



VST Diet Office System

Vision Software Technologies, Inc. was the first company in North America to create and install a commercially available diet office application.

The first system was installed in the early 1980's and the software has been continuously updated since that time, making it the most sophisticated set of diet office programs ever developed.

The VST Diet Office System completely automates the three major functions performed in the Diet Office - maintenance of patient records, manipulation of individual patient menus, and management of prescribed nourishments/ supplements. A generous amount of statistical information is also derived from the data maintained in the System and is made available for clinical and management use.

In addition to paper based "select" menus, the VST System allows use of "non-select" and "semi-select" delivery systems, "spoken menu" concepts using PDAs at the patient bedside, and a sophisticated "patient room service" module that employs a call center allowing patients to order meals from their bedside telephones.

VST was also the first company to receive information from various hospital registration and clinical systems (A/D/T, Order Entry, etc.) through electronic interfaces. VST has more experience in developing and installing electronic interfaces than all other companies combined. All of the patient related interfaces developed by VST use HL7 standards.

Diet History System

The VST Diet History System provides an electronically maintained patient record for use by both clinical professionals and diet office

personnel. The patient diet history record contains all information required for each patient and completely obviates the need to maintain paper cardex records. The facility has the ability to create customized templates in the record for different patient types in order to capture the specific information required by clinical dietitians. These patient records can be archived in the system upon discharge and they can be automatically retrieved if the patient is readmitted.

Historic information on a patient's nutritional status, including previous diet order, dislikes, specific patient demographic information, etc., can be kept on file for individual patients. Using the patient's name, ID number or room location, this information can be recalled and referenced at any time and the data can be updated if necessary.

Ideally, the Diet History module should interface with the hospital's Admission/ Discharge/Transfer system, Order Entry system, Laboratory system and Pharmacy system to create patient records for the Diet History file and execute changes to the records. A keyboard initiated method of patient data maintenance is also provided.

The Diet History module operates in conjunction with the Menu Management, Nutrient Analysis, Nutritional Risk Screening, Nutritional Assessment and Food/Drug Interaction modules. Information generated through these systems is stored in the Diet History module and can be accessed at any time.

Menu Management System

The VST Menu Management module allows patient menus to be printed by computer. The menu is headed with the patient's name, room

number, diet order, etc. Menu selections are printed according to menu day and individual dietary restrictions and they consider the specific requirements of the patient, including allergies, dislikes, preferences, food/drug interactions, etc.

This module operates in conjunction with the Diet History module (ideally interfacing with the hospital's Admission/Discharge/Transfer system and Order Entry system) to print patient menus, patient nourishment labels, and reports on patient status in total or as exceptions occur. The system will accommodate both standard menu types or menu combinations. Modifications to these menus can be made at any time.

The Menu Management system compares the patient's choices with the patient's exchange pattern and makes corrections to the selections based on pre-established criteria developed by the facility. Concurrence with specific nutrient amounts can also be identified.

Tray cards can be printed for each patient based on his selections, modified selections, or computer generated selections. Production tally information is available at any time.

Nourishment, supplement and tube feeding labels can be printed for all patients for each delivery time or for the entire day. Nourishment, supplement and tube feeding tally information is also available. Charges for nutritional supplement products can be maintained in the patient records for future billings. Billing reports can be generated at any time.

If used in conjunction with the VST Nutrient Analysis System, the patient selections can be shown on the screen after service and the amount of each item consumed can be input. This feature significantly reduces the time needed to accurately perform calorie counts and detailed nutrient intake analysis.

The patient nutrient intake will be calculated and several analysis reports can be generated, by day or for a series of days.

BENEFITS

- More productive diet office staff through the elimination of repetitive tasks.
- Better patient related record keeping.
- Better statistical analysis and management reporting.
- Assurance that patient diet restrictions are being adhered to, as well as all specific patient related restrictions and individualities (allergies, dislikes, beverage preferences, etc.).
- Reduced diet office expenses and reduced food costs.
- The ability to use a "paperless" menu concept.
- Timely, automated patient movement and diet order information through the use of real-time interfaces with all appropriate hospital registration and clinical systems resulting in distribution efficiencies and reduced food costs.

