



White Paper

The Logistics of Healthcare Foodservice

From Delivery to Dinner



1. Lessons from Rudyard Kipling

*"I keep six honest serving-men
They taught me all I knew;
Their names are What and Why and When
And How and Where and Who."*

In Foodservice, this lesson translates into "Logistics",...Getting the

- The Right Person,...doing
- The Right Thing,.....for
- The Right Order,....delivered to
- The Right Place,....at
- The Right Time

While this seems to be a simple concept, unfortunately many departments have trouble following this through. When considering there are hundreds of variables to contend with for every patient, this allows for tens-of-thousands of possible combinations and outcomes. Multiply these variables by a few hundred unique patient orders that need three meals a day plus up to three nourishments in-between meals. In addition, those with specialized formulary prescriptions, tube feedings and guest trays and, don't forget, there's forecasting, purchasing, production, distribution, inventory management, sanitation, safety, compliance, customer satisfaction, patient education and cost management. As you can see, there are a multitude of demands. It's now easy to understand why Food and Nutrition Service is one of the most complex departments to operate in healthcare. To be successful, the Who's, What's, When's, Where's and Why's need to be carefully planned with incredible precision to synchronize all of these services and activities within the operation itself as well as with many other departments in organization.

2. The Patient (Why)

Activity starts in the Foodservice Department upon receipt of a patient Admission Order. This information is sent electronically through HL7 interface transaction protocols which then automatically updates the patient's electronic Dietary Cardex. The Dietary Cardex is a specialized software system (Menu Logistics) managed by Dietary Department personnel. Information included in the Admission Order will be; the Patient ID, Room/Bed, Name, Gender, Height, Weight, DOB, Cultural Practices, Allergies, Diagnosis, Attending MD's and perhaps several other relevant pieces of information that would impact menu selections, meal service and clinical nutrition protocols all unique factors for each patient.

The actual provision of meals for the patient will commence once the MD prescribes a Diet Order. Until then, additional information may be updated into the Cardex for medications the patient is taking as well as any results from Laboratory tests. Upon receipt of the Diet Order, the Menu Logistics System



will generate a list of compliant menu items considering all restrictions and conditions associated to the details in the patient's Cardex. The Menu Logistics System will also "flag" items to limit the number of servings that a patient can order to ensure that the nutrition guidelines for their condition are met. Certain conditions or a combination of conditions will auto-generate nourishment orders for patients that are identified as needing additional nutritional requirements.

3. Forecasting & Ordering (What & When)

The first challenge for the Foodservice Department is also an on-going, never-ending challenge. That is, to constantly be looking into the future while considering recent trends for product usage to accurately predict how many portions of each menu item will be required. Once the number of item portions are finalized, the Foodservice Department needs to decide how much of each ingredient is required for purchase to be on-hand in advance of the preparation and service date. This will ensure that every menu item can be produced on time for each meal. Adding to the challenge for ordering is being aware that that one ingredient may be used in dozens of recipes. The Purchaser must be careful to not over order to maintain cost control while never under ordering to ensure that every patient need is met.

4. Production & Distribution (Who, What, When & Where)

There are specialized "Work Areas" in production kitchens; Bakery, Ingredient Room, Breakfast Cook, Deli, Tray Line, etc. Each Work Area will be assigned a daily schedule of what items they are to prepared "Today for Today", "Today for "Tomorrow", "Today for Two Days Ahead", etc. according to the menu. This schedule communicates the responsibilities for each Work Area identifying the Item, the Quantity, the Time/Meal Period and where to deliver it to be served or for additional processing.

