

# Diagnosing coughs and colds

IT is easy to dismiss coughs and colds as 'trivial'. Part of *The NHS plan* is for general practitioners to make 'better use of receptionists and practice nurses to deal with coughs, colds and minor ailments'.<sup>1</sup> Respiratory tract infections are so common, are generally self-limiting, and are so little amenable to effective treatment that as doctors we feel we make little difference.<sup>2</sup> But we are also aware of the amount of misery and suffering that they cause. It is estimated that acute respiratory infections result in the loss of 1.2 disability adjusted life years per person's life — in comparison, all gastroenterological and genito-urinary diseases each lead to only 2.6 disability adjusted life years; endocrine disease, excluding diabetes, 1.2; and all skin disease only 0.4.<sup>3</sup> 'Acute bronchitis' is the fifth most common reason for presenting to general practice.<sup>4</sup> Although we think of respiratory tract infections as minor ailments, 10% of patients are still troubled by symptoms after 2 months,<sup>5</sup> and 20% of people have re-presented to their general practitioner within a month.<sup>6</sup> Even a small change in our ability to manage these problems would make a large difference to our patients.

Despite the burden of illness that they cause, there is so much that we do not know about respiratory tract infections. What symptoms and signs differentiate viral from bacterial infection? Which patients will benefit from antibiotics — and if they do, by how much? What is the average duration of symptoms following infection? What, if anything, predicts who will develop the rare, serious complications, such as pneumonia?

In the past, in the absence of clinical research, many general practitioners developed their own decision rules or heuristics for these questions. For example, most general practitioners believe that smokers should be treated more readily,<sup>7</sup> and, even now, that purulent sputum implies a bacterial aetiology and therefore is more likely to require antibiotics.<sup>8,9</sup> At last, clinical research is being published to answer these questions — much of it in this Journal.<sup>9-15</sup> Some of this research overturns our previously held beliefs and heuristics.

A large observational study from The Netherlands shows that the best predictors of pneumonia in patients with a lower respiratory tract infection are a dry cough, diarrhoea, nausea, a general impression of a moderate or severe illness, a temperature  $\geq 38^{\circ}\text{C}$ , and chills.<sup>15</sup> Many of the textbook symptoms and signs of pneumonia — dyspnoea, thoracic pain, feeling feverish, tachypnoea, dullness to percussion, bronchial breathing and other abnormalities on auscultation — were not predictive.<sup>15</sup> These findings are helpful but not conclusive. A similar study by Graffelman *et al* indicated that diarrhoea was a predictor of a viral rather than a bacterial lower respiratory tract infection.<sup>11</sup> Both studies disprove the belief that purulent sputum indicates a bacterial infection. And both studies showed that C-reactive protein (CRP) with a cut-off value of  $>20$  mg/l has a high predictive value, particularly for ruling out bacterial infection or pneumonia.

New studies also elucidate the natural history of respiratory tract infections. A study of 391 patients by Holmes *et al*

showed that 58% of patients still had a cough 10 days after the initial consultation and 29% had not returned to normal activities.<sup>9</sup> The systematic review by Hay *et al* used the control arm of placebo controlled trials and cohort studies to examine the natural history of pre-school children who presented in primary care with a respiratory tract infection and a cough.<sup>14</sup> The sizes of the studies were small and there were some questions regarding the validity of some studies, but a significant proportion of children still had symptoms at 2 weeks to 1 month later, with the most common persisting symptoms being nasal discharge and cough. The overall rate of complications (including merely persistent symptoms) was 12%. A prospective cohort study of 222 pre-school children with acute cough had a similar complication rate, (10%, again mostly from persistent symptoms) and reported serious complications only rarely (two hospital admissions for bronchiolitis and one for pneumonia).<sup>13</sup>

One difficulty with interpreting these studies is the lack of a standard definition for conditions such as upper and lower respiratory tract infections. In one, lower respiratory tract infection was defined as 'a new cough and symptoms of shortness of breath, wheezing, chest pain or auscultation abnormalities and either fever, perspiring, headache or myalgia' — robust enough to be reproducible and reliable for research purposes, even if it strikes a slightly unfamiliar chord with many of us for clinical use.<sup>15</sup> In another, the definition was 'any abnormality on pulmonary auscultation in combination with at least two of the following three signs and symptoms: fever  $>38^{\circ}\text{C}$  or fever in the past 48 hours, dyspnoea or cough; and tachypnoea, malaise or confusion'.<sup>12</sup> In everyday clinical practice, we do not need to be too concerned by diagnostic labels. They are merely short cuts for predicting outcome and response to treatment. But the lack of a standard definition makes it difficult to compare and synthesise information across the studies. For example, we need to be careful interpreting the number of patients who re-present and are subsequently given diagnoses of bronchitis or pneumonia, as these may be merely labels to justify prescribing antibiotics. Pneumonia may sound like an objective diagnosis, but there may be disagreement whether infiltrate on chest X-ray is sufficient or necessary for diagnosis.<sup>15</sup> Now we have good data on prognosis in patients defined in a relatively standard way, perhaps the clinical use of labels will change accordingly.