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VST Clinical Systems

Four clinically oriented modules make up the VST Clinical Systems. These modules are used by Dietitians and Diet Technicians on a daily basis to assist in the identification of patients at risk of protein/calorie malnutrition, to calculate and determine the patients' nutritional status, to perform intake analysis, and to record all patient related information. Use of the VST Nutritional Risk Screening System and the VST Food/Drug Interaction System allow for complete adherence to *JCAHO* standards.

Nutritional Risk Screening System

The VST Nutritional Risk Screening System operates in conjunction with the VST Diet History System and the VST Nutritional Assessment System.

Using electronic interfaces, the Nutritional Risk Screening System accepts data from the existing hospital A/D/T, order entry, lab, and pharmacy systems into the appropriate VST System tables. This data is compared to facility selected screening criteria in the VST System and specific screening reports are generated throughout the day.

The screening reports show all patients currently in the hospital who meet the risk criteria established by the facility. Appropriate patient information (name, room, diet type, etc.) is shown, as well as the specific risk criteria that have been met.

After review, dietitians may elect to have the computer generate a thorough nutritional assessment profile on specific patients who have met the screening criteria. This report can be used as further backup for the screening system, as a thorough nutritional assessment that can be

reviewed with the physician, and as documentation to be placed in the patient medical record.

Any patients who have been assessed and treated for malnutrition and associated nutrition related problems are identified in the VST Diet History System. Upon discharge, patients who have been treated for malnutrition will appear on the Patient Discharge Status Report, which is submitted to the Medical Records Department. This report can be used by diagnosis coding personnel to assure that those patients who have been treated for malnutrition can be coded as such, allowing for additional financial reimbursement by third party payers.

Nutrient Analysis System

Using the nutritional composition of recipes and individual inventory items, a patient's nutrient intake can be calculated (on line) considering the items consumed or projected to be consumed. Nutrient calculations can be made for individual items or an entire patient menu. Comparisons can be made to RNI/ RDA tables. The institution can define as many standards tables as are needed. The nutrient density of a patient's diet or for an individual food item can also be calculated.

When used in conjunction with the Diet History module, specific patient data (age, sex, weight, etc.) can be automatically accessed, reducing the amount of time necessary to input this information. Also, the patient's menu/diet selections can be called up on the screen automatically and modified, again reducing input time and increasing accuracy.

Summary nutrient analysis data can be transferred to and stored in the Diet History module daily and a multiple day composite analysis may be generated.

The VST Nutrient Analysis System uses the ESHA Research nutrient database. Updates to the database are provided periodically. Users may also input additional food items into the nutrient database on-site.

Nutritional Assessment System

The Nutritional Assessment module requests the input of general patient information, laboratory data, physical parameters, etc.; analyzes these data and generates information to assist in assessing a patient's nutritional status. Values of transferrin, arm muscle circumference, energy expenditure, required kilocalories/kilojoules, protein requirements, etc., are calculated. The individual patient's values are compared to age and sex matched standards and deficiencies are noted.

When used in conjunction with the VST Diet History module, specific values calculated for individual patients are transferred to and stored in the patient's Diet History record.

Food/Drug Interaction System

The VST Food/Drug Interaction programs are designed to assist in identifying patients with whom a potential drug-nutrient interaction may occur. The system will assist in specifying those drugs prescribed to patients which have a possibility of affecting nutritional status and where interaction with nutrients will alter absorption and distribution. Lists of drugs meeting specific nutrient related criteria (reduced or delayed absorption, decreased appetite, alcohol affected, etc.) are accessible by the clinical staff.

The system will print a set of instructions for use by the patient that lists his prescribed medication, notes possible undesirable effects, and suggests a dietary approach.

If used in conjunction with the VST Menu Management System, the patient's menu choices will be automatically altered if his prescribed medications are identified as having an interaction with specific food items.

BENEFITS

- Increased accuracy of patient intake analysis.
- Enhanced clinical analysis of patient nutritional status.
- Increased clinical staff productivity.
- Reduced patient related hospital expenses due to a reduced length of stay.
- Additional reimbursement opportunities.

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VST Production Systems

The VST Production Systems are composed of two VST System modules - the VST Production Scheduling module and the VST Production Control module. Together, these modules allow all of the major production processing functions in the Department to be automated, significantly reducing food costs, improving standardization and increasing staff productivity.

