PRACTICE OBSERVED

Practice Research

Measles immunisation rates and the good practice allowance

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Abstract

The recent discussion document on primary health care proposes that a good practice allowance is paid to general practitioners based in part on the uptake of immunisation by patients. The variation between and the validity of practice immunisation rates for measles as determined by one district health authority's child health computer are assessed. In areas of low population mobility district health authority rates may be sufficiently accurate to base a good practice allowance on but should not be used until the social environment of each practice can also be characterised. In areas of high mobility intermittent surveys may be a preferable method of auditing performance.

Introduction

The recent government paper, *Primary Health Care: an Agenda for Discussion*, proposes a good practice allowance "linked to such factors as ensuring that certain services—for example, immunisation—have been provided for an agreed proportion of patients in relevant categories."[1] This follows suggestions in the medical press that practices, rather than practitioners, should be held accountable for their performance,[2] and that achievement in prevention would be a good place to start.[3]

Child immunisation rates for each general practice can be ascertained readily from the computerised child health records that are held by district health authorities. Although such records are known to be inaccurate in terms of the populations of patients who are registered with a practice and the recording of immunisation state,[4] if the error is random it may not lead to an inaccurate overall estimate of the immunisation rate for the practice. Moreover, if this is true and important variations in the immunisation rate between practices can be shown then the link between immunisation and the good practice allowance would be both feasible and attractive.

The Aylesbury Information on Prevention Project, which was set up in 1985 to examine the exchange of information between general practice and a district health authority, provided the opportunity to examine these questions with respect to measles immunisation. Firstly, the participating practices agreed to the practice immunisation rates being abstracted from the health authority's computer to assess interpractice variation. Secondly, one of the practices had a research interest in measles and therefore had medical records on measles immunisation of a sufficient standard to base the validation of the health authority records on them.

Method

Five general practices with an aggregate list size of 44 000 patients, which represents roughly a third of the population of the health district, participate in the Aylesbury project. The criterion for selection of practices and the procedure for abstracting information from medical records has been reported.[5] For this study the measles immunisation state of all children who were aged 2 years to 9 years 9 months on the audit date (1 September 1985) and who were recorded as being registered with a doctor from one of the five practices was obtained from the district health authority child health computer. The crude measles immunisation rate for each practice was calculated. (The notes of each apparently unimmunised child were also tagged to evaluate the feasibility of increasing immunisation uptake in this

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manner. The results are not reported here.) All practice immunisation records were held in manual form.

In one practice, which was selected because of the high level of recording of immunisation state in the medical records and the availability of comprehensive health visitor records, the list of children registered in 1975, 1979, and 1982 was abstracted from the age-sex register. The medical record card was audited for immunisation state by the practice staff supervised by the project coordinator (AP). The age-sex list and record audit were then manually cross tabulated at the practice with the printout from the district health authority computer.

Results

District health authority recorded rates—The figures in table I confirm the initial assumption that there would be substantial differences in the immunisation rate between practices on the basis of the crude figures calculated from the child health computer. There is up to a threefold difference in the proportion of children who were not immunised against measles, depending on age group. Recorded immunisation rates were highest in the youngest age group in each practice, although the age gradient of immunisation varied.

TABLE I—*Percentage of non-immunised children in each practice according to child health computer, by age group. (Numbers of children in parentheses.)*

Practice	2 years 4 years 9 months	4 years 10 months 7 years 9 months	7 years 10 months 9 years 9 months	All ages
1	24 (106)	30 (152)	32 (143)	29 (401)
2	18 (66)	19 (61)	21 (69)	19 (176)
3	10 (23)	22 (39)	18 (57)	13 (119)
4	13 (36)	16 (52)	29 (82)	20 (120)
5	8 (20)	14 (47)	21 (66)	15 (133)
All	13 (251)	16 (351)	21 (417)	17 (999)

$\chi^2 = 40.11$, 8 df, $p < 0.001$

TABLE II—*Recording of measles immunisation for children with both a child health computer and a medical record: one practice, birth years 1975, 1979, and 1982. (Percentages given and numbers in parentheses.)*

Source	1975	1979	1982	All years
Computer only	11 (6)	3 (2)	4 (4)	5 (12)
Medical record only	4 (2)	4 (3)	7 (6)	5 (11)
Both records	85 (47)	93 (71)	89 (81)	90 (199)

TABLE III—*Percentage of non-immunised children as determined from medical and child health computer records: one practice, birth years 1975, 1979, and 1982. (Numbers in parentheses.)*

	1975	1979	1982	All years
Computer	20 (16)	16 (17)	10 (8)	15 (41)
Medical records	34 (37)	17 (20)	10 (9)	21 (66)

Accuracy of denominator—Figure 1 shows the correspondence between the existence of a computer record, a medical record, and an age-sex record for each child identified from any source according to year of birth. Figure 1 and tables II and III relate to one practice only (practice 5 in table I) and to children born in the years 1982, 1979, and 1975. Overall, 73% of children with a medical record card were listed on the computer, and 88% of the children named on the computer had a medical record card. Health visitor records were available only for children born in 1982 and registered at one of the two surgeries from which the practice operates. Figure 2 shows the correspondence between this record, the district health authority computer, and the medical record card.

