Food Monitoring Tools: Mealtime Audit Tool (MAT) and My Meal Intake Tool (M-MIT)
Summary of Hospital Malnutrition in Canada

*Nutrition Care in Canadian Hospitals Study*

- 45% of medical and surgical patients are malnourished on admission to hospital (Allard et al., JPEN 2015)

- Nutritional status deteriorates in hospital for 20% of patients (Allard et al. Clin Nutr 2015)

- Food intake ≤50% and malnutrition are independent predictors of length of stay (Allard et al., JPEN 2015)

- Patients experience many barriers to food intake, such as not being able to open packages (Keller et al., 2015)
Prevalence of Malnutrition in Hospital (Allard et al., 2015)

• Reported prevalence of malnutrition among hospitals in North America and Europe: 20% to 60%.

• The prevalence of malnutrition at admission in medical and surgical patients is reported at 45% in acute care hospitals in Canada.

Prevalence based on the subjective global assessment (SGA)

- Well Nourished (n=558): 54.98%
- Moderate Malnutrition (n=341): 33.60%
- Severe Malnutrition (n=116): 11.43%

(Allard et al, JPEN, 2015)
Patient Reported Eating Difficulties
(Keller et al., JHND 2015)

- When missed, not given food: 69%
- Opening packages/unwrapping food: 30%
- Reaching meals: 20%
- Avoiding food for tests: 35%
- Disturbed at meals: 39%
- Did not get help when needed: 42%
- Poor position for eating: 27%
- Interrupted by staff: 42%
- Do not want the food ordered: 58%
- When missed, not given food: 69%

Keller et al, JHND 2015
One Strategy: Monitor and Report

Staff/family/friends and the patient need to monitor food intake and when it is low, implement strategies, such as snacks or special supplements.

Monitor:

- Food/meal intake
- Weight
- Duration of NPO/clear fluid intake
- Hydration status
- Appetite
Tools for Monitoring

- **Mealtime Audit Tool (MAT):** identifies barriers to food intake and patient perceptions of the meal and food. (McCullough et al. 2017)

- **My Meal Intake Tool (M-MIT):** assesses intake of foods and fluids provided at a single meal, as well as reasons for poor consumption. (McCullough et al. 2016)

(Both tools are available in English and French)
Mealtime Audit Tool (MAT)

- A 2-page form
- Completed by hospital staff
- Documents *mealtime issues, challenges, and/or barriers* that patients might have
- Part 1 completed *before and during* a meal
- Part 2 completed with *selected patients* after the meal
MAT Development and Testing

- Developed from the Nutrition Care in Canadian Hospitals (NCCH) study results, as well as other research on protected mealtimes.

- Testing:
  - How to enhance usability
  - To determine if auditors got the same result when interviewing the same patient

- Results:
  - Following testing, the clarity of items and instructions was improved
  - Testing showed that MAT is reliable when used by different auditors

(McCullough et al. 2017)
When can I use the MAT?

- Establish a **baseline** on mealtime barriers patients may experience
- Identify **differences between units**, or within a unit, when staff education or other improvement efforts occur
- Identify **priorities** for change
- **Educate** staff on the needs, barriers and perspectives of their patients.

*MAT can be used for any of these situations separately.*
Who can complete MAT?

• Patients must be **well enough** (both physically and cognitively) to answer the questions

• **Do not use** MAT in those with:
  
  • delirium
  
  • excessive pain
  
  • cognitive or memory problems
  
  • no meal tray

• If it becomes clear to the auditor that answering the questions is too difficult for the patient, it is best to stop and thank them for their time.
What if the patient can’t answer the MAT questions?

• The auditor can observe a patient during mealtime and complete the form, rather than asking the patient the specific questions.

(Note: MAT has not be tested in this manner and results from observation should not be compared to those based on asking patients the MAT questions)
What does MAT include?

Part 1

• **Description and observation** of the unit (e.g., type of unit, time of meal tray arrival)

Part 2

• A list of key challenges or barriers individual patients may experience

• **Ask the patient** about their meal experience (i.e. was the food hot enough)
Completing MAT Part 1

• Auditor arrives shortly before the trays are delivered to the floor to observe:
  o The unit environment
  o Potential delays/challenges to the meal
  o When the meal arrived and how trays are delivered
  o How the meal service ended

• The auditor should also note any challenges during mealtime such as:
  o Is staff focused on the mealtime?
  o Are there excessive disturbances on the unit?
  o Are patients interrupted during the meal?
  o Are there delays in meal delivery?
MEALTIME AUDIT TOOL

Instructions

1. There are two parts to the audit:
   a. Part 1: General observations of the unit and descriptors of the mealtime being audited
   b. Part 2: Specific challenges or barriers to food intake experienced by selected patients

2. Auditor will arrive approximately 10 minutes before the anticipated meal start time to complete Part 1.

3. Auditor will try not to interrupt or alter the usual mealtime in any way.

4. After selected patients have completed their meals, auditor will ask questions (as shown in Part 2). Multiple copies of the second page with Part 2 may be used for a single meal.

