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Developmental screening for pre-school children: is it worthwhile?

THE question of developmental examination of young children is beset by problems of definition, and it is necessary to be clear about what is understood by the terms surveillance, screening and assessment. Surveillance refers to an ongoing process which includes a number of preventive and anticipatory measures going beyond the mere quest for disease. This is an integral part of the day-to-day contact that general practitioners have with children during surgery consultations and home visits. Screening is where a health professional initiates contact with an apparently healthy child and applies a test in order to detect deviations from normality. Its purpose is the detection of mental and physical handicaps, and defects of hearing and vision, behaviour disorder and neurological disability. Assessment refers to a more specialized examination carried out because of suspected abnormality or the presence of risk factors, and is usually performed by those with additional skills in the examination of children.

There is little argument about the need for the general practitioner to be alert to the chances for opportunistic surveillance, but the introduction of routine screening to general medical services raises a number of questions about practice organization, reliability of tests, cost-effectiveness and wider issues in relation to the overall health needs of children.

Advantages of screening

The government's white paper on primary health care[1] laid great stress on the promotion of health and made specific reference to the needs of children under five years of age. Practising screening brings potential benefits to both patients and primary health care professionals. It places the doctor and health visitor in a better position to understand and identify childrens' problems while children learn to see health professionals in a more positive light and may then find consultation for illness much less threatening. Opportunities arise for advice about minor problems which would not normally be brought to medical attention and parents may be reassured about their childrens' normality. It has been suggested that compliance with medical advice is improved by the provision of a 'child care package'. For example, immunization rates are reported to be higher in practices where integrated child care sessions are provided.[2]

For the doctor there is the hope that the provision of anticipatory care will lead to improved relationships with patients and with other members of the primary health care team. Jenkins[2] reported that his practice's total consultation rate for children up to four years old was 25% lower than comparable practices, and he attributed this to the provision of general practitioner led pre-school clinics. Though lowering consultation rates in itself will never justify the provision of such clinics, it suggests that clinics may be an effective means of modifying health-seeking behaviour.

There are good arguments for routine screening carried out by general practitioners who have responsibility for comprehensive care and know the family background of the children in their practices. Priority should certainly be given to the early

diagnosis of conditions which can be identified and dealt with, such as hearing problems and visual defects.

Disadvantages of screening

Time and resources are not limitless. The additional workload for a doctor conducting a pre-school clinic based on an average practice list has been estimated at one two and a half hour session per week and this is based on a rather conservative estimate that each child will take 10 minutes to examine.[3] It has been claimed that opportunistic surveillance is just as effective for examining children's development as formal screening programmes,[4] and there may be evidence to support this. A large proportion of routine examinations will inevitably be spent examining normal children and responding to apparently minor queries. The number of major abnormalities will be relatively small, so that, for example, the average general practitioner will see only one child with congenital dislocation of the hip in 10 years.

The standard of developmental examination is extremely variable and general practice, as it is currently organized, could not take on the full responsibility for routine examination of all pre-school children. There is no agreement about the intervals at which children should be examined although this is constantly under review. It is important that a developmental clinic should not just carry out a series of tests but should allow time to observe the mother–child relationship.

Clinic non-attendances are a substantial problem with figures as high as 40% being reported.[5] Non-attendance is highest in low socioeconomic groups and for older children, and it is in these children that screening becomes more highly predictive of future health and educational needs.

Questions have still to be answered about the cost-effectiveness of screening all children, and if cash limits are to be imposed on primary care, selective screening may be more appropriate. The financial implications of comprehensive developmental screening by general practitioners have not been thought through and require closer scrutiny.

Screening programmes in primary care

A number of evaluations of screening programmes have been reported ranging from the enthusiastic[2] to the lukewarm[6] with others in between.[7-13] These and similar studies make an earnest effort to assess the morbidity detected by general practice based screening clinics. On average, between 5% and 10% of children screened are referred for further assessment and the more severe abnormalities detected at such clinics which were not already known to either parent or health care professional amount to less than 1%. There have been few large and systematic evaluations of the benefits of developmental screening programmes in the UK but large scale studies in Sweden have concluded that the measurable direct impact of screening on the health of children is marginal.[14] A recent study from Northern Ireland has shown that little is achieved by unselective school entry examinations and that a change in policy is long overdue.[15] These programmes have contributed little to the prevention of most problems with the possible exception of visual screening and dental examination. Despite the increasing pressure to extend health screening and the increasing resources being devoted to it, there has been little proper evaluation of important aspects of routine health checks.

A parallel field of research is that concerned with the relative value of individual screening tests. After decades of routine pre-school screening little is known about the general application of methods of examination of young children. The report of a British Paediatric Association working party on child health screening[16] points out that developmental examinations cannot satisfy the usual criteria for screening tests and thus casts doubts on the standards of any formal programme of developmental surveillance. The report emphasizes that a number of the tests routinely carried out in the examination of young children are both unreliable and invalid. Although many of the screening tests available are unsatisfactory or badly performed, every primary health care professional involved with children should be familiar with the scientific basis of the subject of development, even if a decision is made not to embark on a formal screening programme.