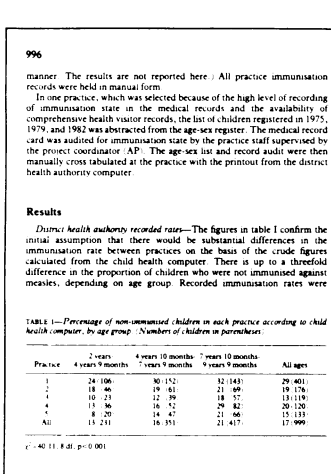

FIG 1—Proportion of children eligible for measles immunisation in one practice who were identified from different sources: birth years 1975, 1979, and 1982.

Accuracy of numerator—There was less disagreement between child health computer records and medical records on the numerator—that is, the record of immunisation. Table II shows that for a child with both a computer record and a medical record there was agreement on whether he or she had been immunised in 90% of cases. Table III compares the non-immunisation rates (the percentage of children who had not been immunised) for each age group, as determined by the audit of medical records and the child health computer. The source of numerator was restricted to that of the denominator—that is, an immunisation record on the computer did not count towards the rate calculated on the basis of the medical record. There is an important discrepancy only for the year of birth 1975, where the computer overestimates the rate of measles immunisation compared with the practice medical records.

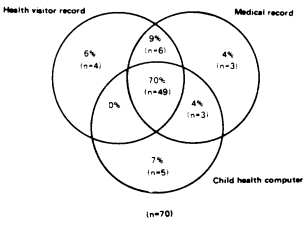

FIG 2—Proportion of children eligible for measles immunisation who were identified from different sources: one surgery and birth year, 1982.

The rate of non-immunisation calculated from the health visitor records (three (5%) of 63 children) is less than the rate from either the computer (eight (13%) of 63) or medical records (seven (11%) of 65), although because of the small number of children this evidence should be interpreted with caution.

Discussion

The first important issue is the extent to which district health authority immunisation rates reflect the true state of immunisation in general practice. The major error in accuracy is the population denominator rather than the record of the immunisation having been given. Error in the latter is small and probably random. The error in the denominator arises predominantly through population movement, and both the health authority computer and the practice age-sex register suffer from this source of error. The results of other studies have shown emigration to be more important than immigration in this context,[4,6] and practice immunisation rates that are determined by the district health authority computer are likely to be biased by population movement only if there is a high rate of immigration from an area with a different rate. This is not the case in the study practice, and the hypothesis that the health authority measles immunisation rate is therefore likely to be a true reflection of the practice rate is supported by the concordance of practice and health authority rates for 1979 and 1982. The apparent overestimation of the practice immunisation rate for 1975 by the computer may reflect inadequacy of the practice records during this period (before MK was recruited).

Health visitor records are thought to be the best source of denominator in the youngest children,[7] and we think that they may also carry the most accurate information on immunisation state. The results suggest that both the computer and medical record rates were underestimates of the "true" immunisation rate if this hypothesis is correct. The difference in rate, however, was based on small numbers, and at this high level of uptake administrative error and delay in updating surgery and computer records may account for much of the difference observed.

The second important issue is that the socioeconomic factors that impinge on each practice will have a major impact on the achievable rate of immunisation, and the level attained must be seen in this context. All the practices participating in the Aylesbury project are undertaking a contact survey of a random sample of patients to provide information on social class. As only 55% of the sample have contacted the doctor and completed a questionnaire the results are not reported in table I. At this stage, however, there is a clear correlation between the social class structure of the practice populations and the immunisation rate. The rank order of practices on the basis of immunisation is mirrored exactly by the rank order based on the proportion of patients in social classes I and II, which varies from 17% in the practice with the worst immunisation record to 36% in that with the best record.

If immunisation rates are used to indicate good practice they must be standardised for the social mix of the practice population. This could be based on geographical characterisation of the practice (using a social deprivation index or Acorn postcode analysis) or on other social variables such as occupational class or educational achievement.[8,9] The implication is that each practice must collect and update such information on its patients in computerised form.

There are two alternatives to assessing immunisation performance on the basis of district health authority computers. The first is to invest responsibility for all immunisation with practices and to set up an information system based on microcomputers or a direct practice-family practitioner committee computer link. Secondly, a continuous monitoring system could be abandoned in favour of the intermittent surveys used by the World Health Organisation, particularly the cluster analysis used in the Expanded Programme of Immunisation.[9] If it proves to be impossible to improve the accuracy of registers, particularly in areas of high mobility and social deprivation, then such ad hoc surveys are a feasible alternative.

