Help from ISABEL for paediatric diagnoses

ISABEL

http://www.isabel.org.uk. A paediatric clinical decision-making support system designed as a near-patient working tool for doctors and health-care workers.

Generations of junior doctors have reinforced their information base on the way to see a patient, by consulting pocket texts on medical or surgical emergencies and any other relevant books that could be crammed into the pockets of their white coats. Nowadays, the web provides easy access to a huge amount of information, but in a crisis scenario—for example, when faced with diagnosing and managing a sick child—an undirected search of the web is likely to produce, at best, information overload and, at worst, delay or inappropriate management.

Support systems for clinical decision-making are designed to give structured access to information that will improve the speed and efficacy of health professionals' management of their patients. ISABEL is such a system for paediatrics and child health and a product of the ISABEL medical charity. The charity, which is self-funded and not owned by any other organisation, was founded after a missed diagnosis of necrotising fasciitis in a 3-year-old girl, called Isabel, who had chickenpox.

ISABEL is an easy to use website that is intended exclusively for health professionals (medical terminology must be used to enter symptoms). The site contains an image library, a diagnostic tool, advanced life-support guidelines, and clinical algorithms. The clinician chooses from one of four age ranges, then in an area for free text describes the patient's symptoms and signs; a list of age-specific differential diagnoses is then given. The list should contain the most likely diagnosis, but the differentials are not put in order of likelihood, since the intention is to alert the clinician to differential diagnoses, which might otherwise not have been considered. A treatment regime is suggested and there is a helpful link to the relevant chapter of the *British National Formulary*, which enables rapid access to information on appropriate drug therapy and interactions.

If such systems are to be clinically useful, they must contain comprehensive information, and to meet this need information from major textbooks has been added to the ISABEL database. Moreover, systems must be carefully validated, and initial steps have shown that ISABEL seems to be a sensitive tool with diagnostic accuracy rates of 91–95% in paediatric cases. Further validation is planned in the form of non-randomised trials. These assessments will aim to establish whether use of the ISABEL integrated decision system improves the quality of clinical decision making by junior doctors in acute paediatric medical care. Since desktop computers may not be readily available in the acute setting, another study is planned to find out whether hand-held devices will improve the accessibility of the system and when and where ISABEL will be most useful. Currently, ISABEL needs further development and funding is being sought. The library of images is fairly small and the diagnostic tool is limited by the number of cases to date that have been used to test it. Further input is invited from clinicians.

Such systems, however, are not meant to replace the clinician, but ensure easy access to relevant information. Support systems like ISABEL, therefore, have an obvious role as teaching tools and for examination preparation. But careful consideration needs to be given as to whether results of randomised trials alone will convincingly show whether diagnostic support systems are of value in all clinical settings, especially in emergency situations. A prerequisite for the successful functioning of ISABEL is that the physician provides accurate source information, which can only be obtained from a careful history and appropriately elicited physical signs. This web-based tool is, therefore, dependent on traditional clinical skills and underlines the importance of the teaching and assessment of effective history taking and examination in medical education. Support systems to help junior doctors make clinical decisions are an additional, not an alternative, strategy to having senior colleagues at the coal face with whom they can confer.

Systems such as ISABEL are without doubt a valuable addition to the armamentarium, but for them to have the most beneficial effect on patients' care they need to be used in conjunction with properly resourced support and training for junior doctors.

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Elsevier Science, of which *The Lancet* is part, supplied ISABEL with electronic texts to serve as content for the diagnostic tool and granted ISABEL a licence to display key texts.

Websites in brief

Global ultraviolet radiation index
WHO has produced an online guide to the global solar ultraviolet index (UVI), with the aim of reducing the risks of skin cancer and cataract worldwide. WHO has assigned specific colours to various UVI values to make the index easier to use and to promote consistency in reporting. The website provides links to the UVI in many countries and languages, alongside information on the UVI, health effects of UV radiation, and sun protection.
http://www.who.int/peh-uv

Fertility-protection adverts
The American Society for Reproductive Medicine (ASRM) has posted public-service announcements in pdf format on one of its websites, *Protect Your Fertility*. ASRM notes that the public-service announcements—which deal with the effects of such factors as smoking, bodyweight, sexually transmitted infections, and ageing on fertility—were deemed too controversial to be shown by certain shopping malls and movie theatres in the USA. The site also provides an overview of infertility risks, beneficial behavioural changes, and treatments.
http://www.protectyourfertility.org

Alcohol's effects on the body
This site looks at the chemistry of beverage alcohol through the eyes of a general chemistry student, providing 14 lessons that cover such topics as how ethyl alcohol is metabolised, research on alcohol and the brain, and the chemistry of addiction.
http://www.chemcases.com/alcohol

Cell membranes
The University of Arizona's Biology Project has produced this sophisticated tutorial on "the dynamic complexes of proteins, carbohydrates, and lipids that comprise cell membranes", which explains how membranes regulate ion exchange and "molecular traffic" among cells. The tutorial is in the form of an interactive multiple-choice quiz. Correct responses are greeted with brief explanations that expand upon the quiz responses; incorrect answers yield diagrams and much additional information to point users in the right direction.
http://www.biology.arizona.edu/cell_bio/problem_sets/membranes

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