5. If any questions are not applicable to an individual patient, auditor will note ‘N/A’. The item on meal selection is N/A if there are no selective menus; this is not asked of patients.

6. Auditor will write clarifying patient comments, in the space provided, such as type of assistance needed.

7. Part 2: To obtain the score, auditor will count the total number of ‘No’ responses for each patient.

Part 1: General observations of unit mealtime activity

Date of audit: ___________ Name of auditor: ___________
Which meal?  □ Breakfast  □ Lunch  □ Supper
Time auditor arrived on unit (e.g., 12:00 p.m.): ___________
Type/Unit (e.g., medical, surgical or name): ___________
Number of beds filled: ___________
Time meal truck arrived on floor: ___________ Time tray distribution started: ___________
Time tray distribution completed: ___________ Time of truck removal: ___________
Comment on the unit readiness for the meal and any delays/challenges that might influence the patients’ perceptions of the meal.
_________________________________________________________________________________
_________________________________________________________________________________
_________________________________________________________________________________
Completing MAT Part 2

• Auditor starts the patient interview with “How was your meal?”

• Two questions ask the patient to rate their perception of the importance of food and fluid to their recovery on a scale of 1-10

• The next 17 questions are:
  • Barriers e.g. not getting assistance when needed
  • ‘Yes’ or ‘No’ or N/A columns to be ticked
  • Shading in the N/A column means that a Yes/No answer required
  • Comments can be written beside each question

• Ask how meals could be improved
### Part 2: Questions to ask patients...

**How was your meal?**
On a scale of 1 to 10 (1 is low and 10 is high), how important is your food and fluid intake (in hospital) to your recovery?
On a scale of 1 to 10, how much importance did staff place on your food and fluid intake?

<table>
<thead>
<tr>
<th>Patient:</th>
<th>Patient:</th>
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<tbody>
<tr>
<td>Comments</td>
<td>Comments</td>
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</table>

<table>
<thead>
<tr>
<th>Self-rating</th>
<th>Staff rating</th>
<th>Self-rating</th>
<th>Staff rating</th>
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</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>Comments</td>
</tr>
</tbody>
</table>

1. Did the meal come at an appropriate time for you?  
2. Did you get the food that you ordered (if applicable)?
3. a) Did you have all of the food/drink items you wanted during this meal?  
   b) If you requested other items, did you get them? N/A if none requested
4. Was your meal appetizing (presentation and aroma)?
5. Were hot foods served hot?
6. Did you need help being positioned comfortably prior to eating, AND if so, was help provided? N/A if no help needed
7. Did you have everything you needed in order to eat/drink comfortably (such as your glasses, dentures, etc.)?
8. a) Were you able to reach your meal tray?  
    b) Were you able to open your food packages, OR did you get help to open packages?
9. a) Are you able to eat your meal without help (from staff or family)?  
    b) If staff helped you, did you get help when you wanted it? N/A if no help provided by staff
10. Did you have enough time to eat your meal?
11. Were you visited by staff mid-meal to see if you needed anything?
12. If tray is untouched, ask: did staff offer you any other food to eat?  
    N/A if some items eaten
13. Are you suffering from constipation, AND if so, have you been offered anything to manage it? N/A if no constipation
14. Were you offered help to use the washroom before mealtime? N/A if no help needed
15. Are you experiencing any symptoms like pain or nausea, AND if so, have you been offered anything to manage them? N/A if no symptoms
16. Were you able to eat your meal without interruptions (e.g., doctor, nurse, physical therapist visiting)?
17. Was your meal free from noise, cleaning or other disturbances?

**Total of NO responses – a higher score indicates more barriers to the meal**

Is there anything we could do to make your meals better?
Scoring the MAT

• Add **Total of NO Responses** for each patient
  
  • Two patient’s responses can be used on a single form
  
• This total is the sum of all of the questions in which the patient answered “No”

• **This value represents the number of issues/barriers this specific patient had during the meal**
What does the score mean?

The higher the score the more barriers experienced by the patient.

• After scoring, auditor communicates with:
  • Dietitian or nursing staff about any barriers to food intake that need to be resolved for specific patients
  • Food services about any food related changes requested by the patient
My Meal Intake Tool (M-MIT)

• A single meal intake record
  • also captures some common food access issues
• Completed by patient after completion of a meal
• Should be considered a minimum for monitoring of oral intake
How was M-MIT developed?

• Developed from other simple single-meal tools

• Testing:
  • The validity and ease of completion of M-MIT
  • 120 patients > 65 yrs in four hospitals
  • Accuracy of patient estimation compared to an auditor’s recording of food and fluid intake

• Results:
  • Valid measure (sensitivity & specificity >70%).
  • Minor modifications made to promote clarity and usability

(McCullough et al. 2016)
When should M-MIT be used?

