Software Review: VisualDx Dental

VisualDx Clinical Decision Support Software

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Reviewed by:

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VisualDx is a software program that provides assistance in the identification of dental and medical diseases. In this review, we focus on the Oral Lesions module of VisualDx Version 4.0, which is intended to help clinicians identify oral and facial lesions. The software allows the user to identify a disease by typing the name of the diagnosis or by providing different clinical clues such as lesion type, distribution, and/or findings. The software matches the given clues and generates a list of possible diagnoses. From this list, the user is able to pick one or several and then review the corresponding information in detail. When selecting a diagnosis, the software displays textual information, which includes a synopsis, elements to look for, diagnostic pearls, and differential diagnoses (if applicable), as well as other data. At the same time, images illustrating the diagnosis appear next to the text. In addition, the user can select several diseases simultaneously, for which the software displays respective images side by side, thus enabling a visual differential diagnosis.

To begin the evaluation, we reviewed the tutorial provided on the CD-ROM. The tutorial was simple and provided a quick way to become acquainted with the software. A key element of VisualDx is the simplicity of the user screens. The overall look and feel of the software are similar to an Internet website, thus allowing easy navigation through “links” and buttons. Although typing is not required, obtaining clinical information is relatively easy.

The main screen (see Figure 1) of the application provides several domains of diagnosis, such as adult and pediatric diseases, and other areas, such as medication problems, bioterrorism, and oral lesions. On this screen, it is also possible to type a specific diagnosis directly. One disadvantage of this feature is that the user has to type the diagnosis exactly as it is listed in VisualDx’s database. The software does not accommodate alternative spellings or typos.

If the practitioner does not wish to type the name of the diagnosis, he or she can follow a different path to reach a diagnosis: 1) identify a clinical area of interest (adult, pediatric, oral lesions, etc.) on the main screen; 2) identify the lesion type (for example, ulcer vs. macular); 3) specify the distribution of the lesion (for example, widespread vs. truncal); and 4) provide additional findings from predetermined menus (for example, obesity or diabetes). In addition, the user can type the name of a specific finding.

During this input process, the software creates a list of diagnoses based on the number of “positive” matches with the information items entered above. The diagnoses in the list are ranked based on two conditions: 1) the number of information matches relevant to the diagnosis, and 2) whether the diagnosis represents a life-threatening emergency that would require immediate treatment. On the list of diagnoses, the user can double-click an entry to receive in-depth information and at least one picture for the diagnosis.

The “Oral Mucosal Lesions” module is edited by Carl Allen, D.D.S., M.S.D., and Sook-Bin Woo, M.S., D.M.D., M.M.Sc., two well-respected oral and maxillofacial pathologists who practice clinical oral medicine and diagnostic oral pathology. The module covers eighty-three diagnoses from amalgam tattoo to (herpes) zoster and includes both common and rare neoplastic, reactive/inflammatory, and systemic diseases with oral manifestations. The module is illustrated with 815 medical photos. The photos are generally of very high quality, though some lack crisp focus.

To perform a search, you can scroll down an alphabetical listing of the eighty-three diagnoses in the left side of the screen (see Figure 2), or you
can type in a description of lesion morphology in the “Enter Findings” box. Thumbnail image diagnoses appear on the screen with the number of images displayed in the lower margin. If you type in “vesicle,” for example, then cicatricial pemphigoid, hand-foot and mouth disease, herpes simplex, and mucocele images are displayed. Differential diagnoses are further refined by entering lesion distribution and patient symptoms.

Most lesions have multiple images to assist the clinician in the variable clinical appearances. For example, Plummer-Vinson syndrome has just one image of a red atrophic tongue, but oral candidiasis has thirty-five images showing the extensive variety of clinical appearances, from pseudomembranous to atrophic to angular cheilitis.

Clicking on icons in the lower margin of the thumbnail image will access all thumbnail images on the condition or provide the diagnosis synopsis. The synopsis appears in a two-column format (see Figure 3) with text on the left and the thumbnail image on the right. The images and supporting text in the synopsis column make this a fairly comprehensive resource.

Traditionally, either a search by diagnosis or image matching by flipping through a textbook or atlas were the processes by which a clinician found a differential diagnosis for an unknown oral condition. VisualDx provides for a focused search whereby clinical findings such as morphology, distribution, signs, symptoms, and medications can be entered to refine the search. The resulting differential diagnoses can be examined and matched to the appearance of the patient’s lesion.

Cross-referencing to other disease conditions is available in VisualDx to allow the clinician a glimpse of the complete spectrum of disease. The experienced clinical user should be aware that the software is intended for use in special circumstances when encountering uncommon clinical manifestations and can assist in the diagnostic process if the clinician is uncertain. On the other hand, VisualDx is a valuable resource, not only as a searchable atlas, but
also as a tutorial for the student and experienced clinician alike. VisualDx’s database ensures that dentists and other health care professionals will have access to the classic presentation and unusual variations of common conditions, as well as the rare entities.

VisualDx v. 4.0 is a Clinical Decision Support software developed by Logical Images, Inc. (Rochester, NY). Our evaluation was conducted using two computers, one with an Intel Xeon processor 2.40 Ghz and 1 GB of RAM running Windows XP Professional Edition and the other with an Intel Pentium 4 processor 2.40 Ghz and 256 MB of RAM running Windows XP Home Edition. Both computers had at least 20 GB of hard drive space and ran Internet Explorer version 6.0. The resolution of the monitors was 1280 x 1024 and 1024 x 768 pixels, respectively. The computers used in the evaluation easily met the minimum system requirements (Windows 2000, 64 MB of RAM, 950 MB disk space, a monitor resolution of 800 x 600 pixels, and Internet Explorer v. 5.5). The installation process ran smoothly, and it only required answering the traditional installation questions. After installation, the software occupied approximately 940 MB of space. In terms of performance, the software was responsive at all times, and it did not interfere with the normal operation of the computers. Part of the software evaluation utilized the Guidelines for the Design of Educational Software, which is an American National Standard as approved by the ANSI and the ADA.¹

Currently, the street price for VisualDx ranges from $495 to $995 with discounts for educational use. The software can be obtained directly from Logical Images, Inc. (www.logicalimages.com). When developing the content, the editors followed a similar process to editing a medical/scientific textbook, in which both the text and images were subjected to peer review by the editorial board established by the company.

We found the software system comprehensive in coverage and easy to learn. It has the potential for use as a tutorial in demonstrating the ease of pinpointing a diagnosis when the appropriate lesion findings and patient symptoms are entered into the searchable database. The identification of oral mucosal disease depends heavily upon the clinical visual presentation. Therefore, this software package is a valuable tool for oral medicine differential diagnosis.

REFERENCE