



ADVISOR REVIEWS—STANDARD REVIEW

Nutrition Care Manual

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Composite Score:

★★★ 5/8

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Abstract

Developed by the Academy of Nutrition and Dietetics, Nutrition Care Manual serves as an evidence-based, point-of-care tool for students, educators, and professionals. The content covers the most common nutrition issues, professional background information, treatment plans, and patient education information. However, the user interface is confusing with few paths for logical search or navigation and lacks many of the common features users expect from most electronic resources, such as permalinks or mobile viewing. While the content and flexibility meet a previously unfulfilled need in allied health resources, the interface problems hinder maximum utilization of the content quickly.

Author's Note: In September 2013, the Academy announced a series of updates to NCM including easier mobile navigation and content organization that may differ slightly from the body of this review.

Pricing

Nutrition Care Manual offers a variety of pricing models based on factors such as individual and institutional subscriptions, number of concurrent users, and membership status in the parent organization, Academy of Nutrition and Dietetics (AND).

An existing subscription to Nutrition Care Manual also provides discounted rates for subscriptions to the Pediatric Nutrition Care Manual.

For more pricing information, visit the following Web sites:

<http://www.nutritioncaremanual.org/Website_content.cfm?code=Intro:NCMMemberPricing> (members)

<http://www.nutritioncaremanual.org/Web_site_content.cfm/?code=Intro:NCMNonMemberPricing> (non-members)

For direct inquiries, please contact Sandra D. Biel at 800.877.1600 x4795 or <sbeil@eatright.org>

Product Description

Nutrition Care Manual (NCM) is a Web-based handbook for the registered dietitian and allied health professionals that functions both as an educational and point-of-care tool. With the growth of computing and mobile computing resources, point-of-care tools are transforming the way health care providers interact with reference materials. The growing adoption of evidence-based practice also supports the adoption of bedside research tools to ensure proper translation of

best practices into health care. Many medical resources, such as DynaMed, UpToDate, and Clinical Key, aim to serve physicians, not allied health specialists. Therefore, organizations, such as Academy of Nutrition and Dietetics, are starting to develop a series of tools that comply with the profession's standard of the Nutrition Care Process and build upon the Academy's position papers and *Evidence Analysis Library* articles.

CONTENT STRUCTURE

NCM separates its content into two separate ways to navigate. The top navigation resembles physical file folder tabs and identifies five main areas: NCM, Client Ed, Calculators, Formulary, and Resources. The NCM tab covers the main information on diagnoses, diseases, and populations. The Normal Nutrition, Risk Screen, Conditions, Nutrition Care, and Older Adult Nutrition buttons in the lower navigation section are all areas covered in NCM. The Client Education tab covers the lower tab Meal Plans, leaving three unique top navigation components: Calculators, Formulary, and Resources. The Calculators tab provides a set of common calculators, such as BMI & Weight Range, Calorie Intake Diabetic Exchange, and Resting Energy Expenditure/Estimated Energy Expenditure (REE/EEE). The Formulary tab provides ingredient lists and nutrient data for oral and tube feeding solutions. Information for Formulary stems from manufacturer product guides and food labels. The Resources tab provides many resources including, full-text equations, cultural food practices for multicultural competency, and an overview of the Nutrition Care Process, to name a few.

The bottom set of buttons organizes the information into seven main categories: Normal Nutrition, Risk Screen, Conditions, Nutrition Care, Meal Plans, Older Adult Nutrition, and References. Each category provides an overview of the topic. The Normal Nutrition button provides a broad overview of nutrition and also highlights general issues for key populations, such as pregnant women, aging population, and vegetarians. The Risk Screen button first allows the user to identify a key disease or topic in the left-hand column; then, the user will find information on Criteria to Assign Risk and Rationale for Nutrition Consult Order specific to the disease or topic. The Conditions button uses the same left-hand disease or topic navigation column; each disease has subsections, such as Overview, Disease Process, and Biochemical and Nutrient Issues. The Nutrition Care button addresses the specific components of assessment, diagnosis, and intervention for specific diseases, again utilizing the same left-hand disease or topic navigation first. The Meal Plans button provides patient education materials on diseases; most are written at the sixth or seventh grade reading level and many are available in English and Spanish. New to

FIGURE 1 Nutrition Care Manual Opening Page

to incorporate more support for the Nutrition Care Process into the EHR. NCM also provides the option to create Facility Pages containing unique information from your institution, as part of the Meal Plans/Client Education section. The Formulary information can also be customized to include nutritional items used at your facility. Permissions and access to these tools reside within the administrator account.

