

# Using on-line images in a primary care office

## Enhancing patient education

Ilana Pister Roni Peleg MD

A 53-year-old woman presented to her primary care physician with an ongoing complaint of lower back pain. Results from an x-ray scan revealed spondylolisthesis of the L5-S1 vertebrae. While the physician was describing the x-ray scan results it was difficult for him to judge the patient's level of understanding, which is a typical problem. To help with his explanation, the physician turned to his computer, connected to the Internet, and ran an image search using the term *spine*. Within seconds, he was able to find a graphic representation of the vertebrae to illustrate the patient's condition.<sup>1</sup>

The Internet continues to provide us with an expanding and evolving wealth of knowledge available with the click of a button. Patients often use the Internet to supplement—or even replace—office visits. Siegel et al<sup>2</sup> describe the increase in patients' use of the Internet as a source of information, particularly Information Rx, a free consumer website produced by the National Library of Medicine.<sup>3</sup> In the study, physicians would write a prescription for a particular condition, such as diabetes mellitus, and the patient would then research the condition on the Information Rx website. At follow-up visits, patients were found to be more educated about their disease and had more informed questions for their physicians.

Many studies have evaluated the advantages of different multimedia learning tools that educate patients about screening for, monitoring, and managing a variety of diseases. Bader and Strickman-Stein,<sup>4</sup> for example, compared the efficiency of 5 different learning tools: printed text, on-line text, audio, audio with on-line text, and Flash multimedia. An overwhelming majority, 84.7%, rated Flash multimedia as their first or second choice. Audio formats were not ranked as a first choice by anyone, and were ranked fifth overall. Audio alone was particularly disliked; it was described as difficult to maintain concentration. Applied to the average office visit, patients have an increased chance of understanding and learning from their physicians if visual aids are used to reinforce verbal messages. This method is more stimulating and gives patients the opportunity to learn through multiple channels of instruction.

Although many studies have evaluated the use of computer-based office programs for patient education, the use of in-office patient-directed images has not been as thoroughly assessed. Brotherstone et al<sup>5</sup> compared the effectiveness of 2 different leaflets promoting colorectal cancer screening using flexible sigmoidoscopy. They found that 84% of those who received leaflets with images had a more comprehensive understanding of the test compared with 57% of those who received text-only leaflets.

Education about cancer screening is among the most commonly studied use of multimedia software in medical practice; however, other diseases would benefit greatly from imaging aids. Images of dermatologic conditions, such as fungus, ulcers, or stages of melanoma progression, could prove to be extremely useful in patient identification of these lesions and subsequent prevention of further disease development. MedlinePlus: Medical Encyclopedia,<sup>6</sup> an on-line medical resource supported by the National Institutes of Health and the US National Library of Medicine, is a convenient location to obtain images useful for explaining disease processes and treatment procedures to patients in the office setting.

Family physician appointments are often too short to engage patients in detailed discussion of their medical conditions; nonetheless an effort should be made to provide the patient with the highest level of understanding given these time restraints. Images of eroded cartilage or hyperinflated lungs can help explain the pain associated with osteoarthritis or the dyspnea of asthma. Schematics of plaque formation or bacterial ascent along the epithelium might lead to better monitoring of risk factors for coronary artery disease or recurrent urinary tract infections. Similarly, images of glucose metabolism pathways or neurotransmitter uptake inhibition can provide insight into the pathogenesis and treatment options for diabetes or depression.

Visuals, readily available with a high-speed Internet connection, are a quick, cost-effective, and productive way to explain conditions to patients. This method of presenting medical conditions complements the verbal conversation between the physician and patient, and supplies the patient with a tool that might help recall the verbal message. 

Ms Pister is a fourth-year medical student in the Medical School for International Health at the Ben Gurion University of the Negev in Beer Sheva, Israel. Dr Peleg is a senior lecturer in the Department of Family Medicine at the Ben Gurion University of the Negev.

**Competing interests**  
None declared

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