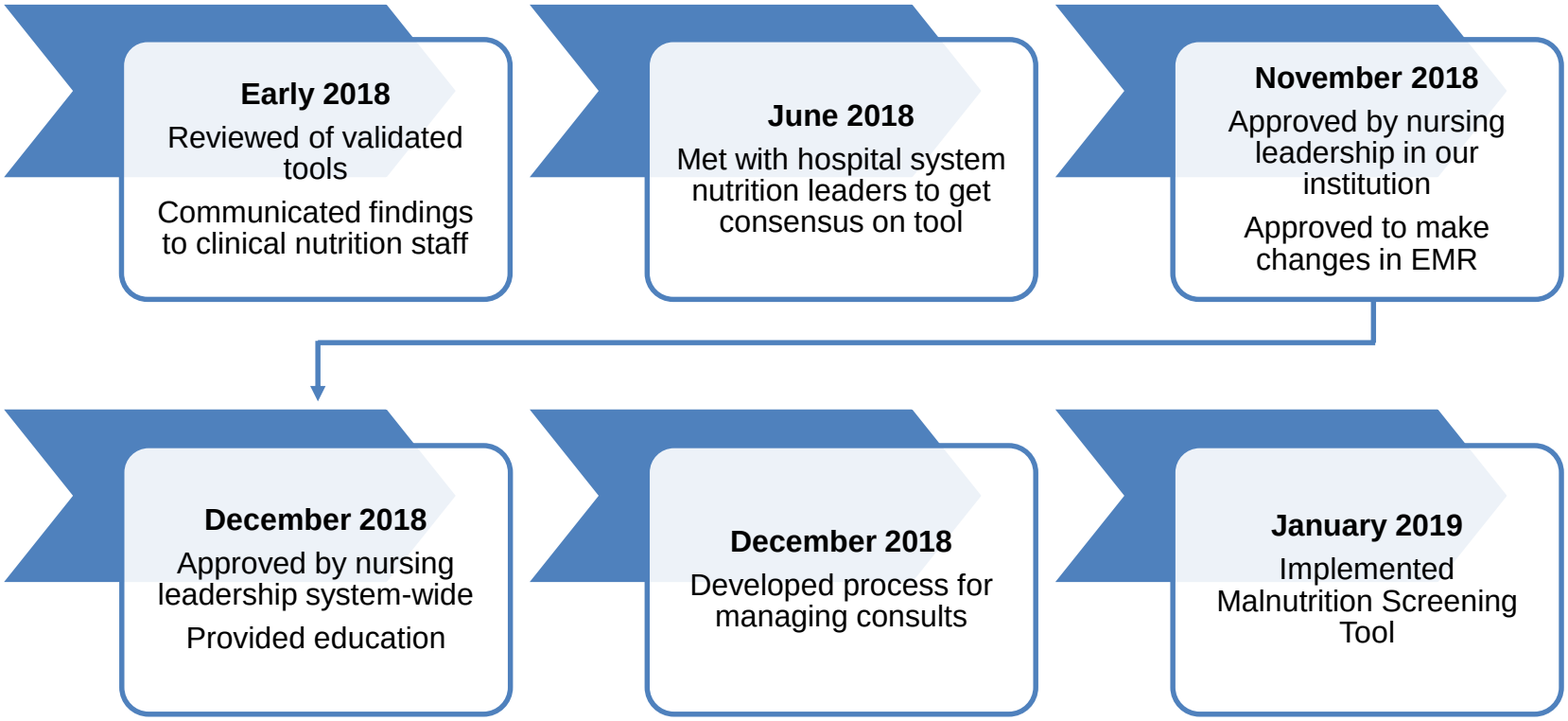
Tool	Population	Indicators	When/Whom
Malnutrition Screening Tool (MST) Ferguson et al. 1999 Australia`	Adults in acute care and outpatient oncology	Recent unintended weight loss Recent poor intake	Within 24 hours Medical, nursing, dietetic, administrative staff; family; friends; patients themselves
Malnutrition Universal Screening Tool (MUST) Malnutrition Advisory Group 2003 United Kingdom	Adults in acute care and community	BMI Weight loss (%) Acute disease	Initially and repeated regularly Nursing, medical, or other staff
Mini Nutritional Assessment – Short Form (MNA-SF) Rubenstein et al. 2001 United States	Elderly Ambulatory and sub-acute	Recent intake Recent weight Loss (%) Mobility Recent acute disease or psychological stress	On admission and repeated regularly Not specified
Nutrition Risk Screening (NRS-2002) Kondrup et al. 2003 Denmark	Acute adult	Recent weight loss (%) Recent poor intake (%) BMI Severity of disease Elderly	On admission and regularly during admission Medical and nursing staff

