letters to the editor

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Diagnostic support systems

Editor – The recent editorial (*Clin Med* August 2011 pp 310–11) and article (*Clin Med* August 2011 pp 317–21) on misdiagnosis suggest that one of the most effective ways to improve the quality of diagnosis is to formulate a list of differential diagnoses and continually re-evaluate it throughout the management process. As junior doctors, we are usually the first and sometimes only port of call for patients, particularly on medical wards at night and our diagnostic ability is limited by our lack of clinical knowledge and experience.

In these instances the use of diagnostic support systems may be able to help us. In our hospital we are trailing the ISABEL system.[1] By entering the demographic and clinical features highlighted in the published case study, one of the conditions red-flagged by the system is diverticular disease of the colon (Fig 1). The use of ISABEL might have alerted the clinicians to the correct diagnosis far earlier in the course of the patient's illness.

Such systems are not intended to replace a clinician's judgement but are reference tools, which compliment our knowledge. They can suggest diagnose that may be highly appropriate but seldom considered or recognised, particularly by an inexperienced junior doctor.

While we should all try harder to be better diagnosticians, mindful of the traps and pitfalls along the diagnostic journey, diagnostic support systems such as Isabel may prove to be an effective way to reduce diagnostic error.

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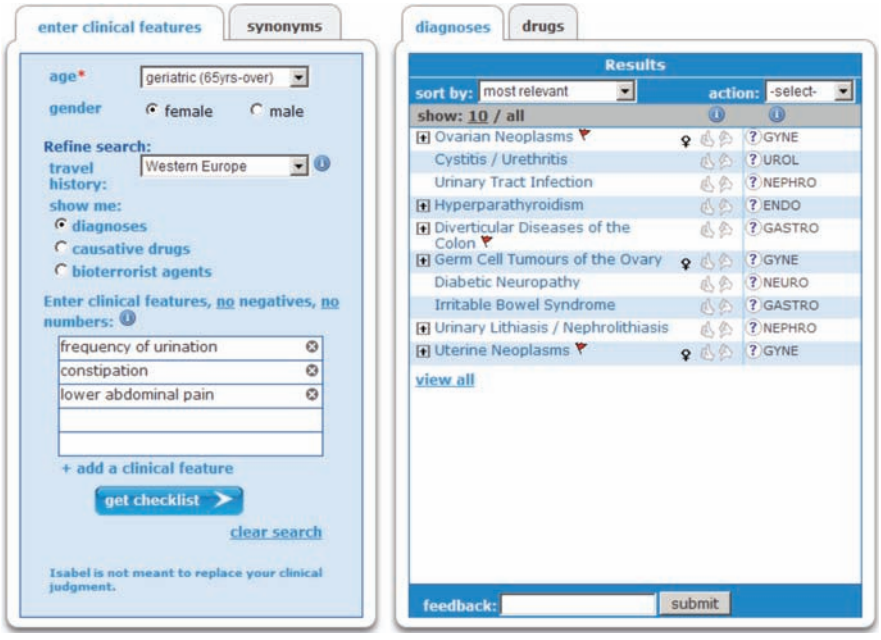

Fig 1. List of diagnoses suggested by ISABEL software when key clinical features highlighted in case study presented by Neale *et al*.[1]

References

1 Isabel Healthcare. ISABEL, the diagnostic checklist. USA. Isabel Healthcare 2011, www.isabelhealthcare.com

In response

We thank Dr Luo and Dr Payne for their contribution to the discussion on improving the quality of diagnosis. In his editorial, Dr Scarpello stressed the importance of differential diagnosis whereas in our paper we were concerned primarily with stage 1 – the initial thoughts and investigations – and how this stage may subsequently influence the progress of a case.

The ISABEL system is well known to our team. In 1999, the parents of Isabel funded the system. Isabel, their three-year-old daughter, survived a cardiac arrest and spent a month in intensive care at St Mary's Hospital (now Imperial NHS Trust), as a result of a previously unrecognised, life-threatening complication of chickenpox (necrotising fasciitis). ISABEL is perhaps the most sophisticated of the clinical decision support systems (CDSSs), developed over the past 50 years, with a database of more than 11,000 diagnoses and 4,000 drugs. It uses natural language processing software to search its database of medical textbooks and journals and it has a 'knowledge window' providing a wealth of information on any chosen condition.[1]

However, in real life, all the information required for the diagnosis may not be immediately available. Moreover, a definitive correct diagnosis is often not needed to initiate an appropriate work-up or treatment. In the case described the admitting doctors were not aware of the tender pelvic mass, but they recognised the evidence of sepsis – and if this situation had been managed efficiently the septic focus would have been found within 24 hours of admission.