We also need to be careful interpreting the results of prognostic studies, which can be subject to confounding by treatment. For example, if tachypnoea is a sign that causes doctors to prescribe antibiotics more frequently, and this effectively reduces the risk of adverse outcomes, tachypnoea may not be recognised as a prognostic indicator — an example of the risk paradox.<sup>16</sup> This can be overcome in studies large enough to examine the risk of complications in sub-groups with and without both the prognostic indicator and the treatment.

Considering how often we see patients with respiratory tract infections, it seems extraordinary that the best evidence

that we have is based on so few methodologically sound studies, containing so few patients. There are still too many questions with too few answers.

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# Is dyspraxia a medical condition or a social disorder?

**D**YSPRAXIA, also known as developmental coordination disorder (DCD), is a symptom collection which overlaps with other neurodevelopmental conditions, such as attention deficit hyperactivity disorder (ADHD), dyslexia, and social and communication impairment. The DSM-1V classification<sup>1</sup> for DCD describes difficulties across a range of living and learning skills, with the child's motor performance abilities differing from one situation to another and across a period of time. The key elements are difficulties with activities requiring fine and gross motor function, such as handwriting, dressing and team games, and poor organisational skills.

The launch of the ADHD NICE (National Institute of Clinical Excellence) guidelines<sup>2</sup> and the SIGN (Scottish Intercollegiate Guidelines Network) guidelines<sup>3</sup> in Scotland has already acted as a trigger to highlight the neurodevelopmental area of paediatric practice. Most general practitioners are now more aware of the signs and symptoms of ADHD. However there may be a lack of knowledge that 70% of children presenting with ADHD will also have co-existing conditions,<sup>4</sup> such as DCD, Tourette syndrome, dyslexia, and specific language disorders. In fact, there is evidence to show a 50% overlap of DCD with ADHD.<sup>5</sup> Pitcher *et al*<sup>6</sup> have recently shown that children

with ADHD who have fine motor control difficulties could not have these attributed to their poor attention and concentration, and DCD should be considered. In addition, Kadejso and Gillberg's work has shown this spectrum of conditions is not solely restricted to childhood and that comorbidity with ADHD and DCD provide a greater indicator for long-term morbidity and increased frequency of anxiety and depression.<sup>7</sup>

In a recent paper, Thapar and Thapar discussed what the primary care role may be in caring for children with ADHD, and highlighted that most general practitioners will have had little or no training in recognising or treating children with neurodevelopmental disorders.<sup>8</sup> Lack of awareness may even result in the disorders being perceived as rare and not requiring a great deal of knowledge as they are not seen very often in primary care. However, both Kadesjo and Gillberg's population study of 7-year-old children in Sweden,<sup>7</sup> and Kaplan's study in Canada,<sup>9</sup> have shown a prevalence of around 6-7% using consistent criteria for measurement, so rare it is not.

Clumsy children have always been around, so what's new now? We can all remember the child in the class who was never chosen for team games and was laughed at for tripping over, or the child whose writing was so poor that even

he couldn't read it back to the teacher when asked. Is this a medical problem, or really a social and educational matter that should be dealt with in schools and at home?

A proportion of children with some level of clumsiness go on to become successful adults. These children would more likely have had other skills that compensated or were supported adequately, or the skills required for school, such as being able to play rugby, were temporary and could be left behind once school was over. However, for others, their difficulties remained at a significant level that affected them in many aspects of their daily living, and support for these individuals alone would not have been adequate to resolve their difficulties.

With increased awareness, more parents are recognising the difficulties in their children and arriving on the general practitioners' doorstep as their first port of call, wanting a label for their child. This is driven by media headlines heralding cures. They are even told by teachers and others that this is the route to go down. Nevertheless, are we leaning towards an over-medicalisation of a symptom collection that is merely part of a normal distribution? There is growing evidence that not addressing those children with more severe co-ordination difficulties can have a continuing long-term impact on their ability to achieve as adults compared to their peers, and have knock-on psychological implications both in the short and longer term.<sup>10</sup> Evidence also suggests that there is also an increase in levels of anxiety and depression for these individuals as they grow up.<sup>11</sup> This then has an additional potential impact for general practice.