https://www.health.qld.gov.au/__data/assets/pdf_file/0021/152454/hphe_scrn_tools.pdf

General Tips for Implementing a New Screening Tool

- **Best practice**
  - Most effective way to achieve an outcome
  - Evidence-based
- **Consider process from beginning to end**
  - Will tool be embedded into nursing screen on admission?
  - Will referral to nutrition services be automatic with a positive screen?
- **Motivate**
  - Improve patient outcomes
- **Monitor**
  - Build understanding around success rate of tool
    - Is the screening being completed?
    - Is the screening resulting in increased diagnosis of malnutrition?

Timeline for Implementation At Maine Medical Center



In-service Education for Nutrition Screening at MMC

Maine Medical Center
MaineHealth

Nutrition Screening on Admission

What you need to know about using the new screening tool and ordering a nutrition consult.

EXPRESS INSERVICE

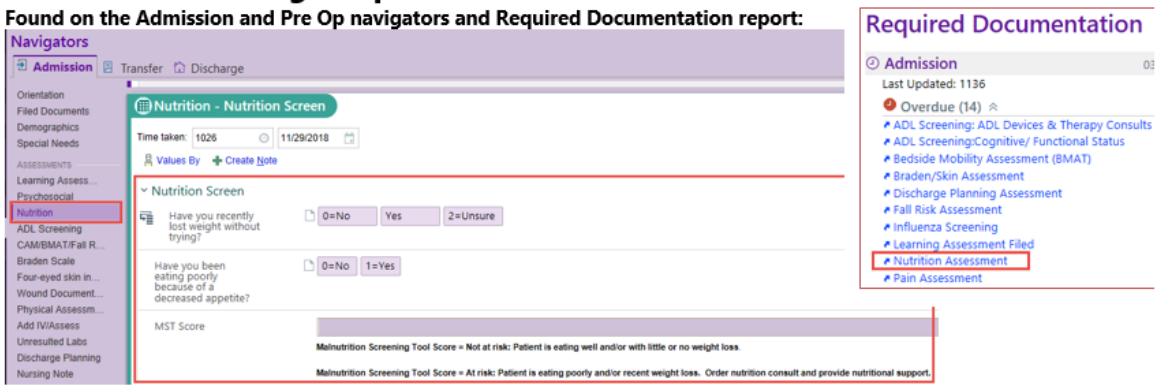
January 2019

Nutrition Screening Workflow

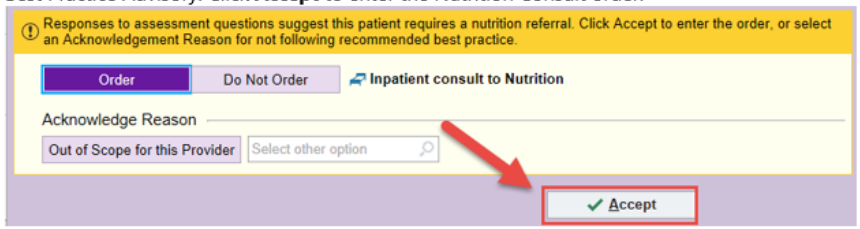
1. Nutrition screening is the process of identifying patients who may have a nutrition diagnosis and would benefit from nutrition assessment and intervention by a registered dietitian.
2. Nutrition screening is part of admission required documentation. This workflow is unchanged. A new tool is being used to assess nutrition risk.
3. New Malnutrition Screening Tool (MST): The MST is shown to be both valid and reliable for identifying nutrition problems in the acute care and hospital-based ambulatory care settings.
4. RN will complete the nutrition screening using the MST as part of the admission assessment. If the patient scores "At risk" (a score of 2 or more), a Best Practice Advisory (BPA) is generated.
5. The BPA guides the RN to place a Nutrition consult order.
6. The Nutrition consult order prompts a Registered Dietitian to assess the patient.

