

# Why children are not immunised

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The World Health Authority in 1977 adopted the target of universal child immunisation by 1990. The UNICEF Report *The State of the World's Children 1986* charts the progress to date and highlights what is required to achieve the Authority's objective [1]. Vaccine uptake rates for the world's children in 1983 were still below 50 per cent. From this perspective, many children may not be immunised because their countries do not have the resources to make the vaccines generally available, or do not have the staff to administer the vaccine, or because their peoples are not aware of the value of the vaccines. The key factor in the surge forward seen in many countries in the last 10 years appears to be the commitment of a nation's leadership to the immunisation programme.

However, in the UK, vaccines for children are offered free, staff are deployed to give them, and it is Government policy that every child should be offered the protection that vaccination gives. Yet we are in the middle of an epidemic of whooping cough, measles is common, occasional outbreaks of diphtheria occur in vulnerable sections of our society and infants are born severely damaged by congenital rubella. One major reason is that too many of our children are not immunised.

In their search for an explanation, investigators have interviewed parents, explored the attitudes of health workers and studied the organisation of the service and the advice of experts. These are obviously inter-related, but because it is easier, they will be considered separately.

There are likely to be many reasons why a vaccine is not given, and it is to be expected that they will differ from vaccine to vaccine, from decade to decade for any one vaccine, from one target age group to another, and from one section of society to another. My comments relate primarily to the infant vaccination programmes for diphtheria, tetanus (DT) with pertussis (DTP), poliomyelitis and measles.

## What do parents think and do?

Parents have the responsibility of rearing and protecting their children. Very few parents object on principle to vaccination; anti-vaccination leagues have a long history [2], and their rights have to be respected. The day has not arrived when a child has sued his parents for not providing adequate protection!. The current services best suit the stable coping families. However, there are within every society, families in crisis, families on the move, travellers and other parents who for one reason or another are unable or unwilling to fulfil their duties to their children. A different approach is required for the children

of such families but, with adaption, their needs can be met. It is unlikely that they would be helped by more information, but they might well respond to a health worker they could trust and who is able to give the vaccine when the opportunity presents.

More probing enquiries have revealed that many parents have instinctive anxieties, for example some fear injections and are not happy to bring their child to 'have the needle'. But parent interviews indicate that the majority of parents have a good appreciation of the benefits and risks of, say, the pertussis vaccine and accept that there are uncertainties and that some things are not known; but they were perplexed by the confusing and contradictory messages they got from local health advisers and national authorities [3].

Poliomyelitis, diphtheria and tetanus are now rare diseases and are unlikely to have been within the personal experience of most of today's parents. Measles and whooping cough may be viewed as comparatively mild disorders from which recovery is the rule. There appears to be a need for a simple statement written for parents about the disease, its consequences and the risks of catching it, as well as the efficacy and safety of the vaccine.

Market and Opinion Research International Limited (MORI) conducted a national enquiry on behalf of the Health Educational Council [4], presumably with the aim of finding means by which parents could be encouraged to take their children to be immunised. They found that while parents would like more information about the seriousness of the disease, parents were more likely to act if they knew that an epidemic was on its way. So, the televised picture of a distressed toddler coughing uncontrollably may well have been the right approach, even if it did distress at least one paediatrician who considered it to be scaremongering.

Parents also responded to the call that if every child was vaccinated, society as a whole would benefit both now and in the future. For the measles programme perhaps we should appeal more to civic pride and introduce an element of competition.

Public statements have swung from describing the benefits with only a passing mention of the risks, to discussing the risks without emphasising the benefits [5]. Quite rightly, parents are now demanding more openness. However, it is difficult to describe the hazards of vaccination without causing undue anxiety. No parent likes signing permission for a vaccine to be given which causes brain damage, however remote the risk, and many have said that they could not live with themselves if that

happened. But the agony is just as great for parents with a child who has been damaged by an illness that they could have avoided, and this more likely event should be brought into the discussion.