VST Production Scheduling System

The VST Production Scheduling module uses historical data on actual usage of items served and projects future production needs. Production sheets are printed based on the computer forecast. However, the manager or operator has the prerogative of manually modifying the computer projections on any item. Production sheets reflecting this change will be printed. The system also has the ability to project usage for several locations and consolidate this data into a single production sheet. If needed, production sheets for unscheduled or special functions can be easily created.

VST Production Control System

The VST Production Control module operates in conjunction with the Production Scheduling information previously calculated and will automatically expand the ingredients in each recipe to the amount needed for production of the forecasted

number of portions. If desired, the system can round ingredient amounts to preparation sizes (i.e., the number of portions in a specific cooking pan, major ingredient pack size or batch cooking size). Several portion sizes are also considered. Labels showing the recipe description and each ingredient are also printed and can be used if the ingredients are pre-measured.

Storeroom Requisitions (pick lists) combine the ingredients needed for all recipes to be produced and gives a cumulative listing of these ingredients sorted by storage location.

The system will list items in issue units and/or order units and will consider ingredient waste. This form is used to retrieve items from the storage locations.

A Processing Sheet can be generated detailing the amount of each ingredient that must be pre-processed in any variation. For example, the listing will show the total amount of onion that must be chopped for the day's production, the amount which must be minced, sliced, etc.

A "thaw schedule" can be printed showing all of the items and the required amounts of each that must be transferred from a frozen location to a tempering location for proper thawing prior to production. Freezer pull labels can also be generated for identification of the items placed in the tempering location.

CONTINUED

BENEFITS

- Improved product standardization and quality.
- Reduced food costs ranging from 3% to more than 7% of the annual food budget.
- Reduced over/under production due to computer generated production schedules.
- Increased staff effectiveness resulting from the use of precise work guides and accurate production information.
- Improved management control due to the availability of timely and factual information.

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VST Food Service Administration System

The VST Food Service Administration System is comprised of a series of software modules that provide excellent management oriented information to the leadership of the Department.

This software builds on the VST Production Modules and gives detailed cost and tracking data to management and staff. The Food Service Administration System includes the following five systems, any of which can be furnished independently:

- Inventory Control System
- Purchasing System
- Cost Analysis System
- Cost Charging System
- Catering System

Inventory Control System

VST provides a manufacturing oriented inventory control system that includes raw materials, work-in-process and finished goods inventory items as separate inventory systems with needed transfer between systems for accountability and costing requirements. The system has been designed to accommodate both conventional and cook-to-inventory production methods. Bar coded inventory tracking methods are available as are interfaces to computerized materials handling equipment. Bar code readers and other electronic inventory recording equipment can be used to reduce the time required to track inventory items.

The Inventory Control System is structured for operation in a single location or with a multi-site organization.

Purchasing System

The Purchasing System is designed to assist the purchasing manager in determining the amount of each food item to be purchased, create bid sheets, hold vendor and contract information and print purchase orders and requisitions. The user can have the system select items to be purchased through a "par level" methodology or can select items based on cycle menu requirements.

Orders received can be verified and the inventory system can be updated.

Electronic price updates can be relayed from vendor computers and purchase orders can be electronically transferred to the vendor's order entry system, again, significantly reducing the requirement for manual data entry.

Cost Analysis System

The Cost Analysis System provides cost information on recipes, special functions, etc., using current ingredient prices. Reports can be generated on the food cost of a cycle day menu, separating the total production costs between patient and non-patient areas.

The system will calculate the suggested selling price of cafeteria items based on actual food cost in conjunction with user selected formulae and variables, compare projected costs with anticipated revenue, show expected gross profit and the percentage of profit to sales. The system can be used like an electronic spreadsheet to determine the best menu item mix and pricing methodology to obtain desired profit objectives in the retail areas of the Department.

Cost Charging System

The VST Cost Charging System is designed to be used as a tool allowing the Food Service Manager to properly monitor and control the cost of food items used by various departments and the cost of bulk nourishments used by individual nursing units. Nursing unit floor stock sheets can be input into the system and the amount of each item sent to the unit can be tracked, costed, and charged to the unit and be properly relieved from inventory.