Nutrition Screening in Epic

Found on the Admission and Pre Op navigators and Required Documentation report:



Best Practice Advisory: Click **Accept** to enter the Nutrition Consult order.



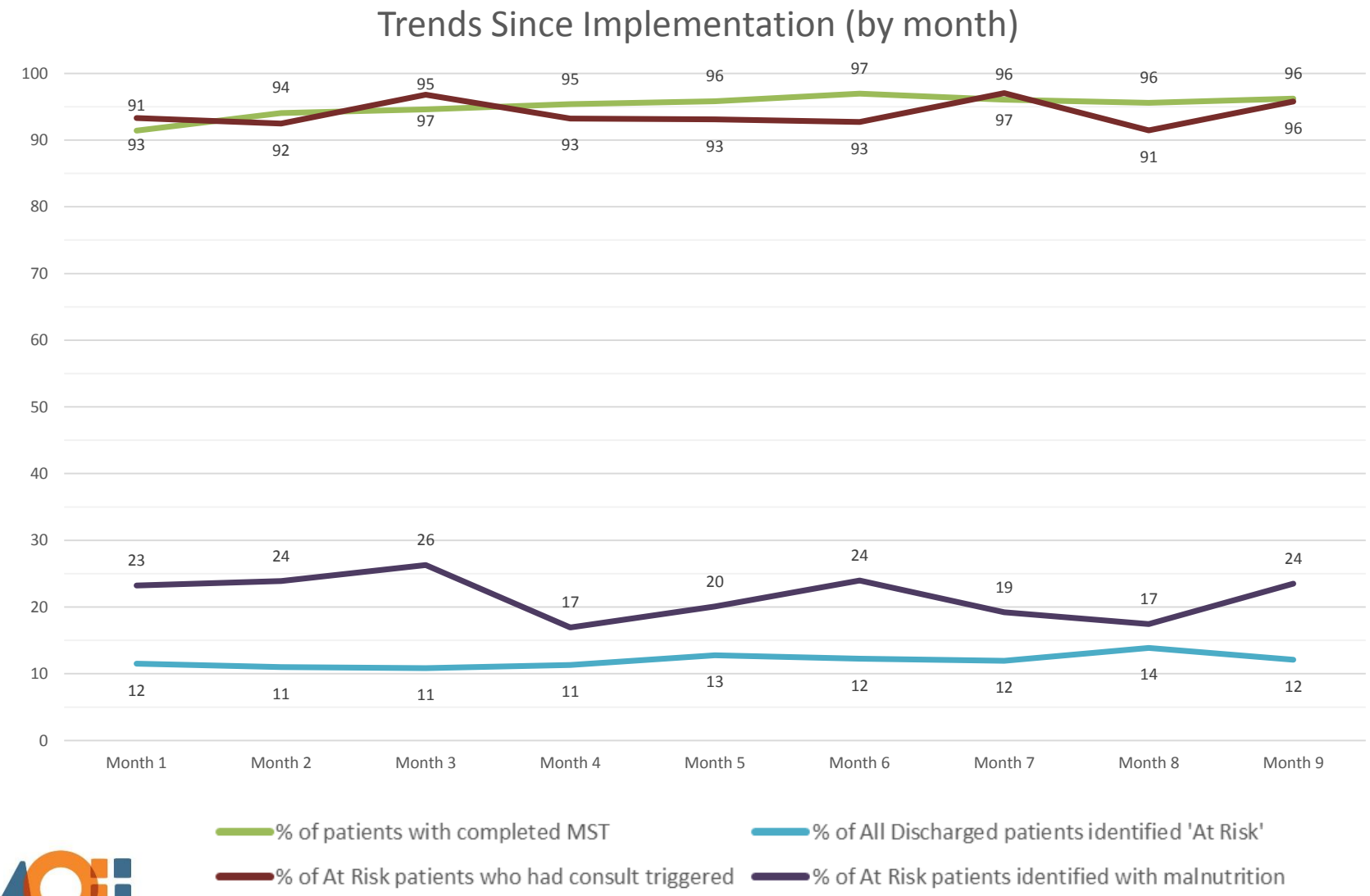
Additional Information:
Elicit information from caregivers if the patient is unable to respond to the assessment questions. An answer of 'Unsure' will score a 2 and identify the patient is at risk and in need of a nutrition consult.
Reports to track the number of patients who are screened, score positive, and how many consults are ordered will be available.