5. Meal Ordering (Who, What & When)

The Menu Logistics System generates a list of appropriate food items for each patient to choose from for each meal period. There are several selective meal ordering options available in healthcare:

- On-demand Room Service
- Bedside Menu Selection
- Interactive Television Systems
- Printed Menus

The result of any of these menu ordering options is to communicate the order to the kitchen. First however, the Menu Logistics System validates the selections against each patient's Diet Order, Allergies, Dislikes, Medications and Nutrient Limits. Once all of the orders are verified for patient safety and nutritional adequacy, the System generates the item tally for each meal period, compares



this result against Forecasted Amounts and alerts the staff to any discrepancies for over/under production allowing time for the kitchen to make any necessary accommodations.

6. Delivery (Who, What, When & Where)

Now that the food has been prepared and delivered to the service areas and the patient orders have been validated, the assembly and delivery of patient trays can begin. Statistics are logged for tray ticket print time, tray completion time and tray delivery time to the patient. This information is analyzed to validate or identify service issues for intervention and log KPI and for Benchmark reporting.

7. Clinical Services (Who & Why)

When the patient has finished their meal, Foodservice Staff can log what percent of each item served was consumed by the patient. The System then generates reports for the RD identifying patients that may be at nutritional risk due to an insufficient intake of the foods ordered. For example, some facilities use < 50% consumption for 2 or more consecutive meals as a parameter to define a high-risk patient. Doctors may order Nutritional Assessments, Supplements or Tube Feedings as intervention therapies to mitigate malnutrition or other nutrient deficiencies associated to the particular condition of the patient. The RD can then work with the patient to formulate a plan of care to meet their individual needs. Follow up and reassessments are scheduled to track patient progress towards their goals. These results are automatically updated to the EMR for the doctor to evaluate.

8. Population Health (Who, What & Why)

Attending to patient needs when in the hospital while under supervised care is a critical element in managing Population Health but, it's only one part of the whole continuum of care. Having resources available in the community for the provision of in-home care to take place is the first approach to ensuring population health goals are met. Maximizing care services in the community prior to admission to an acute care setting has been shown to have a huge impact on patient outcomes, quality of life and reduction in personal health care costs.

Recently, there has been an intensified focus to enhance the role the hospital plays to help keep people at home for as long as possible. Hospitals have worked to provide an interdisciplinary team approach to treating patients outside of acute care facilities and outpatient clinics to ensure all patients needs are met. Nutrition and the RD position plays an essential role in this IDNT

Maintaining nutritional status is one way that has been proven to reduce readmissions and improve Population Health. The provision of clinical care in the community setting that includes RD consulting, take-home meals, meal delivery and Nutritional Supplement Dispensaries is necessary to ensure



nutritional needs are met. The Menu Logistics System manages these services for the patients including the interfaces for purchasing and billing management.

9. Menu Logistics – Operational Benefits (How)

The benefits delivered by the ML system are outlined below in the following areas;

9.1. Dietetics Department Operational Efficiency Benefits

The ML system includes Clinical Assessment, Formulary & Supplement modules mapped to F&NS workflows which delivers;

- The capability to draw together the vast array of clinical data required to complete patient assessments including laboratory, medication, vitals
- Ability to evaluate patient food consumption and nutrient analysis thereof;
- Provision for standardized international dietetics and nutrition terminology enabling long-term research and ensure compliance with F&NS nutritional guidelines and JCI compliance;
- Automation of complex nutritional calculations for patient nutritional requirements
- Bi-directional summary report for assessments appended to eMR to provide requesting MD with dietary analysis completed for review and consultation with the Dietetic Department
- Automating monthly and annual reporting requirements including group reporting, facility comparatives, internal KPI and WHO reports
- Access to Formulary and Supplement modules reducing the current workflow requirements substantially ensuring better compliance with patient needs and vastly improved labelling outputs and control
- ICD10 reimbursables integrated within the Clinical assessment module with interface to Billing system
- Centralized records facilitate patient's assessment being available to be accessed after transfers between facilities and/or staff members due to leave requirements

9.2. Diet Office Efficiency Benefits

The ML system provides Patient Meal Ordering and Menu Management Modules mapped to F&NS workflows which deliver the following improvements