Vaccination uptake rates of between 85–95 per cent for DT and poliomyelitis and over 85 per cent for pertussis are achieved in certain parts of the country, usually areas with a high percentage of privileged families and committed health professionals. This suggests that the majority of parents who understand the issues want their children vaccinated. It is said that in general, social groups A, B, C1 seek their family doctor's advice, but social groups C2, D, E tend to turn to health visitors for guidance [4]. In underprivileged inner-city areas, over 95 per cent of parents have signed permission for the vaccination programme [6]. So underprivileged families also either understand the issues and accept or welcome the advice they are given. On these figures, it is inconceivable that uptake rates in some health clinics, and some health authorities of only 20 per cent for pertussis and 60 per cent for DT are due to parental fears, objections or apathy.

There is a need for a simple guide for parents which describes the nature and hazards of the infections and the efficacy and safety of the vaccines. Such a guide would need regular, perhaps yearly, review.

## What health staff think and do

### *Nursing staff*

It is the task of the health visitor to advise parents about DPT, polio and measles vaccination; what it is, what is involved and where and when to go and get it. Perhaps more than anything else, the uptake rate in any one community depends upon the commitment of the health visitor. When health visitors become enthusiastic, uptake rates increase [7,8].

In most areas those that give the advice do not actually give the vaccine and yet the procedure itself is relatively simple compared to many other procedures in modern nursing practice. Unfortunately, it is health visitors who have been most undermined by the uncertainties of the benefit/risk debate and, in particular, the interpretation of the contra-indications [9–12]; no doubt parents sense this uncertainty. True 'contra-indications' to pertussis are present in less than 7 per cent of children [13]. Macfarlane [14] suggested that adequately trained nurses should be responsible for the vaccination programme, giving advice and the vaccine, and only referring for medical review children for whom there was uncertainty about indications and contra-indications. It has been suggested that a special clinic for such referrals should be established in each health authority [15].

### *Medical staff*

A *Lancet* leader [16], concluded that the main reason for failure (to vaccinate) lay in the medical profession's lack of interest. Even in those who are interested, there is a degree of confusion, again mostly relating to the interpretation

of the contra-indication. It has always been known that vaccines could damage, and the potential for damage will always be there. So, perhaps the profession should be more steadfast in the face of scares about possible harmful effects. The whole story of the pertussis vaccine scare has yet to be written, and the saga continues. Perhaps we will never know how much of the initial fall in pertussis vaccine uptake was due to parent concern. There is some reason to believe that the persisting low levels of uptake reflect professional reluctance and loss of commitment.

Computer records in Gloucestershire showed that of children born in 1979, 52 per cent had three doses of DTP, about a quarter of general practices had uptake rates below 40 per cent and another quarter above 60 per cent. To find out why this was so, Stevens *et al.* [17] made a prospective study of a cohort born in 1983. By 1985, the uptake rate in the 'high' practice group was 81.4 per cent and 73.1 per cent in the 'low' practice group. They concluded that it was confusion over the interpretation of the contra-indications that was the main stumbling block to vaccine uptake. But this does not explain the impressive change in the last four years. Could drawing attention to the 'poor performers' have had an effect? Vaccination rates are to be used as 'performance indicators'.

One doctor commented to the MORI study [4] that the 'DHSS must convince doctors. If doctors are confident, patients will listen'. Brook [18] concluded that the policy of the DHSS has changed little in the past decade, and that this complacency was detrimental to the health of living children and of children yet to be born.