Collaborate with Clinical Informatics to Develop Automated Quality Reports

- **Data Collection Needs:**
  - MST completion rate
  - Nutrition consult placement rate
  - Malnutrition diagnosis rate for those with a consult

- **Other Data Needs to Consider:**
  - Data by unit
  - Ability to run report for any specified time frame

Graphical Report of MST Implementation Outcomes



Key Takeaways

- Recognize your hospital's need for a validated screening tool
- Choose the right tool for your practice setting and patient population
- Identify stakeholders involved in the implementation of a new nutrition screening process
- Develop methods for monitoring the nutrition screening process
- Utilize your organization's existing resources
  - Clinical informatics
  - Nursing education

References

Kondrup J. Nutritional risk screening (NRS 2002): a new method based on an analysis of controlled clinical trials. *Clinical Nutrition.* 2003;22(3):321-336.

Malnutrition Advisory Group (MAG): A standing Committee of the British Association for Parenteral and Enteral Nutrition (BAPEN). The 'MUST' Explanatory Booklet. A Guide to the 'Malnutrition Universal Screening Tool' ('MUST') for Adults. In: *BAPEN*; 2003.

Rubenstein LZ, Harker JO, Salva A, Guigoz Y, Vellas B. Screening for undernutrition in geriatric practice: developing the short-form mini-nutritional assessment (MNA-SF). *The journals of gerontology Series A, Biological sciences and medical sciences.* 2001;56(6):M366-372.

Skipper A, Ferguson M, Thompson K, Castellanos VH, Porcari J. Nutrition Screening Tools. *Journal of Parenteral and Enteral Nutrition.* 2011;36(3):292-298.

Validated Malnutrition Screening and Assessment Tools: Comparison Guide. Nutrition Education Materials Online, "NEMO." https://www.health.qld.gov.au/__data/assets/pdf_file/0021/152454/hphe_scrn_tools.pdf. Published 2017. Updated May 2017. Accessed 11/3/2019.

MALNUTRITION QUALITY IMPROVEMENT INITIATIVE

Jennifer Doley, MBA, RD, CNSC, FAND
Regional Clinical Nutrition Manager
Dietetic Internship Director
Carondelet St. Mary's Hospital

- Overview of terminology for testing validity
- Assessing the validity of nutrition screening tools
- Screening tool considerations

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Understanding Validity vs. Reliability

- **Validity** – extent to which a test measures what it is supposed to measure

VS.

- **Reliability** – consistency of a test or measure over a period, and between different participants

- **Inter-rater reliability** – produces consistent results for the same subject regardless of the user

Validation Terms

- **Sensitivity –** how likely is the test to detect presence of condition in someone *with* the condition?
- **Specificity –** how likely is the test to detect the absence of a condition in someone *without* the condition?
- **Positive predictive value –** how likely is someone to *have* the condition if the test is positive?
- **Negative predictive value –** how likely is someone to *not have* the condition if the test is negative?

Sensitivity and Specificity

Sensitivity	**True Positive** Identified at risk AND is at risk	**False Positive** Identified at risk BUT NOT at risk
Specificity	**True Negative** Not identified at risk AND NOT at risk	**False Negative** Not identified at risk BUT at risk

Assessing Your Nutrition Screening Tool (NST)

- How accurate is the NST at identifying patients at risk for malnutrition?

