school booster dose of the pertussis vaccine, will the findings still apply in the UK now that the preschool booster has been introduced? Do the findings represent a "flow" in a cycle of pertussis incidence that will "ebb" on its own? How robust is the authors' approach of using a single serum sample for diagnosing recent or active *Bordetella pertussis* infection in general practice? How will new, non-invasive salivary tests perform,and how will they perform relative to clinical prognostic instruments, given the opportunity cost of new tests amid the relentless rise in requests for laboratory tests from general practice? And how will increased testing affect help-seeking behaviour? Consultations for common infections have fallen dramatically in recent years,[11] making room for general practices to contribute more effectively to the management of chronic and complex diseases. Poorly targeted testing may encourage people with a cough to consult in the belief that a test is necessary for its optimal management, thus undermining trends towards greater self care.

Perhaps even more importantly, older people with pertussis act as a reservoir for infection among the very young, and it is in the first months of life that the illness takes its greatest toll; 60-70% of infected babies are admitted to hospital, 12% develop pneumonia, 1% have seizures, and just under 1% die.[9 12] Is the *Bordetella* organism evolving to escape the protection afforded by existing immunisation schedules? Should the UK follow the US and provide adolescents with a booster, and what effect will this have on pertussis in babies?

Whatever the immediate implications for practice, this study focuses the agenda on pertussis as a major clinical and research issue for general practice. Keeping pertussis well to the back of our minds is no longer an option.

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The evidence base in child protection litigation

Medical expert witnesses need legal protection too, to use the evidence effectively

In this week's *BMJ* Gornall points out some of the problems associated with the presentation of medical evidence of child abuse in the United Kingdom. He focuses on the omission from the Royal College of Paediatrics and Child Health's new handbook, *Child Protection Companion*, of research evidence gathered by two controversial paediatricians—David Southall and Sir Roy Meadow.[1]

A well developed evidence base exists for child abuse medicine that is suitable for use in litigation for child protection. The published evidence on the abuse and neglect of children begins with a descriptive article by Tardieu (the father of forensic medicine) in 1860.[2] He pointed out how medical conditions that he had observed in 32 children defined the abusive nature of the events that had occurred. In 1962 Kempe and colleagues reiterated that doctors could and should infer abuse on the basis of certain medical findings of injury. The "battered child syndrome" that they defined is still a valid concept based on observational research.[3] The medical consequences of neglect have been noted since the 1960s, and the extensive medical assessment of sexual abuse cases began in the 1970s.[4]

The American Board of Pediatrics has recently approved the definition of the new subspecialty of child abuse paediatrics. In describing this development, Block and Palusci[5] note that the knowledge and evidence base on child abuse is similar to that of other accredited medical specialties. PubMed contains more than 16 000 citations for child abuse and a similar number for neglect. Like the medical definitions of breast cancer, AIDS, myocardial infarction, and many other disorders, those of medical conditions resulting from child abuse are based first on observations of patients—initially descriptions of individual cases that are then supplemented by defined case series.

Block and Palusci also point out that the forensic analyses associated with medical work in child abuse

BMJ 2006;333:160–1

make up an important component of the evidence base. In the United States, practitioners in child abuse medicine regularly provide expert testimony to the courts during adversarial litigation. In the United Kingdom the risks of testifying that a child has been abused have become formidable, and many doctors are reluctant to testify.[6]

The evidence base contains work that uses many scientific methods in addition to the observation of cases. Useful tools include confidential surveys of adults' childhood histories, surveys of adults' admitted violent and sexual behaviours with children, and confessions. Overt and covert video surveillance of adults' behaviour with children has recorded astonishing and incontrovertible abuse. Further evidence has come from medical knowledge about the healing of injuries of known causes and the medical documentation of damage that results from reliably observed injury events.

Research evidence on prevention and treatment is important but has prompted little attention from lawyers. It is the work that underpins the definitions of different kinds of abuse that has generated the political and personal attacks on responsible expert witnesses such as Southall and Meadow.

The identification of Munchausen syndrome by proxy, the suffocation of infants and young children, and the shaken baby syndrome have particularly sparked great controversy recently in the United Kingdom. Consensus statements and many reviews in the English language literature support the existence and general definitions of these conditions.[7–9] Yet each case of suspected abuse is unique, and the applicability of the evidence base will always differ from case to case. This makes the testimony of doctors who specialise in the study of child abuse particularly valuable and important. Without such testimony from expert witnesses children may be unprotected from abuse.

The courts seek scientific reliability in expert testimony. The definition of science is "the state of knowing," and reliable "knowing" usually requires the reproducibility of observations.

Court processes have a powerful influence on the presentation of expert evidence. Lawyers ask the questions and doctors give answers. Evidence may be included or excluded, emphasised or minimised, depending on how the lawyers manage it. The outcomes of adversarial trials are more dependent on the capabilities of the litigators than on the quality of the available medical evidence base.

Nevertheless, not all medical testimony is responsible and reliable. The problem of irresponsible medical testimony in the courts[10 11] has been around for decades. In the United Kingdom, expert witness are now advised to follow the "3 Rs" of good practice: record (everything they do from the start of the case), retain (the records until the prosecution says they can be destroyed), and reveal (the records to the prosecution).[12] In addition, peer review of expert testimony may help to regulate the quality of expert testimony.

The child abuse medical evidence base is robust and thriving, but, like the evidence base for AIDS or breast cancer, is a long way from perfect or complete. With reasonable public support, doctors practising child abuse medicine will continue to develop the evidence and to use it in court to protect children. To do so, however, doctors everywhere require the sort of protections generally provided by the laws on child abuse reporting and witness immunity that prevail in the United States rather than those in the United Kingdom.

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Regulation and revalidation of doctors

England's chief medical officer's report should resolve the uncertainty

A profound loss of public, and to a lesser extent professional, confidence has cast a dark shadow over medical regulation and the General Medical Council for the past few years. After the Shipman inquiry's fifth report,[1] revalidation was suspended pending a review by the chief medical officer, Sir Liam Donaldson. The review, *Good Doctors, Safer Patients*,[2] published last week, will be followed by consultation, but the direction is set. As expected, the review places the protection of patients as paramount, but within an appropriate regulatory framework that is practical, non-punitive, and at the international leading edge.

The intellectual case for two levels of revalidation—relicensure for all doctors to remain on the register and recertification for all on specialist and general practice registers—is compelling. Relicensure will be

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