• Patients should receive the M-MIT when their meal is delivered

If following INPAC *(Integrated Nutrition Pathway for Acute Care)*

• *Standard* nutrition care, day 3 and 7 of admission, single meal

• *Advanced* nutrition care, one meal per day
Completing the M-MIT

• Ask the patient to **record their food and beverage intake** so that the staff can better monitor their nutrition needs.

• If **family/friend** is present at the meal, they can **complete this form with/for the patient**.

• When the tray is picked up, retrieve the completed form. If the form has not been completed, remind the patient to complete it.
What if the patient can’t answer the M-MIT questions?

- The **staff** member retrieving the tray can **help the patient** by asking them about their intake.
- Other members of the team can complete:
  - Diet technician
  - Health care aide
  - Volunteers
- **If the staff member completes the form,** they should **check the appropriate box** at the end of the questionnaire.
Completing M-MIT: Page 1

- Patient name and room number is required so that the M-MIT information can be tracked and reported for each patient.

- Placing an X in the correct bubble indicates consumption of each food/beverage during the meal.

- If the food/beverages are left on the tray but not consumed, they are also listed here with an X placed in the 0% bubble.

- Food intake is meant to represent all food items on the tray; an estimate of intake overall is provided.
This form helps us understand how you are eating. Please complete this form after you have finished **this meal**. If you need help, let us know.

1. List all drinks on your tray; this includes juice, tea/coffee, milk, drink supplements, etc.
2. Place an ‘X’ in the circle to indicate how much you consumed of each beverage.
3. For the food on your tray, place an ‘X’ in the circle to indicate how much you ate overall; this includes the main dish, side dishes, soup, bread, dessert.
4. List any food or beverages you are saving to eat at a later time.
5. **Turn the page over** and answer the remaining questions.

<table>
<thead>
<tr>
<th>What meal is this?</th>
<th>Breakfast</th>
<th>Lunch</th>
<th>Supper</th>
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<tr>
<th>What and how much did you drink?</th>
<th>0% I drank none</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>100% I drank all</th>
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<th>How much of all the food on your tray did you eat?</th>
<th>0% I ate none</th>
<th>25%</th>
<th>50%</th>
<th>75%</th>
<th>100% I ate all</th>
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Please list any items (food or beverages) being saved for later: _______________________________
Completing M-MIT: Page 2

• Questions on the second page relate to:
  • If the patient has a poorer than usual appetite
  • Reasons for their poor appetite
  • Challenges with food intake other than poor appetite

• A comment box near the end is for the patient to list any other concerns they may have about the food and mealtimes.
How was your appetite at this meal?

- Very good/Good
- Less than usual

**Why was your appetite less than usual?**

- I was not interested in eating
- I had nausea/vomiting
- I was tired
- I had pain
- I ate other foods and was not hungry
- No specific reason
- Other: ________________________________
  ________________________________

Did you have any challenges at this meal?

- I needed help to sit up to eat
- I needed help opening food packages
- I needed help to eat and/or drink
- I did not like the food
- I had problems chewing/swallowing
- I was not allowed to eat because I am having a test today
- I did not get what I had ordered (if selective menu)
- The environment was not appetizing
- Other: ________________________________
  ________________________________
- I had no challenges

Other comments to share with us about your food intake: ________________________________
  ________________________________
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  ________________________________
  ________________________________
  ________________________________
  ________________________________
  ________________________________
  ________________________________
  ________________________________

Who completed this form?  □ Patient  □ Family/Friend/Volunteer  □ Staff
Scoring M-MIT – What does it mean?

*Intake of less than or equal to 50% of the overall food estimation (e.g. main plate, side dishes etc.) on the tray indicates that further intervention is required to promote intake and recovery of patients. If the patient is only on a fluid diet then similarly low intake indicates need for intervention.*
Next Steps for the Patient

• If the patient is consuming less than or equal to 50% of their meal they should be moved to the next INPAC level (i.e. a patient in Advanced nutrition care should move to Specialized nutrition care)

• If an adequate amount of fluid has not been consumed, interventions to prevent dehydration may be in required.

* Food and fluids saved for later are not considered in the estimation of food and fluid intake.
Summary

• Monitoring food intake and barriers to intake is important for the prevention, identification and treatment of malnutrition

• Mealtime Audit Tool (MAT) identifies barriers to food intake and patient perceptions

• My Meal Intake Tool (M-MIT) is a simple meal intake record that also captures some common food access issues
Acknowledgements

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* Includes input from the UK Need for Nutrition Education/Innovation Programme (NNEdPro) Group

This research is funded by Canadian Frailty Network (known previously as Technology Evaluation in the Elderly Network, TVN), supported by Government of Canada through Networks of Centres of Excellence (NCE) Program
References


McCullough J, Keller HH. The Mealtime Audit Tool (MAT) – Inter-rater Reliability Testing of a Novel Tool for the Monitoring and Assessment of Food Intake Barriers in Acute Care Hospital Patients. 2017; Under Review.