- Only assess part of NST intended to identify malnutrition
  - Weight loss
  - Low BMI
  - Poor intake

- Do not include elements intended to identify other patients
  - Education needed
  - Other RD intervention

Assessing Your Nutrition Screening Tool

- Choose appropriate patient group
  - Exclude rehab, behavioral health
  - Only adults or only pediatrics

- Assess nutrition status of ALL patients in the chosen patient group during a specified time frame

- Use evidence-based criteria
  - Subjective Global Assessment (SGA)
  - Academy / ASPEN Consensus Characteristics

- Document nutrition status and if the NST triggered

Example

Out of 200 total adult inpatients assessed*:

- 40 malnourished – 15 not triggered, 25 triggered
- 160 well-nourished – 150 not triggered, 10 triggered

** 35 nutrition consults resulted from NST*

Of all **malnourished** patients:

- 25 triggered by NST = TRUE POSITIVE
- 15 not triggered by NST = FALSE NEGATIVE

Of all **well-nourished** patients:

- 10 triggered by NST = FALSE POSITIVE
- 150 not triggered NST = TRUE NEGATIVE

Sensitivity

Sensitivity = TRUE POSITIVE / (TRUE POSITIVE + FALSE NEGATIVE)
Malnourished patients triggered by NST / All malnourished patients

EXAMPLE

Of all **malnourished** patients
25 triggered by NST = TRUE POSITIVE
15 not triggered by NST = FALSE NEGATIVE

Of all **well-nourished** patients
10 triggered by NST = FALSE POSITIVE
150 not triggered NST = TRUE NEGATIVE

Sensitivity = [25/(25+15)] x 100 = 62.5%

NST correctly identified 62.5% of malnourished patients

Specificity

Specificity = TRUE NEGATIVE / (TRUE NEGATIVE + FALSE POSITIVE)
Patients not triggered by NST / All well-nourished patients

EXAMPLE

Of all **malnourished** patients
25 triggered by NST = TRUE POSITIVE
15 not triggered by NST = FALSE NEGATIVE

Of all **well-nourished** patients
10 triggered by NST = FALSE POSITIVE
150 not triggered NST = TRUE NEGATIVE

Specificity = [150/(150+10)] x 100 = 93.8%

93.8% of well-nourished patients were NOT triggered as at risk

Sensitivity vs. Specificity

High sensitivity tests

- Good at identifying patients with the condition
- Used to rule out conditions if the test is negative
- Have a higher number of false positives (Type I error)

High specificity tests

- Good at not misidentifying a condition
- Used to rule in conditions if the test is positive
- More likely to miss patients with condition (Type II error)

Higher sensitivity tests have lower specificity and vice versa

For NSTs, high sensitivity is desired

Negative Predictive Value

NPV is how likely someone is to NOT be malnourished if the NST is negative

NPV = TRUE NEGATIVE / (TRUE NEGATIVE + FALSE NEGATIVE)
NPV = Well-nourished patients not triggered by NST / All patients not triggered by NST

EXAMPLE

Of all **malnourished** patients
25 triggered by NST = TRUE POSITIVE
15 not triggered by NST = FALSE NEGATIVE

Of all **well-nourished** patients
10 triggered by NST = FALSE POSITIVE
150 not triggered NST = TRUE NEGATIVE

NPV = [150 / (150+15)] x 100% = 90.9%

If the NST is negative, the likelihood of a patient not having malnutrition is 90.9%