Reports can be generated which will give information, by cost center, on weekly, monthly and yearly costs, relate these costs to previous year's costs, and compare these costs with pre-established budgets. Reports are also provided showing statistical information on the census and tray count for each nursing unit.

Catering System

The VST Catering System allows general administrative information on a catered function to be input into the system (name of event, date of event, place of event, etc.) along with the menu to be served at the function. The system will cost the menu - considering food cost, labor cost, overhead and profit and will print an invoice for the event. Costs can be transferred to a cost center, accumulated, and reported on a weekly, monthly and year-to-date basis. If desired, catered function production requirements can be consolidated into standard daily production schedules.

BENEFITS

- Improved effectiveness of the Department due to automation.
- Better control of the inventory and purchasing process.
- The ability to automatically charge the cost of foods to various cost centers, tracking the distribution of materials throughout the facility.
- Incorporating catered functions into the general flow of information and materials in the Department.
- Seamless order placement with the Department's prime vendor(s) and automation of price updates, allowing for immediate, accurate cost information with very little keyboard entry.

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Vision Software Technologies, Inc. DIETCOM

Dietary Communication System

The VST, Inc. Dietary Communication System is a unique application that allows dietary information to be transferred from nursing units to the dietary offices. This modern approach to order communications is specifically tailored for dietary operations – it's not simply a generic order entry program configured to transmit diet orders. DIETCOM allows the *complete* entry of diet orders, schedules progressive orders and other activities, calculates clinical requirements, and provides dietary specific reporting to nursing and dietary personnel. This additional functionality eliminates the need to interpret free text, eliminates the numerous phone calls between nursing stations and the dietary department, and eliminates the time consuming cross-referencing and manual documentation – *providing significant increases in nursing and dietary personnel productivity.*

Developed for a 32-bit, Windows NT/2000 platform, DIETCOM incorporates open architecture, operates in a client/server environment, and complies with mandated HL7 standards for data communication in health-care. DIETCOM is currently being installed in high profile, industry-leading facilities that are applying state-of-the-art technology in innovative fashion to optimize patient care and achieve record rates of return on investment.

In a user-friendly environment, DIETCOM represents the state-of-the-art in data entry and control of patient related dietary orders and accompanying dietary information. Used as a stand-alone program, DIETCOM allows dietary orders to be input by physicians, nursing personnel or clinical dietitians from any workstation connected to the hospital's network.

Exclusive to this product, DIETCOM not only accepts data but also provides significant process and scheduling of important dietary information, performs clinical calculations, routes documents, etc. Patient related reports and labels are generated which provide dietary and nursing personnel with summary, STAT and exception information needed to quickly and accurately fill orders.

In addition to its use in a stand-alone mode, DIETCOM can be used in conjunction with an automated dietary information system such as the VST Food Service Management System. If so, the above noted data is deposited directly

The screenshot displays the 'Patient Master' window for 'DSL-8' in the 'Dietary Order Entry System'. The patient name is 'BOBPIDT, ROBERT', MRN is '38300773', and the nursing station is 'DSL-8'. The room/bed is '823 - A'. The admission date is '07/09/1998', age is '44 Y', and sex is 'Male'. The active order status shows an allergy to 'Egg Free, Peanut Oil'. Below this, there are sections for 'DIETS' and 'FUTURE TUBE FEEDING' with specific details for each. At the bottom, there is a row of navigation buttons: Allergy, Orders, Diet Order History, Consults And Visits, Intolerances, Dislikes, Likes, Tray Delivery, Tray Instructions, Missing Tray/Item, and Guest Trays. A message box states 'Your orders / requests have been sent.' and provides instructions on how to continue entering orders or navigate to another patient. At the very bottom, there are buttons for 'Signoff', 'Previous', and 'New Patient'.

Allergy	Orders	Diet Order History	Consults And Visits	Intolerances, Dislikes, Likes	Tray Delivery	Tray Instructions	Missing Tray/Item	Guest Trays
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Vision Software Technologies, Inc. DIETCOM

Dietary Communication System

into the dietary computer system. This eliminates the need to write interfaces to major HIS order entry systems which are costly and less effective than DIETCOM, usually requiring supplemental entry of dietary data not made available in the generic order entry system.