- Eliminates last minute calls or emails from nursing staff prior to meal service with the patient changes stipulated above
- Allowing staff to always access real-time data for the meal provision to patients
- Provide kitchen with real-time data for meal tallies
- Improved patient satisfaction with face-to-face interaction with staff collecting orders electronically as bedside or through bedside entertainment system
- Automate room-service offering with real-time data removing possibility of non-current data being used by the telephony order takers
- Remove the need to print menus daily thereby reducing staff processes and paper consumption
- Reduce staff stress during busy periods through the adoption of processes ensuring all last-minute changes are identified and processed to ensure patient safety and maximize the efficiency of the kitchen output
- Remove the need for late trays as new admissions after tray line cut-off will be supplied with the light meal option or sandwiches automatically driven by the system for arrivals after set times by facility
- Automates the nourishment delivery reporting facilitating significant efficiencies within the mid meal delivery processes.
- Menu changes can be completed easily within the system to ensure compliancy with allergens and medication
- Guest trays are automatically taken from the HIS and facilitated within the system according to facility procedures including diet requirements and billing protocols

9.3. Food Service Operational Benefits

- The menu management module provides the kitchen with real-time data for patient's meals, guest meals, catering events, nourishment requirements ensuring efficiencies for the production and trayline processes
- Remove the production of meals for discharged patients
- Reduce the number of meals produced because of late diet order changes
- Reduce the number of meals produced as a result of late changes of updates to medications and allergens
- Reduce the number of meals produced as a result of late room/bed or facility transfers
- Record and prepare tray tickets for new admissions arriving after cut-off enabling proper tracing of meals and nutritional consumption
- Provides forecasting capability based on census consumption history to better inform purchasing decisions thereby leading to cost reductions which may be passed on to F&NS by the contractor
- Provides clear financial support for contractor charges provided across any given period by F&NS group, facility, NSID, diet type, meal period and by patient



- One-off or long-term menu changes can be completed easily within the system for operational reporting

9.4. Nursing & MD Benefits

Diet orders, Assessment/Re-Assessment consultations, Consumption/intake analysis, Formulary and Supplement orders made by the physicians and nursing within the HIS are interfaced directly to the Assessment module for action by Dietetic staff.

- Diet orders are immediately updated to ensure patient safety and remove the likelihood of a patient with a late change to an NPO diet order being provided with food from an earlier diet order.
- Formulary and Supplement orders are reviewed and actioned by the Dietary staff in accordance with the order made by the physicians and labels automated to ensure clinical efficiencies are maximized
- Changes in formulary and supplement orders are managed by an exception process with the system to ensure that updated labels are prepared and previous labels are eliminated
- Upon finalization of the Clinical Assessment by dietetic staff, a summary is automatically appended to the eMR providing a closed loop where the physician can review and action any changes sought to diet order by the dietitians
- The automation of the transactions within the HIS remove the need for nursing to call the diet office during the busy meal period with changes. These changes are managed by the system to provide the diet office with exception reporting every 10-15 mins (or as required) to eliminate the manual adjustment of the menu for each patient subject of a change which impacts the meal offering available to the patient.
- Malnutrition screening results conducted by admissions or nursing staff can be interfaced across to the system thereby eliminating any duplication of process

9.5. Dialysis Patient Benefits

- The system manages Dialysis patients by interfacing the appointment schedule from the HIS and provides the diet office with a tally for future orders requiring production from the kitchen
- Patients can order their meal in advance should choices be available for these outpatients
- The system maintains the schedule and thereby schedules the meal preparation irrespective of the patients being admitted within the HIS and is compliant with the physician's diet order placed for the outpatient
- No shows, cancellations and changes to schedule are also accommodated within the system automatically