Conclusions

The statement in the Royal College of General Practitioner's report *Healthier children — thinking prevention*[3] that 'we have no doubt that from the point of view of children the immediate start of a comprehensive system of regular child examination through general practice across the country as a whole can be provided by general practitioners trained as they are now' is one which has to be questioned. Large gaps in training exist and only 18% of general practitioners in training practices are conducting regular child surveillance and in non-training practices the figure is 11%.[17] A more effective use of doctor's time in the care of children would be to focus on maintaining high levels of immunization uptake, with more careful follow-up of children with established conditions where medical intervention has a proven track record. Health visitors can be encouraged to enhance their advisory service in child development, but setting aside two to three hours a week for routine examination of all children by general practitioners could be extremely unproductive.

If we are to consider primary medical care in its broadest context, and not merely from the narrower focus of general practice, then the appointment of a consultant community paediatrician in each region or district, who could provide a strategy, a support system, an educational backup and, most importantly, a monitoring system for child care may be a more realistic use of limited resources. Allied to this would be the necessity to strengthen health visitor services. By this means, local needs, which will differ from area to area, can be identified and acted upon in a way which does not exist at present.

The recent offer of money to all general practitioners for developmental examinations[18] has to be matched with an understanding of the limited impact on the overall health of children that this payment may have. Priority will have to be given to areas of unmet need, such as inner cities, large housing estates and new towns, where it would be entirely appropriate to offer incentives to achieve progress. In the midst of pleas for more and more medical intervention, it is worth remembering that the main factors which have a significant effect on childhood morbidity and mortality are poverty and accidents. Tackling these problems requires social and political initiatives and not just action by health care professionals.[19] With regard to the comprehensive screening of all children a Department of Health and Social Security committee looking into services for children[20] made a plea for future research to 'examine the effectiveness of health screening particularly in relation to cost, in the context of what are today's health and social problems.' These comments are as relevant today as they were almost 10 years ago.

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Direct access to hospital investigative facilities: threats and opportunities

DIRECT access for general practitioners to hospital pathology and radiology investigations was recommended in the UK before the introduction of the National Health Service, but in 1948 these services were largely restricted to hospital practice. Excessive outpatient referrals were one result.

The case for open access to these and other facilities is strong; it is widely accepted that the resulting enhanced role of the family doctor is beneficial to patient management[1,2] and raises the standard of primary care. The joint working party of the Royal Colleges of General Practitioners and Radiologists, for example, recommended that family doctors should have the same right of access to radiological imaging facilities as consultants.[2] Despite this, there is still wide variation of access to certain services, from complete to virtually none.[3,4] Of the districts surveyed by Thorpe,[5] under half had direct access to ultrasound scanning or contrast examinations (other than barium meals and cholecystograms). Inconsistency in the availability of services not only between regions but between neighbouring health authorities in the same region has been demonstrated[6] suggesting that there is no coordinated policy at regional or national level to ensure an equitable and logical distribution of open access services.

Variation between health authorities

The reasons why open or direct access is so variable are twofold: there is resistance from some consultants who feel that their departments will be swamped by frivolous and unnecessary requests,[4] and there are restrictions by hospital managers who for financial reasons seek (or are forced) to limit demand.[6] These attitudes and prejudices dictate which facilities are provided, as although 'open access' has been Department of Health policy for years,[1] its implementation has been left largely to the hospitals. Neither argument for restricting access to hospital services is justified, given that the evidence points towards extending open access, not restraining it. In general, such services are used responsibly, efficiently and with discrimination.[7-9] Fears that increased availability leads to increased demand[10] are unfounded; a new service usually has its peak demand within the first two years, settling down thereafter.[11-13] General practitioner requests for X-rays, for example, remain at about 10% of the work of most departments.[6,14] A low level of general practitioner usage (but wide variation) of pathology services has also been demonstrated.[4] No noticeable abuse of direct access to X-ray departments[7,15,16] has been seen and in many respects the general practitioner's use of unrestricted facilities compares favourably with that of outpatient departments.[8] Furthermore there is evidence that restricting general practitioner access actually increases the workload and pressure on hospital services.[4,8,9] In some districts it is stated that certain services (for example intravenous pyelogram) are only available 'by consultant referral to limit demand'.[6] If a patient needs an investigation or service, it is (at the least) inefficient to put obstacles in the way. If the view is that the investigation is being performed unnecessarily, then discussion, constructive suggestions and education are the answers, not blanket restrictions which penalize those professionals (and patients) who use the facilities responsibly and with discrimination. Waiting lists work in the same way to restrict direct access and again the eventual result is more, not less, strain on the hospital services. Some X-ray departments now publish guidelines for local general practitioners to indicate their particular imaging policies. Many radiologists feel that they are in the best position to decide which imaging test is the most appropriate in any given clinical situation, a point recognized by the joint working party of the two royal colleges.[2] An X-ray request thus should be analogous to a request for a clinical outpatient consultation.[2]

Variation between general practitioners

Like referrals to outpatient departments, however, the rates of referral to radiological departments and other laboratories show considerable variation among general practitioners, even when standardized for important patient characteristics, indicating that doctors have unique 'referral thresholds'.[17] Forbes[18] reported a 40-fold variation in general practitioners' use of local laboratories in Kent in the 1960s, while Ashley[19] found discrepancies of up to 25-fold between different hospitals in the use of laboratory tests for the same case. Smith[9] demonstrated a dramatic variation in the referral rate for diagnostic radiology: while the average number of referrals was two each week, one doctor referred only one patient in six months while two doctors referred over 100 each. Even greater variation in these referral rates has been demonstrated between general practitioners with differing com-