TRAINING MATERIALS

The About page provides a Webinars link to recorded Webinar training sessions that now serve as asynchronous tutorials. Tutorials range in scope from a general overview to ordering to administrator controls. Additional tutorials provide tailored perspectives for nurses, students and interns, and

the 2012 edition, the Older Adult Nutrition button explores the issues unique to geriatrics and end of life nutrition. The References button provides a list of material used in developing the evidence-based information in NCM; many of the entries also provide other recommended Web sites or resources. Each set of references is organized around a condition (disease, diet type, population type, etc.) and general healthy diet information. Many of the references also offer links to abstracts or full-text articles. Items cited from the Academy of Nutrition and Dietetics' *Evidence Analysis Library* are not linked or available for review. Product updates occur annually.

CONTENT SHARING

Throughout the system NCM provides print, e-mail, and Facebook sharing functions. To print individual pages, you can use the direct print option. Like the print feature, the e-mail feature will generate an e-mail for the specific page. To gather multiple pages together or collect them as PDF files, you can use the Add to Print Queue option; a limit of 5 pages can be in the Print Queue at one time. Adobe Reader is required to open PDF files in the browser. Users must utilize these functions since the URLs for each page are not reusable as a permalink. Referenced works are provided and direct links to public resources are available, clarifying the role of evidence in the recommended practices and information.

CUSTOMIZATION OPTIONS

Several options exist for customizing NCM to your institution's needs and usage. Direct annotation via highlighting text or applying sticky notes is possible. The client education materials also allow for direct entry of information into the PDF forms prior to printing, as well as allowing you to incorporate your own logo onto the patient education forms. The patient education materials are also available for direct integration into electronic health record (EHR) systems. Currently, EHRs poorly support nutrition information or the nutrition care process¹. Therefore, NCM would be a good, rather inexpensive option

dietetic educators and preceptors. The Help section provides FAQ information and answers.

Critical Evaluation

SEARCHABILITY/USER INTERFACE

Overall, the NCM user interface aims for a basic level of searchability and lacks some of the features common in other resources for broader, more reliable searching. Starting from the product home page, NCM focuses the central frame on information about the printable table of contents for NCM and other different products, an order form, and update information. The navigation at the top and the search bar are tucked away in the upper right-hand corner and overshadowed by this other information (Figure 1). The PDF of the Table of Contents is useful to identify the sections and nesting structure, but the Table of Contents is not hyperlinked for direct navigation from the PDF. For new users, this overwhelming amount of information hinders direct access to content. At least the top segment of the page remains persistent throughout the rest of the site's navigation. The persistent header and links are vital as NCM's design aims to offer only two paths of content navigation: browsing and basic keyword searching. For browsing, the relationship between the two rows of tabs is confusing. While some items in the top row do relate to items in the second row, the relationship is inconsistent as other items, like Resources, have no second row relationship. For those items with bottom tab correlations, there is some feedback about that connection through on-click button style changes; for example, the selected Client Ed tab change to a blue/white color setting when selected and the Meal Plans button changes the font to black when selected (Figure 2).

For all items, left-hand column navigation is persistent, but especially important for sections like Resources that have no other section refinement options. Key words are indexed across the entire Web page and no specific weight is given to terms used in headings or section names over terms mentioned once within the main text of the page.

FIGURE 1 Meal Plans button changes the font to black when selected.

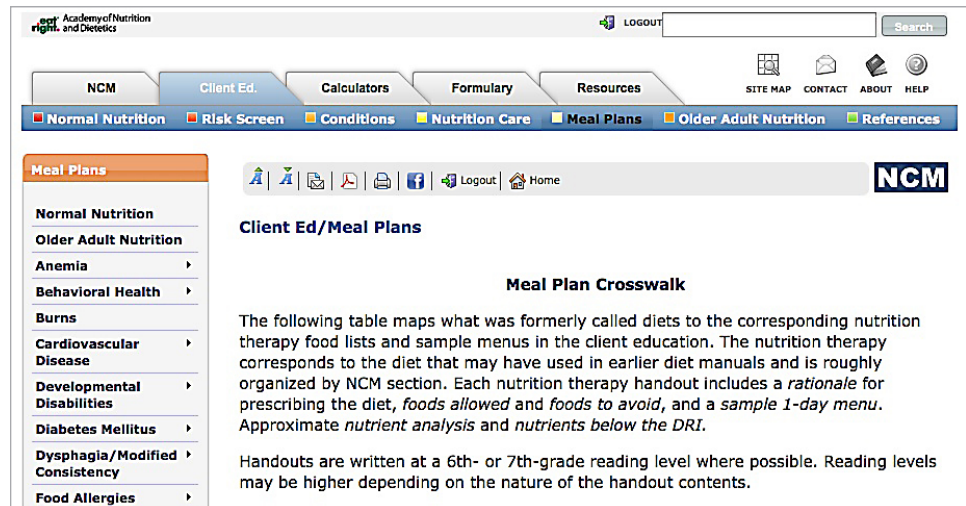
No advanced search screen is available, but phrase searching using quotation marks and Boolean logic work consistently, as tested with “diabetes insipidus,” diabetes AND Hispanic, and diabetes NOT Hispanic.