## What the authorities say and do

The DHSS periodically sends circulars to advise nurses and doctors. Maybe it is to be expected that the 'official' view would be slow to change, less it is thought to be inconsistent, or prey to enthusiasts and innovation. Invariably, doctors are asked to use their judgement because no simple directive can embrace all eventualities. This approach may well be desirable, but it hardly permits an enthusiastic approach in support of vaccines and has led to an over-cautious stance with regard to contra-indications. Some might have expected that the DHSS should have taken a firmer stand during the pertussis affair, but the more vocal minority wished the vaccine banned. The final report of the National Child Encephalopathy Study has yet to be written; what has appeared so far gives little, if any, support to the view that the vaccine itself is a cause of brain damage, which is in contrast to the conclusions drawn from reports based on temporally related events. The fears about the pertussis vaccine were unfortunately reinforced in the public and professional mind by the Vaccine Damage Payments Bill (1978) and subsequent tribunals. Where does the Government stand in relation to children left unprotected against whooping cough? Should any child damaged by pertussis be compensated?

In the USA, in the light of litigation, pertussis vaccine has been in short supply, its price has rocketed, the

uptake of DT is on the increase and DTP on the decrease, and outbreaks of pertussis are occurring [19]. In an editorial urging clinicians to maintain high pertussis vaccination uptakes, Cherry [20] concludes: 'in the present litigious climate a word of warning is in order. The same plaintiff attorneys who promote suits when alleged vaccine reactions occur are also willing to promote suits when children who should have been vaccinated get serious complications of pertussis!'

In the UK, on the matter of causation, we await the decision of Mr Justice Stuart-Smith in an English court of law. But this will not fully resolve the matter, for a judge decides, on the evidence put before him, on that vaccine and at that time.

The adverse reactions of all vaccines are kept under regular review by the DHSS Advisory Committees. Perhaps the findings of the Committees should be more freely available and open to public comment. The DHSS Advisory Committees are primarily concerned with the benefit/risk ratio, they do not necessarily have to decide, one way or another, whether a reported association between an administered vaccine and a disease manifestation is causal. They are obliged to consider whether they would change their recommendations on the assumption that the association is causal. They may well have to decide before the evidence reaches the level of probability required in court (ie the decision on aspirin and Reye's syndrome). Perhaps difficult issues, like whether the pertussis vaccine causes permanent brain damage, should be resolved by an independent tribunal with legal as well as medical assessment of the evidence.

### What about the organisation?

In 1974, the child health services became the responsibility of Health Authorities. Medical and nursing staff were confused, the lead given by county and city medical officers was lost. Community physicians with new visions took their place and computers became popular. There is some evidence [21] that an immunisation programme co-ordinated by a computer-controlled system results in a higher rate of uptake. Now unit managers are in control, and audit is the activity. Certainly, it would be most helpful to have a data collection system for each clinic which, at the touch of a button, indicates those children who were and were not immunised, and that informed those who ran the clinic (and their managers) of the uptake rates for each vaccine and compared them with rates of adjacent clinics, the District and the Region. District figures do not help individual health workers, for they do not identify small local populations where the uptake is poor. An analysis of a local inner-city clinic [22] with 40 per cent of families of Asian background showed that 95 per cent started the vaccination programme (only 60 per cent were vaccinated at the due time), but only 75 per cent completed the course. However, only 50 per cent received measles vaccine and over 45 per cent were overdue. In such a position, hoping the parents will bring their child to a baby clinic seems unlikely to succeed, but toddlers often attend family doctors, accident and emergency hospital outpatient clinics for a variety of reasons

and under circumstances when the vaccine could be given. However, to provide a district-wide service with different localities for the administration of vaccine requires a sophisticated data collection system.

The WHO/UNICEF joint statement (1985) on *Planning Principles for Accelerated Immunization Activities* identified the two key elements required for a rapid and sustained increase in immunisation coverage. They were the mobilisation of 'consumer demand' and of 'multisectorial resources', or, put more simply, to motivate the parents and inspire the health workers. In Nottingham, a group in the community unit has tried to do that with a training programme involving the production of a teaching video (DHSS funded), a local 'interpretation' of DHSS advice, teaching manuals (one for nurses and one for doctors) and training sessions for those concerned with the immunisation programme [23]. The exercise has made 'vaccination' an interesting challenge, and uptake rates have risen, although still not high enough to stop some babies dying from and others being seriously ill with whooping cough this year.