Junior doctors may perceive a CDSS as potentially helpful but may have insufficient knowledge and experience to judge the appropriateness of the many suggestions it offers. Moreover, it is difficult to see how using a CDSS might be integrated into a busy clinician's workload. In the future this may become easier if the system could obtain its data from an electronic medical record.

Meanwhile, perhaps the main value of ISABEL is its potential to ameliorate cognitive tendencies to 'premature closure' and 'diagnostic momentum' and to improve diagnostic accuracy in complex cases that are difficult to unravel.

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1 Vardell ER, Moore M. ISABEL, a clinical support system. *Med Ref Serv Q* 2001;30: 158–66.

Postgraduate training in global health: ensuring UK doctors can contribute to health in resource-poor countries

Editor – It was encouraging to see the emphasis on medicine in resource-poor settings in the paper by Brown and colleagues (*Clin Med* October 2011 pp 456–60). The need is certainly great as highlighted by a recent review in the *Lancet* indicating that very few developing countries are likely to reach Millennium Development Goals 4 and 5.[1] Many of the difficulties are due to a lack of trained personnel, as well as a lack of resources.

It was especially interesting to see the emphasis being placed on the role of more junior doctors by Brown *et al.* Having completed my foundation years in Wales, I spent a year volunteering in Sierra Leone, West Africa, in a clinic for children aged 12 and under, in a heavily supervised post. I am now undertaking the DTM&H and hoping to apply into further training starting in August 2012. However, in the current system it is quite likely that taking this time out to focus on improving healthcare in the developing world may count against me on some of the more rigid application forms.

I know from experience in West Africa that doctors who have completed the foundation years are able to contribute significantly in terms of providing training for nurses and treating some of the more basic cases, as well as carrying out audits to ensure that good practice is being maintained. Doctors at this level also often have fewer family commitments so are more able to travel to these settings than some who are more senior. Unfortunately, many young doctors are afraid of doing this as there are fears it will disadvantage them in certain specialties. In contrast, this experience has greatly enhanced my clinical skills and given me a new clinical confidence, especially relating to teaching. Hopefully, articles such as the one mentioned above will lead to a more positive view of time out to work in developing settings and more opportunities to bring these new found skills back into the NHS.

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Reference

1 Lozano R, Wang H, Foreman K *et al.* Progress towards Millennium Development Goals 4 and 5 on maternal and child mortality, an updated systematic analysis. *Lancet* 2011;378:1139–65.

Paraneoplastic limbic encephalitis associated with ovarian teratoma

Editor – I read with great interest the article by Derry and colleagues (*Clin Med* October 2011 pp 476–8) on autoimmune limbic encephalitis. I would like to highlight an important form of paraneoplastic limbic encephalitis (PLE) which associated with ovarian teratoma.

While PLE has shown preponderance for females in their 60s and above, with small cell lung carcinoma being the most commonly-associated malignancy,[1] a relatively new category of PLE associated with ovarian teratoma has been described recently, which was found in young female adults. In a case series, the mean age of reported cases was 25±8 years. They presented with prominent psychiatric symptoms and behavioral disturbances, focal or generalised seizures, refractory involuntary movements and autonomic instability. Central hypoventilation requiring prolonged ventilator support has also been reported in patients with brainstem involvement. Neuroimaging finding is characterised by temporal lobe or brainstem abnormality. Lumbar puncture in patients with PLE typically showed cerebrospinal fluid with lymphocytic pleocytosis.[2]

Accurate and early diagnosis of PLE can be difficult, as symptoms may precede the tumour diagnosis in up to 60% of patients by a median of three months,[3] and the clinical presentation often mimics various forms of infectious and autoimmune disorders. More recently, antoantibody to N-methyl-D-aspartate receptor (NMDAR) of cell membrane antigens found in hippocampus and forebrain has been identified to have resulted in psychocognitive impairment. Presence of anti-NMDAR antibodies in the serum of patients with PLE is strongly associated with an ovarian teratoma, and is concentrated in the nervous tissue of the tumour. Malignancy eradication and immunosuppressive treatment has been shown to reduce morbidity and mortality. The time interval of clinical improvement, however, has been reported diversely from one to four months.[2]

In summary, PLE can be the first manifestation of ovarian teratoma and should be considered in young females who present with neuropsychiatric symptoms. Early diagnosis with aggressive treatment should be initiated to optimise clinical outcome.

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References

1 Pearce J. Paraneoplastic limbic encephalitis. *Eur Neurol* 2005;53:106–8.
2 Kataoka H, Ueno S. Paraneoplastic encephalitis associated with ovarian teratoma: clinical picture and n-methyl-