In addition to subsection content listing, the left-hand column also offers a Print Queue and Recent Pages listing. The Print Queue saves resources and print queues across users and sessions for up to two weeks (Figure 3); this is particularly problematic if you have multiple users or multiple seats for the product, using NCM regularly. Removal of items from the print queue is not automatic after completing the Download Queue option. Instead, individual items must be manually removed from the print queue. The queue also has a five-page limit. When a user reaches the limit, a message appears stating, “Only 5 pages are allowed to be added to your print queue at this time.” Recent Pages offers a limited search history for the last five pages visited within NCM; the five-part listing is a standard listing of database activity, as also seen in PubMed’s layout for Recent Activity listing. While these items are all useful components, they unfortunately are often hidden well below the fold of the page, as the left-hand navigation of disease or topic subsections is often rather lengthy.

MULTI-USER ACCESS

NCM automatically times out after 15 minutes of inactivity. When trying to access NCM and the maximum number of users are logged in, the following message appears:

Your login has exceeded your facility’s subscription. Please wait a few minutes before trying to login again or contact your clinical



nutrition manager (dietitian or dietetic technician) if this happens frequently. Unattended users will be logged off automatically after 15 minutes of inactivity. Thank you.

Therefore, the recommended best practice is to have users use the Logout button before closing the Web browser screen to avoid lag time between users.

WEB BROWSER COMPATIBILITY

According to the Help files, NCM is officially supported on the following Web browsers: Internet Explorer 7+; Firefox 3.5+; Safari; and Google Chrome.

Javascript and cookies must be enabled on the Web browser to utilize all features in NCM. Pop-up blockers are not recommended, as some links (client education printouts, references, external Web sites, etc.) open new browser tabs or windows.

MOBILE DEVICE COMPATIBILITY

Since this product does not utilize standard platforms like ebrary or MyiLibrary, there is no mobile app developed for access. There is also no mobile site developed for phone or tablet access. However, NCM works well on the iPad (Safari and Chrome browsers seemed to operate well) with a few barely noticeable functionality differences. One main difference is the subtopic menus do not appear as hover menus (no hover ability on the iPad), but when a user taps on a main heading he or she is then taken to a page displaying the subtopics listed under the overarching condition. For example, when a user taps on “Cardiovascular Disease” in the Risk Screen area, these subtopics appear on the next screen: Cardiovascular Disease, Coronary Artery Disease, Disorders of Lipid Metabolism, Heart Failure, and Hypertension. Meal Plans and other Client Education PDF articles will display on the iPad if the iPad user has Adobe Reader or another PDF reader app installed on their device. Some alternate PDF reader apps include Evernote, ebrary, Nook, Chrome, iBooks, or Kindle. Adding and removing items to the print queue work as intended, although printing may be restricted by user’s connectivity to a WIFI-enabled printer. The various calculators (BMI, REE/EEE, Metric Converter, Calorie Intake Diabetic Exchange, etc.) work well on the iPad. Please note that the Webinars and other videos included in NCM are in WMV format and will not play on the iPad unless a WMV player app is installed. WMV player apps are available in the App Store.

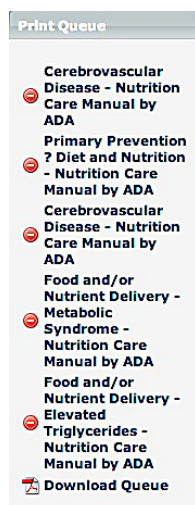


FIGURE 3 Print Queue



Nutrition Care Manual Review Scores Composite: ★★☆☆ 5/8

The maximum number of stars in each category is 5.

Content: ★★★★★ 1/2

The content covers many of the top 120 nutrition issues for dietitians. Annual updating ensures the accuracy and currency of the evidence and recommendations.

Searchability: ★

Confusing navigation starts from the home page and continues throughout. Basic keyword searching limits users' ability to place weight on search terms. Needs more attention to navigation structure and document formatting for better accessibility.

Price: ★★★★★

A very economical solution for point-of-care nutrition information, even for those who are not Academy members.

Contract Options/Features: ★★★★★

Lots of customization features allow for flexibility in tailoring the tool to your institution's practice. Permissions to reuse patient education information also a plus. Lack of permalinks and mixing of users stored items are some problematic features.