I suggest that higher vaccination rates for established vaccines and the introduction of new vaccines would be facilitated if:

1. The parents were given a booklet describing the nature and hazards of the disease with the efficacy and safety of the vaccine;
2. On-going training programmes for health workers are established in each health authority;
3. Special clinics are established to which children with special problems may be referred;
4. Information systems be introduced which rapidly identify the 'unimmunised' to those who provide the service.

*This article is based on a paper read at the Immunisation Conference held at the Royal College of Physicians in June 1986.*

### References

1. Grant, J. P. (1986) *The State of the World's Children 1986*, Oxford: Oxford University Press.
2. Williamson, S. (1984) *Archives of Disease in Childhood*, **59**, 1195.
3. Harding, C. M. and O'Looney, B. A. (1984). *Public Health, London*, **98**, 284.
4. Market and Opinion Research International Limited (MORI) (January 1985) Attitudes towards whooping cough immunization.
5. Harding, C. M. (1985) *Community Medicine*, **7**, 87.
6. Alberman, E., Watson, E., Mitchell, P. and Day, S. (1986) *Archives of Disease in Childhood*, **61**, 251.
7. Bruce-Quay, M. (1981) *Health Visitor*, **54**, 359.
8. Carter, H (1985) *Health Visitor*, **58**, 287.
9. Hull, D. (1981) *British Medical Journal*, **283**, 1231.
10. Nicoll, A. and Ross, E. (1985) *Health Visitor*, **58**, 285.
11. Nicoll, A. (1985) *Lancet*, **i**, 679.
12. Wilkinson, J. R. (1985) *Public Health*, **99**, 198.
13. Jelley, D. and Nicoll, A. G. (1984) *British Medical Journal*, **288**, 1582.
14. Macfarlane, J. A. (1984) *Maternal and Child Health*, **9**, 302.
15. Lingham, S., Miller, C. L. and Pateman, J. (1986) *British Medical Journal*, **292**, 937.
16. Lancet leader (1983) *Lancet*, **ii**, 1343.
17. Stevens, D, Baker, R and Hands, S (1986) *Archives of Disease in Childhood*, **61**, 382.
18. Brook, C. G. D. (1983) *British Medical Journal*, **286**, 1082.

19. Nkowane, B. M. *et al* (1986) *American Journal of Diseases of Children*, **140**, 433.
20. Cherry, J. D. (1986) *American Journal of Diseases of Children*, **140**, 417.
21. Newman, C. P. St J. (1983) *Public Health, London*, **97**, 208.

22. Horn, N. J. (1986) *Immunization Uptake in Radford Baby Clinic, Spring 1985*. Local publication, Department of Child Health, Nottingham.
23. Hutchison, T., Nicholl, A., Polnay, L. and Roden, D. A training procedure for immunization. *Health Trends* (in press).

## Physicians in the nursery

Although many books written for children make life-long impressions on young minds, the nursery environment is often inimical to the books themselves. Paper and boards are vulnerable and perishable unless used exclusively for the purpose for which they were made. As a consequence, first editions of the most famous youthful entertainments are rare and valuable. A copy of *Der Struwwelpeter* by Dr Heinrich Hoffmann was sold at Sotheby's for £13,200 in June 1982. The original stock of 1,500, published in Frankfurt-am-Main in 1845, had been sold out in four weeks, each copy being priced at 59 kreuzer so that, as Hoffmann insisted to the publishers, the buyer might think: 'Why, it costs less than one guilder!'