The marked increase in numbers of children with DCD in the last 15 years may not only be as a result of increased awareness but could also be owing to a number of the social and educational changes that have taken place. DCD is a heterogeneous condition, with different influences contributing to the dysfunction. Today there is a tendency for young babies to spend their days more in a supine position rather than prone.<sup>12</sup> Babies are placed on their backs to go to sleep, as well as sitting in the car seat and pushchair as compared to being placed prone in a pram and on the floor in past times. The 'back to sleep' campaign has been highly successful in decreasing sudden infant death syndrome, but may have also sent out a message to parents that 'back' is good and 'front' is bad. The child with DCD often has lower muscular tone and finds that maintaining the prone position is harder to do, and will cry when placed in this position. Parents anecdotally have said that they tend to avoid this position, possibly again exacerbating the problems and reducing the potential to improve the already weakened motor skills necessary for crawling and walking. Propping the child to support them in this position can help them to work in this position rather than avoiding it.

Twenty years ago many of these children led different lifestyles that resulted in more physical exercise, which may have given the children a regular opportunity to improve their motor skills. Children today are taking less exercise and leading more sedentary lives. Walking to school and doing physical education were undertaken on a regular basis. Even in the playground, games such as 'two balls', hopscotch, jacks and French skipping allowed children to practise both their fine and gross motor skills on a daily

basis. Today in most schools there is far less physical education and in many areas the school playing fields have been sold off. Team games, the one type of physical activity which is the hardest, as they lack often even the foundation skills to play, is often the only option in school, not allowing the child with DCD to undertake any physical activities.

The balanced school meal, with fish on Fridays, has almost become extinct. This is of interest as there is some early evidence that the ingestion of adequate omega-3 fatty acids may be important for this group.<sup>13</sup> However, today, it may be better to give the children sardines on toast or tuna sandwiches, both having a significantly higher omega-3 fatty acid content.

The death of the family meal in many houses has also resulted in children having less experience of using a knife and fork — a precursor for using a pen and paper — both fine motor tasks that are usually weak in children with DCD. The family meal also teaches the child the art of social conversation and to gain an understanding of social rules, including idiom and sarcasm. These have been shown to be an associated difficulty for children with DCD and by having regular practice in a safe environment this can assist the child to gain some of the necessary social skills required to interact with peers and teachers in his or her school.

Nowadays the child's practising of fine motor skills is often confined to solitary 'texting' and using a computer, even at a young age, rather than playing with jigsaw puzzles and construction toys.

Many of the children's problems with DCD lie in the fact that they are often moved on to the next stage in education before gaining the necessary foundation skills. The pace is dictated by others, rather than being the pace at which a particular child can learn to acquire a skill. As adults we have the freedom of choosing how many lessons we have before attempting the driving test, but for children the choice is not there.

With the increased recognition of DCD has come increased referrals to paediatric services, and this has resulted in long waiting lists in many areas of the UK for both assessment and treatment. In some areas occupational therapy waiting lists are as long as 46 months. This is a long time for a parent with a concern about their child to wait for a diagnosis. In the meantime parents are trying to find solutions to their child's functional difficulties, some of which could be addressed by the primary care team, such as advice on feeding and independent living skills. While waiting, the primary care team could be signposting the parent to local support groups, offering advice on disability living allowances (if appropriate) or even advising about local activity programmes.

Early identification can allow for support that can help to minimise long-term difficulties. Some children only start to present once they reach school, where a greater level of independence is required or where there is a greater expectation of motor performance; for example, when playing team games and handwriting at speed. An awareness of key signs and symptoms at different ages could allow the primary care team to offer basic parenting support to those with less severe difficulties and ensure there is good liaison between services. Treatment has been shown to be effective and can be undertaken by both parents, and within the

school setting alongside the therapist.<sup>14,15</sup>

Sadly, at this time some adolescents and young adults with persistent difficulties fail to be supported by any services. They lack a 'home', as they are not seen as patients with mental health or learning disabilities, but rather fall through the gaps of service provision once they are too old for paediatric services. There will be adults who have grown up with the label of DCD who will now be presenting to practices and may require longer term support and potential referral to psychological and psychiatric services, as well as to occupational therapy.

Whether primary care professionals see DCD as a medical condition or not, they may still be driven to support individuals if increasing numbers of parents ask for help.

If this is the case, then general practitioners will, at least, require a working knowledge of neurodevelopmental disorders and some basic information on support and signposting.

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