NCM will also work on Android tablets. For the purpose of this review, NCM was tested on a Motorola Xoom, running Android 4.1.2 (Jelly Bean), with Chrome and Firefox the tested browser apps. PDFs on the Xoom opened in the pre-installed Quickoffice Lite HD app. All of the Calculator forms work as intended, but the Webinar WMV files did not function on the Xoom. Adding and removing items to the print queue work well, although printing may be restricted by user's connectivity to a WIFI-enabled printer. A WMV media player app is required to view the videos in NCM; these WMV player apps are available in the Google Play Store.

ADA ACCESSIBILITY

As more information lives in an online or electronic environment, organizations must also evaluate the accessibility of these materials for those with visual, hearing, motor, or cognitive disabilities. NVDA and JAWS, two common screen reading software, were used to evaluate document structure and navigation. For normal content pages, such as Vegetarian Nutrition under Normal Nutrition, many parts were not structured well. The main body text, headings of the navigational boxes on the left, and the in-page toolbar including font size adjustments, e-mail, print, and Facebook links were all skipped. Use of pop-out menus in the left hand column was somewhat problematic, as JAWS could acknowledge the menu while NVDA could not. The same pattern occurred with topics from the main body that used plus and minus sides to explode or hide content. Native PDF files exist as untagged document files; Adobe Reader does provide users the options for automatic tagging of PDF files. The form fields at the top of the PDF documents could not be corrected and simply read the section as "Underline" instead of guiding a user on what information should be entered there.

Special thanks to David Vess, Digital User Experience Librarian; Carl Nelson, Digital User Experience Specialist; and Christina Wulf, Assistive Technology Assistant for collaborating on the accessibility evaluation.

TRAINING MATERIALS

Many of these videos are based on the 2009 edition of NCM, including the ones listed as "New!" Because the product is updated annually, some of the navigation links are named differently now and the home page's central content is also very different. While the videos use Microsoft's proprietary Windows Media Player extension, there are unique encoding components to the videos since they come from recorded GoToMeeting Webinars. These unique components make it difficult to access the files properly in common video players and a plug-in is required. Also, files tend to be rather large, making it difficult to stream due to long lag times. Videos are also recorded at full browser size, requiring those with smaller screens to scroll up and down and left to right to see the entire screen. Tutorials are not captioned or subtitled for accessibility; no transcripts of tutorial content are available for review. No new or upcoming live Webinars are listed for possible participation.

USAGE STATISTICS

Usage statistics are available upon request by contacting <nmsupport@eatright.org>. After the initial request, monthly reports can be delivered via e-mail if the subscriber opts-in with a designated e-mail address. The reported usage is not COUNTER-compliant and provides page views by date only. Turnaways, searches, sessions, and other counts are not provided.

Contract Provisions

For ordering, no contract is completed, just a Nutrition Care Manual Order Form with instructions on order placement. Other provisions regarding resource use are listed in the Help section of the resource. For example, NCM describes the restrictions to reprinting or adapting information, granting permission for reuse of Client Education Materials but requiring consultation with the permissions editor for any other alteration or reuse of the materials.

Authentication

NCM is IP authenticated, but access is restricted based on the number of user seats paid for in the subscription. No login is required because of the IP recognition, but users should logout when finished to allow others to access NCM. Shibboleth options are not available.

Authors' References

Gregerson, John. "The Great Migration: Opportunities and Obstacles Await Those Advancing towards Electronic Health Record Adoption." *Journal of the Academy of Nutrition and Dietetics* 112, 11 (2012): 1710, 1713-1717. Accessed on May 11, 2013. doi: 10.1016/j.jand.2012.09.001.

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Endnotes

1. John Gregerson, "The Great Migration: Opportunities and Obstacles Await Those Advancing towards Electronic Health Record Adoption," *Journal of the Academy of Nutrition and Dietetics* 112, no. 11 (2012), 1710, 1713-1717. Accessed on May 11, 2013, doi: 10.1016/j.jand.2012.09.001.

About the Authors

Carolyn Schubert is the Health Sciences and Nursing Librarian at James Madison University. Carolyn earned her Masters of Library and Information Science from San Jose State University. She is an active member in the Mid Atlantic Chapter of the Medical Library Association (MACMLA). She has authored a product review in *Collaborative Librarianship* and presented at the Medical Library Association's and MACMLA's annual meetings.

Amanda Hedrick is the research database specialist at James Madison University. She holds a B.A. in history and an M.A. in Appalachian Studies. Amanda works closely with the librarians at James Madison University to ensure access to quality electronic research resources. ■



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