Carondelet St. Mary's Hospital

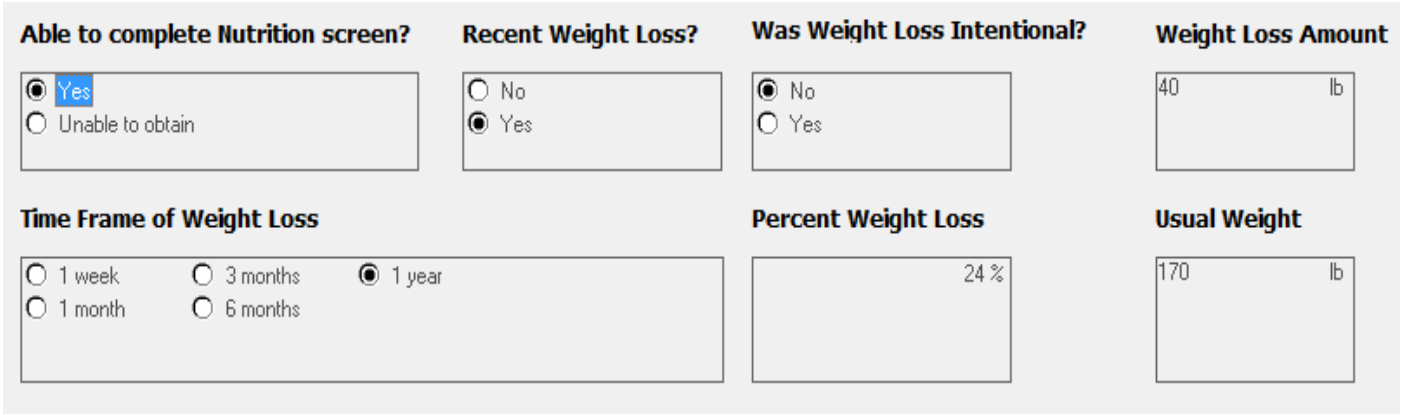
- Community hospital in Tucson, Arizona
- Average length of stay 4.5 days, average census 175
- Units include ICU, med/surg, cardiac, neuro, ortho, rehab, behavioral health
- 3 Registered Dietitian Nutritionists
- NST not validated
- Study objective: determine the positive predictive value of our NST

Our Nutrition Screening Validation Study

Data collected

- Behavioral health & rehab excluded
- All age groups
- Retrospective
- Jan 2015 through Dec 2016

NST at a Community Hospital



Loss	Time Frame
≥ 2%	1 week
≥ 5%	1 month
≥ 7.5%	3 months
≥ 10%	6 months
≥ 20%	1 year

490 patients were triggered for significant wt loss from the NST

- 422 had a nutrition diagnosis
- 338 were diagnosed with malnutrition

Positive Predictive Value

PPV is how likely someone is to be malnourished if the NST is positive

PPV = TRUE POSITIVE / (TRUE POSITIVE + FALSE POSITIVE)
PPV = All malnourished pts triggered by NST / All pts triggered by NST

- Jan 2015 through Dec 2016
- 490 patients were triggered for significant wt loss from the NST
  - 422 had a nutrition diagnosis
  - 338 were diagnosed with malnutrition

PPV = 338 / 490 = 69%

- Doley J. Assessment of a Nutrition Screening Tool in the Acute Care Setting. Poster presented at the Food and Nutrition Conference and Expo, Oct 2017.
- Doley J. Abstract: Evaluation of a nutrition screening tool to identify patients at risk for malnutrition. *J Acad Nutr Diet*. 2019;119(9 Suppl 2):S69.

Sensitivity / Specificity and PPV / NPV – What's the Difference?

Sensitivity / Specificity
Intrinsic to the test; do not depend on given population
Don't change regardless of population to which they are applied

PPV / NPV
Depend on prevalence of condition in the given population
Low prevalence condition will have low PPV

I don’t have time for this!

Sensitivity, Specificity, and NPV require ALL patients be assessed

PPV requires only patients triggered by the NST be assessed

PPV
- Keep track of all triggers from NST
- Record if malnourished or well nourished
- PPV = all malnourished patients identified by NST / all patients triggered by NST

Sensitivity (sort of)
- Keep track of all patients diagnosed with malnutrition
- Record if they were triggered by the NST
- NOT true measure of sensitivity because does not account for malnourished patients who were not assessed

Considerations

NSTs should never require users to:

- Complete a calculation such as % ideal weight
- Look up information elsewhere in the chart
- Use clinical judgment

NSTs should automatically:

- Determine score
- Trigger a consult to the RDN

Consider use of a “hard stop” – RN must complete NST to sign the assessment form

Questions?

15 mins