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# Falling neonatal autopsy rates

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simply wrong.[8 9] So differences in the correlations between tests probably reflect content differences more than different skills.

Current discussions about best evidence medical education are an indication that, just as in clinical medicine, intuitions will frequently be at variance with evidence.[10] And since we will continue to be engaged in activities to ensure that our graduates are competent, these procedures should be based on evidence of the effectiveness of these methods. The ignorance of relevant evidence is no more pardonable in education than in clinical medicine.

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# Falling neonatal autopsy rates

*Neonatologists, pathologists, and relatives need to boost neonatal pathology*

*Papers* p 761

The provision of perinatal and paediatric pathology services is a sign of an enlightened society. It symbolises the care that society attaches to the wellbeing of its young by trying to find out what makes each pregnancy and infancy go well or badly. Yet in their audit of neonatal autopsies in a tertiary referral centre published in this week's *BMJ*, Brodlie and colleagues found a general fall in autopsy rates over the past decade (p 761).[1] This occurred despite a senior clinician always asking relatives for permission for autopsies and the availability of a dedicated paediatric and perinatal autopsy service. What are we as clinicians and as the lay public to make of this?

Geographical differences may exist in requests for neonatal autopsies. Directors of British neonatal units may have reservations about requesting an autopsy in some cases,[2] but Australian neonatologists do not seem to share these.[3] Nurses' attitudes may differ from doctors'.[3] Grief counsellors, nurses, or social workers who may be in contact with parents can unconsciously send messages that discourage parents from consenting to an autopsy. If, however, relatives are approached after each neonatal death, as in Edinburgh, then we can assume that failure to get permission is the limiting factor. When information on all aspects of the autopsy, including its usefulness, is available to relatives when consent is sought then it is their right to refuse permission. However, as caring professionals we need to examine the reasons why this is happening.

It may be useful to involve a pathologist, preferably the one doing the autopsy, while seeking consent.[4] This face to face meeting with the pathologist may clarify some misunderstandings.[5] The visibility of perinatal pathologists while seeking consent may also help in rehabilitating the subspecialty. The Alder Hey controversy had the effect of demonising perinatal and paediatric pathologists.[6] Yet the core business of perinatal and paediatric pathologists is to help women and children. An acknowledgement in a scientific paper expressing "appreciation to the many parents who so generously gave permission to examine their babies in the hope that some good might come of their misfortune" suggests that pathologists are not demons.[7]

Fetal and perinatal pathology is already a shortage specialty in the United Kingdom. The reasons include poor remuneration compared with general histopathologists, and lower status.[8] The tragic Alder Hey controversy has only exacerbated this situation.[9] Yet this situation is not unique to Britain. Low recruitment into the subspecialty, low budgets, and high workload are problems in North America also.[10]

Perinatal pathology requires highly specialised diagnostic skills, and though based on morphological examination at autopsy, it is probably less confined than general histopathology to morphology in reaching clinicopathological correlations. Morphological description of abnormalities is only one skill. It is used to point to additional investigations or to recall syndromes. There is a greater need to integrate the results from other laboratory disciplines with the obstetric and neonatal history. Perinatal and paediatric pathologists may require access to other perinatal and paediatric clinical specialists to plan the autopsy or interpret the findings. For example, many of the diagnoses with implications for future counselling in the report of Brodlie et al would have depended on biochemical tests to confirm the anatomical findings. In countries where autopsies are publicly funded administrators need to recognise that these laboratory tests can be expensive and that correlating all the findings takes time.

Any parents who have lost an infant will want to ask whether they get as excellent a service from their local hospital as is available in Edinburgh. Studies have shown that perinatal and paediatric autopsies are performed best by perinatal and paediatric pathologists.[11] In the United Kingdom the royal colleges of obstetricians and gynaecologists and of pathologists

*BMJ* 2002;324:749–50

have made recommendations on interim and long term provision of the service.[8] Globalisation of knowledge and technology has meant that many countries now aspire to have neonatal intensive care units. Established paediatric and perinatal pathologists have been encouraged to participate in pathology congresses and teaching programmes in developing countries to nurture local expertise.[12] But a real fear is that in future there may be no experienced pathologist to do an autopsy for those parents who want one.[9]

What can the lay public do about it? The findings of Brodlie et al's audit are of immediate relevance to the relatives who want to know the cause of death, but do not address the other benefits of autopsies. These include auditing complications of care, providing knowledge for research and teaching, and aiding grief resolution. The public needs to ask if they wish to support these altruistic aims. Neonatologists and obstetricians need to seek consent in every neonatal death or stillbirth while pathologists need to provide the service sought by clinicians and relatives. All need to be vigilant about the quality and rates of perinatal autopsies.[11 13] If relatives wish to have these services they might also have to demand adequate funding for them.

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# Protein conjugate pneumococcal vaccines

*Offer new opportunities for high risk individuals but still lack robust evidence*

Given the substantial global burden of invasive pneumococcal disease, the introduction of protein conjugate pneumococcal vaccines may provide a useful option for protecting individuals at risk. Optimism stems from a large prospective study showing that a protein conjugate pneumococcal vaccine prevented 94% of invasive disease in young children.[1] The clinical effectiveness of this vaccine now needs to be established among other children and adults at risk. These include people with increased exposure to *Streptococcus pneumoniae*, immunological defects due to HIV infection, bone marrow transplants, multiple myeloma, nephrotic syndrome, anatomical or functional asplenia, and older people with chronic conditions. The efficacy of the vaccine is unpredictable because the immune defects are different in each group.

The need for a strict, objective assessment of the vaccine is further enhanced by serious concerns raised recently when this vaccine was unexpectedly found to increase the rates of pneumonia in HIV infected individuals.[2] The lack of knowledge of the basic mechanism underlying pneumococcal vaccine failures indicates that adequate evidence should be obtained, before protein conjugate pneumococcal vaccines can be routinely recommended for people at greatest risk.

Early reports for improved protein conjugate pneumococcal vaccine immunogenicity among different target groups[3–5] have limitations in predicting clinical efficacy. Immunogenicity does not necessarily imply opsonising antibody production. One study showed that the ineffectiveness of pneumococcal polysaccharide vaccine among the elderly was due to the poor production of opsonising antibodies after vaccination regardless of antibody titres achieved.[6] The protein conjugate pneumococcal vaccine could be a better vaccine if it could induce functionally improved immune responses. Among healthy individuals this vaccine induces a 16-300 fold increase in serum opsonophagocytic activity compared to a threefold increase induced by pneumococcal polysaccharide vaccine.[7] Immunological memory also needs to be considered, since it may correlate with subsequent protection, even in the face of suboptimal vaccine immunogenicity. Indirect evidence for the fundamental role of memory in durable protection comes from our experience with the epidemiological impact of *Haemophilus influenzae* type b (Hib) vaccines. While the plain polysaccharide vaccine had no epidemiological impact, the incidence of Hib disease declined rapidly after the introduction of conjugate vaccines, and even the least immunogenic conjugate vaccines were effective.[8 9]

The superiority of protein conjugate pneumococcal vaccine induced immune responses is promising, but does not guarantee clinical efficacy. Prospective randomised controlled trials are indispensable. Both clinical and bacteriological outcomes should be used, acknowledging the unavoidable limitations of each endpoint. Clinical outcomes may be less specific, while bacteriological outcomes may be less sensitive in healthcare settings where few cultures are drawn or antibiotics are given before cultures are obtained. Fur-

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