Struwwelpeter delayed his appearance in the title of the book until the fifth edition, by which time Hoffmann, a young physician in Frankfurt with an interest in mental diseases, was also sufficiently emboldened to declare himself the author. The title of the first four anonymous editions was (in German) *Jolly Tales and Funny Pictures*, in each of which shock-headed Peter appeared as the finale; in the fifth edition, and thereafter in hundreds of thousands of copies, Struwwelpeter astonishes and admonishes the young reader immediately after the Christmas greetings, which are bestowed on the reader on page one. Hoffmann himself described the nativity of the book. As Christmas of 1844 approached, he looked in vain in the shops for a book to amuse his three year old son. He returned instead with a notebook, on the blank pages of which he set about describing and creating, among other iridescent immortals, cruel Frederick, Harriet and her matches, the inky boys, little Suck-a-Thumb, Fidgety Phil and Augustus who would not have any soup, all for the delectation (and moral instruction) of his son. Hoffmann says of the book that 'the little home-bird flew into the wide, wide world'; by the time of his 31st birthday, shock-headed Peter had celebrated his hundredth edition. As an explanation for the haunting quality of Struwwelpeter, it has been suggested that Hoffmann recreated, perhaps unconsciously, primitive mythical figures.

In the year 1844, when Hoffman wrote and illustrated his jolly tales and funny pictures, John Ayrton Paris was elected President of the Royal College of Physicians; he was re-elected annually for the next 12 years. Like Hoffmann, the President was the medical author of a bestseller for children. *Philosophy in Sport made Earnest in Science*, published anonymously in eight editions (1827-1857), became one of the most popular of the home toy-making books. It included the first description of a

thaumatrope, a toy which utilised the persistence of visual images and so is claimed to be a forerunner of the moving picture. The moral purpose of the book is made plain in the subtitle, which presents the book as 'an attempt to implant in the young mind the first principles of natural philosophy by the aid of the popular toys and sports of youth'. The work, earnest but entertaining and instructive, is enhanced in all but the first edition by George Cruikshank's illustrations.

No copy of *Der Struwwelpeter* is included in the College library, either in the first English edition (1848) or in any of the innumerable issues that followed. The author may, however, be consulted (in German) on the subject of his observation and experiences of personality disorders and epilepsy in the lunatic asylum at Frankfurt-am-Main, 1851-1858 [2]. By contrast, in addition to his book on toys, the literary output of John Ayrton Paris was interesting and varied. His works include a detailed guide to Western Cornwall as well as several influential medical publications of the time, all available in the library. He was also well served by William Munk, who was a close friend and recorded his biography in three places [4,5,6]. The pages of the eighth and last edition of *Philosophy in sport . . .* were corrected 'by its late lamented author within a few days of his death . . . after he was confined to the bed from which he rose no more.' Paris died while he was still President of the College, and the copy of this final edition in the College library has a poignant inscription written by the author on the 22nd December 1856 to Charles Hawkins of the Royal College of Surgeons, who later added 'written by Dr Paris two days before his death.'

### Bibliography

1. The English *Struwwelpeter* was first printed in Leipzig in 1848, and distributed in England for its German publishers. Later editions based on this anonymous translation were published in Britain.
2. Hoffman, H. (1859) *Beobachtungen und Erfahrungen über Seelenstörung und Epilepsie in der Irren-Anstalt zu Frankfurt-am-Main, 1851 bis 1858*, Frankfurt: Rütten.
3. Paris, J. A. (1816) *A Guide to the Mount's Bay and the Land's End being a sketch of the topography, natural history, agriculture, fisheries, antiquities, mineralogy and geology of Western Cornwall*. Penzance: Vigurs.
4. Munk, William (1857) *A Memoir of the Life and Writing of John Ayrton Paris*. London: Bell and Dandy.
5. Munk, William (1878). John Ayrton Paris. *Munk's Roll*, **3**, 120-127.
6. Munk, William (1884) *The Gold-headed Cane*, 6th ed. London; Longmans Green. (Munk edited this edition, omitting the illustrations but continuing the narrative to 1876, and adding accounts of later Presidents including Paris.

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