DIETCOM accepts patient information through an interface with the hospital's A/D/T system or through keyboard entry. Patient listings can be sorted by nursing unit, by service, by floor, by building, etc., or for the entire facility. The desired patient can be selected and his order(s) placed quickly and completely. VST can also write HL7 interfaces to send data from DIETCOM to the major hospital information systems to populate HIS patient records with dietary information.

DIETCOM has full integrated security and allows the input of:

- ◆ Patient diet orders – including multiple components and restrictions
- ◆ Progressive orders and advanced orders
- ◆ Patient nourishments and supplements
- ◆ Patient tube-feeding orders
- ◆ Infant formula orders
- ◆ Food allergies, food intolerances, food likes, food dislikes
- ◆ Dietary/clinical instructions and messages
- ◆ Tray delivery instructions (early, late, hold)
- ◆ Guest tray processing and charging
- ◆ Patient anthropometric data input (height, weight)
- ◆ Patient consultation orders
- ◆ Missing tray items

Various reports can be generated from DIETCOM to include patient census for a specific area, listings of progressive orders, listings of future orders, etc. These reports can be printed on demand or scheduled for automatic printing at pre-established times. The printouts can be routed to individual nursing stations, to the diet office, or to any designated printers on the network.

DIETCOM also allows the users to inquire and review the patient transfer and discharge activity by nursing station, by service, etc. Various sort/filter options are available to allow information to be presented by user defined date range, time of day, etc.

DIETCOM Benefits

Primary benefits derived from the use of DIETCOM are:

- ◆ Increased management efficiency and control
- ◆ Enhanced patient care
- ◆ Reduced food costs due to the timely receipt of dietary orders
- ◆ Reduced labor costs through the reduction of manual recording and duplicate data entry
- ◆ Increased productivity and effectiveness
- ◆ Improved patient satisfaction
- ◆ Improved management of clinical (nutrition) records
- ◆ Compliance with relevant regulations and guidelines (from JCAHO, OBRA, state agencies, etc.)

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VST Mobile Bedside Menu Selection System

Most acute care hospitals in the US allow patients to select the items that they would like to eat from a menu of choices served each day. The conventional method of patient selection uses a paper menu that is delivered to the patient each morning. The patient makes his selection by checking the desired items (usually for the next day) on the paper menu, which is then retrieved and returned to the diet office for processing. If an automated diet office system is used, the patient's menu selections are input into a computer program through keyboard entry.

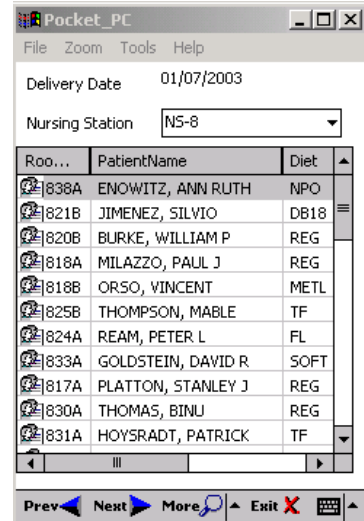
This decades old process of patient menu selection is fraught with inefficiencies and high costs, and it engenders low patient satisfaction scores. The logistics associated with conventional paper menu distribution and retrieval cause the patient selections process to take place as much as five meals in advance of food delivery. Considering that more than 1/3 of the patients in an acute care setting have daily diet changes that affect the food items they are permitted to eat, collecting menu selections several meals in advance results in patient food choices made while on a previous diet not being honored, and leads to low patient satisfaction scores. The "impersonal" approach associated with the use of paper menus also contributes to reduced patient satisfaction scores.

Considering standard food preparation and delivery methods, VST employs the newest technology to overcome the causes of patient dissatisfaction while reducing costs and increasing staff productivity. The VST Mobile Bedside Menu Selection System uses standard Personal Data Assistant (PDA) equipment with sophisticated data transfer protocols to give a food service worker the ability to gather patient menu selections at the bedside. This technology makes all of the relevant patient and menu information available to the food service worker in a compact device, allowing for accurate and timely input of the patient selections through direct communication with the patient. This "face-to-face" interaction is, in itself, a major contributor to improved satisfaction scores.

