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# A is for aphorism

## Do smart mothers make better diagnoses than poor doctors?

### Keywords

aphorisms and proverbs as a topic; medical history taking; sensitivity and specificity

A core skill to acquire during our medical education is the ability to identify the sick child. When presenting cases to my mentors in general practice, emergency departments and paediatric services, a recurring question asked of me was, 'What does the mother think? How worried is she that this child is really sick?' A mother's intuition ranks highly when we are looking to form a diagnosis and establish how unwell their child is.

As Dr August Bier (1861–1949) put it, 'a smart mother often makes a better diagnosis than a poor doctor'. (Bier is known for developing the 'Bier's block' for regional anaesthesia). So what evidence do we have that Bier's thoughts about a mother's intuition are correct? How much can parental concern help to sort the diagnostic 'wheat from the chaff'?

In a systematic review published in 2010, Van den Bruel addressed the diagnosis of serious infectious illness in children.<sup>1</sup> One included study examined the use of parental concern (that this 'illness is different from previous illnesses') and doctor's instinct (that 'something is wrong') in diagnosing serious childhood infection.<sup>2</sup> In children presenting to general practice with an acute illness, parental concern made a serious infection 14 times more likely. However, clinician instinct was the single best predictor, making a serious infection 24 times more likely. In other words, these act as red flags for the diagnosis of a serious illness.

These likelihood ratios (LRs) compare very favourably to other signs and symptoms used as diagnostic tests for some specific childhood infections. Children with a distinctly red tympanic

membrane are eight times more likely to have acute otitis media than children who don't.<sup>3</sup> The likelihood ratios for ear pain are less powerful (LR ~5). In children with abdominal pain, fever is a discriminating sign for appendicitis (LR ~3).<sup>4</sup> However, neither of these examples is as powerful as the gut feelings presented in Van den Bruel's review.

Serious infectious illness was much more prevalent when Bier was alive than today. With the low prevalence of serious infectious illness, GPs are searching for smaller diagnostic 'needles' in bigger 'haystacks'.

How can we apply this information to Australian general practice? Few data exist on the prevalence of serious childhood illness in general practice. A Sydney based study estimated 7% of febrile children presenting to the emergency department had a serious bacterial infection.<sup>5</sup> The profile of patients in general practice is very different; fewer febrile children will have serious infections. A Dutch study found that 1% of children, per year, presented to a general practice with a serious bacterial infection.<sup>6</sup> The rate for acute, but not serious, infections was about 100 times higher.

So, if we applied the diagnostic tests of parental concern and clinician instinct, what would the results be? If the rate of serious infection is 1% (pretest probability), if the parent is concerned, the likelihood of a serious infectious illness rises to 13%. If the doctor's instinct is that something is wrong, the probability of serious infection is 28%.

If we assume that these tests are independent, which they almost certainly aren't (but this is an interesting mental exercise), then if both the doctor and parent are concerned the probability

would rise to 78%. This exploration has validated the spirit behind Dr Bier's comment, if a mother (or father) feels this illness is different to the others, a wise GP will listen. However, if you are both concerned, it would be a foolish emergency doctor who ignores you both.

### Resources

- Department of Health (UK). Spotting the sick child. Available at [www.spottingthesickchild.com](http://www.spottingthesickchild.com)
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