9.6. Day Surgery patients

- The system manages Day Surgery patients by interfacing the appointment schedule from the HIS and provides the diet office with a tally for future orders requiring production from the kitchen
- Patients can order their meal in advance should choices be available for these patients
- The system maintains the schedule and thereby schedules the meal preparation irrespective of the patients being admitted within the HIS and is compliant with the physician's diet order placed for the patient
- No shows, cancellations and changes to schedule are also accommodated within the system automatically

9.7. Outpatient Clinic Benefits

- Dietitians can complete patient dietary assessments at the clinic level with the ability to draw various laboratory data into the assessment for a more complete analysis. Food recall is also provided to provide feedback of nutritional profiles for consumption to educate the outpatient
- Bespoke Outpatient assessment forms are designed with the F&NS team to ensure appropriate coverage of specific groups within the outpatient arena. These may include school children for population health measures
- Common terminology and assessment forms allow for the collation of data for research and analysis
- Allows for the standardization of procedures amongst the rotating dietetic cohort attending the outpatient clinic alongside their clinical inpatient roles
- Provides the ability for the Dietitians to place orders for supplements prescribed by the physician to be dispensed from a dispensary point at a future point in time. Notification is provided to the patient via SMS when products are available for pick-up. Reminder messages are also placed for patient convenience.
- Access to Supplement module providing greater control over inventory management for supplements including stock levels, expiry dates, batch numbers, dispensation, stock location, return of goods (subject to F&NS protocols)
- Supplement dispensation then facilitates the transaction to be sent through to the billing system or facilitate the processing of credit card payments from the patient.
- Provision of supplements to patients at risk improves population health and reduces admissions

9.8. Patient Safety Benefit

- Ensures compliancy with allergens to eliminate significant events of patient compromise
- Ensures diet order observance including texture modified and viscosity compliancy



- Eliminates foods with attributes that may have a negative food/drug interaction
- Educational material is provided within the Assessment module available for the patient to access electronically, emailed or be printed
- Nutrient parameters are managed within the system to control the intake of various menu items for compliance with a diet exchange program built specifically by the dietitians for the patient
- Real time room/bed or facility transfers to ensure patient trays are delivered to the correct patients
- Removes the manual process for management of late changes to diet orders, allergen and medication updates which occur just before or during meal period which may result in human error events negatively affecting patients
- No meals provided for patients without a diet order
- System ensure all patients are fed with the system automatically providing compliant patient specific meals without selections being made by the patient.

9.9. Patient Satisfaction Benefits

- Allows better focus on dialogue between dietitian and patient as data is already collated into the system for the patient and removes the significant manual processes required to complete the assessment process
- Assessment can trail will the patient from facility to facility or upon readmission and available to requisite staff due to leave requirements or shift changes.
- Menu choices provided based on menu substitution items when initial menu offering does not accord with recorded patient dislikes
- Menu provided on screen or at bedside available for patients in any language including Arabic, Urdu, Hindi, Pilipino, Chinese or English
- System ensure all patients are fed with the system automatically providing compliant patient specific meals without selections being made by the patient
- Traycard notification for patients where their meal selection has been altered due to change in diet order, medication or allergen update made since the selection time.
- Menu item rating system of one to five stars is available. Capturing specific feedback from patients allows the menu to change related to acceptance of menu items.

9.10. Organizational Benefits

- Elimination of recorded allergens being served to patients due to the sophisticated attribute mapping within all inventory items rolling up into each recipe. For example, a patient with a nut allergy would not be able to order a Fish Curry which contains sesame oil.
- Reduced Patient LOS due to the elimination of meals being delivered to NPO patients due to issues of timing, miscommunication or mis-collation within current data flows;



- Bi-directional clinical assessment communications between RD & MD enhanced delivering better clinical outcomes for patients
- Transfer of dietetic data across facilities for transfers & re-admissions
- Development and documentation of procedures to assist with any ISO review.

For additional information on how to automate Food & Nutrition Services for your organization, call 949-212-7905 or visit <http://menulogistics.com>