Process:

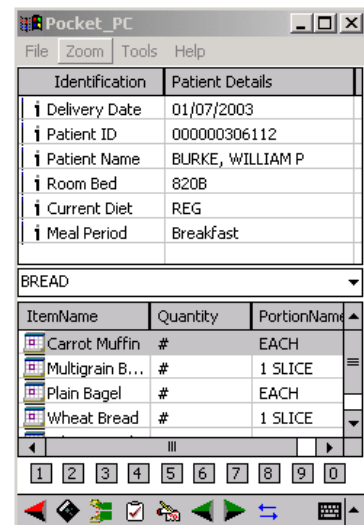
The VST Mobile Patient Menu Selection System allows Nutrition Services staff personnel to select and download patient information by specific nursing station. Multiple nursing stations can be selected, as well as menu information for as many as seven days in advance.

Once at the patient bedside, the Nutrition Service worker can select the desired patient from the PDA screen, choose the appropriate date and meal, and begin the menu selection process.



The menu selections, specifically tailored for the patient to consider his diet and individual restrictions, will appear on the PDA screen by menu category (entrees, deserts, beverages, etc.).

Virtually any menu style can be accommodated (i.e., cycle menu, restaurant style menu, packaged meals, etc.). The user can select menu choices from a specific category, choose the number of servings and the portion size (if different from the preset defaults) and either move to the next category or select a specific

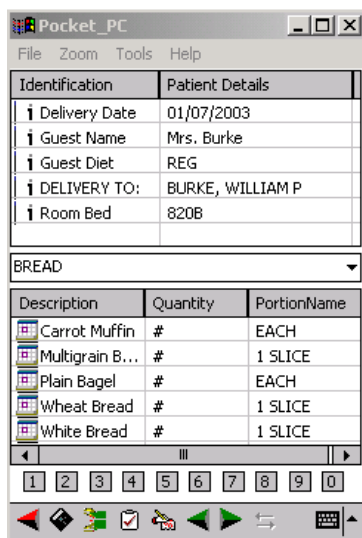


category in order to continue the selections process. "Write-in" items can also be entered into the device as per the department policy.

If a patient prescribed a diet that requires adherence to a diabetic exchange pattern or if carbohydrate counting is used, the operator can view a dynamic comparison of the values of the choices made relative to the pattern/restrictions. Corrections can be made at the bedside, assuring that the patient will receive the items selected, and that those selections meet the requirements of his diet without further review

by clinicians. The user can override the pattern restrictions if desired.

The programs also allow "auto-generation" of full meals, tailored to the patients diet and individual restrictions, if the menu collection procedure is to request only partial meal selections from the patient (i.e., only the entrée and beverage). This feature reduces the time spent with each patient and the corresponding staffing requirement.



"house" meal can be chosen. A tray card for the guest tray(s) will be generated with that of the patient for the required meal(s). If desired, the cost of the guest tray(s) will be charged to the

Menu selections for guests of the patient can also be input into the device. Multiple guest trays for any meal, identified by guest name, can be entered and processed appropriately. The software allows for individual item selections for each guest, or a

patient and reported through standard VST System reporting processes.

Features:

- The ability to collect patient menu selections at the bedside for the day, for a single meal, or for two of the three meals served in a day...up to seven days in advance.
- The ability to input "write-in" items.
- The ability to dynamically calculate and display a comparison of menu items selected to carb counts and exchanges.
- The ability to input guest tray selections
- The ability to "auto-generate" a full meal if only partial selections are entered. This abbreviated process achieves desirable outcomes for both the patient and the department by combining personal preferences with limited selections while reducing menu selection collection to a minimum.
- The ability to download recent patient transactions only, informing menu collection personnel of patient changes by exception.

Benefits:

Increased patient satisfaction. Use of the VST Mobile Patient Menu Selection System increases patient satisfaction through personal dialogue with the patient regarding his menu selections, and through increased accuracy of delivered items.

Increased staff productivity. Inefficient delivery and retrieval of paper menus, paper handling, and/or input of selections in an office environment are replaced by one-on-one activity at the patient bedside. Patient related activities are moved from the diet office to the point-of-care.

Reduced costs. The cost of purchasing, storing and printing of paper menus is eliminated.

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