Practices that are recruited to research projects are atypical, and the immunisation rates reported are higher than the national average. The variation between a representative sample of practices would be greater. This variation might be reduced and overall immunisation levels increased if the responsibility for providing and auditing immunisation is passed from district health authorities to general practices and the fulfilment of this responsibility is linked to practice remuneration. If, however, no account is taken of the social environment of the practice a good practice allowance that is based on the absolute immunisation rate may increase the present inequalities in health care and hinder the development of high standards of care in areas of social deprivation.

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Doctors as nutrition educators? Part II

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Did you get 12/12 for your nutritional knowledge in the last quiz (11 October, p 928)? Will your training in nutrition or dietetics provide the answers to these questions?

(1) What are the National Advisory Committee on Nutrition Education recommendations?
(2) What are the dietary goals for diabetic patients?
(3) What is a rule of thumb guide for energy requirements (calorie needs) for children of different ages?
(4) Give three reasons why sorbitol is not recommended as a sweetener for diabetic patients.
(5) Which of the following would you recommend to help with weight reduction?
Ponderax
Tenuate dospan
Microdiet
Ayds
Slim Disks
Bran Slim
Fybogel
Prefil
(6) Which of these foods are unrefined carbohydrate?
boiled potatoes
unsweetened orange juice
milk
wheat flakes
cream crackers
Crackottes
(7) Name three sweeteners suitable for diabetic patients.
(8) If you see that the nutritionist or dietitian has recorded 3-1-3-1-3-1+1 in a diabetic's medical notes how much carbohydrate has that patient been prescribed?
(9) How much energy (calories) would the above diabetic be eating?
(10) Which diabetic products would you recommend to be bought as an adjunct to the diet?
(11) What is the lowest safe energy (calorie) intake that you would recommend for an overweight (*a*) adult woman, (*b*) adult man, (*c*) 14 year old girl, (*d*) 5 year old boy?
(12) Which bread would you recommend on a weight reducing diet?
Starch reduced bread, such as Nimble
Hovis
Wholemeal bread
Granary bread
White bread
Starch reduced rolls, such as Energen
Crispbreads, such as Ryvita
Brown bread
Hi-bran bread
Vitbe bread

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100 YEARS AGO

In this great overgrown city of London, and to a less degree in other great cities of the country, as the opportunities for healthy exercise grow fewer, the custom of resorting to gymnasia will grow even more common than it has already become. The advertisements of "Professors of the gymnastic art," multiply with rapidity, a sure sign that the fashion is spreading. While willingly admitting that gymnastic training has its uses for both sexes, and is, indeed, especially during the winter months, the only substitute for out-door exercise available to those large classes of the community who follow ill-remunerative sedentary occupations, it is advisable to sound a note of warning with regard to the ventilation of the room in which the exercises are performed. The training received from a gymnastic master necessitates inspirations which, when not rapid, are deep; the pupil, therefore, charges his or her lungs very fully with the air of the often crowded room in which the apparatus is erected; if ventilation be not free, the air quickly becomes charged, not only with dust, but with emanations from the lungs and perspiring bodies of the executants. If ventilation be carelessly managed, draughts most dangerous to heated bodies are generated; of the two evils, it is to be feared that draughts are looked upon as the chief and the only one to be seriously combated by the managers of gymnasia. To delicate persons, the danger, however, of breathing air contaminated as above described must be very real; and it is worth while remembering that, of a family of four famous acrobats who, not many years ago, delighted the frequenters of London theatres and music halls, all have met early deaths from disease; in two cases, death was due to pulmonary consumption. Who shall say that this dire disease was not contracted in the fetid atmosphere in which their marvellous feats of agility and strength were commonly performed? (*British Medical Journal* 1886;ii:562.)

Doctors as nutrition educators? Part II

(1) Eat to maintain an optimal body weight with adequate exercise
Eat the same proportion of protein but more vegetable protein
Eat more foods rich in fibre
Eat less sugar
Eat less (particularly saturated) fats
Drink less alcohol
(2) 30-50% energy from unrefined carbohydrate foods, 15% energy from protein, 25-35% energy from fat (reduce salt intake)
(3) (1000 kilocalories energy plus 100 kilocalories energy for every year of age)
(4) (*a*) It has the same energy value (calories) as sugar and has no other nutritional value
(*b*) It is a refined carbohydrate (=) carbohydrate extracted into the bloodstream and only marginally helps in control of blood glucose
(*c*) It has a high osmolar load, giving many people a powerful laxative effect
(*d*) It is expensive
(5) None
(6) Boiled potatoes and wheat flakes
(7) Natural: fructose, Sweetex, saxin, saccharin, and Canderel—tablets and liquid only; plus Canderel powder. (Unstable sweeteners are: Sucron, Sugarine, Sweet 'n' Low, Sweetex powder, Sorbital, Dietade, and Sanson because they contain sugars.
(8) 150 g carbohydrate (=) 3 carbohydrate exchanges)
(9) Approximately 1000 kilocalories energy
(10) Only dietetic squashes
(11) (*a*) 1000 kilocalories, (*b*) 1200 kilocalories, (*c*) 1200 kilocalories, (*d*) 1000 kilocalories
(12) Wholemeal bread and crispbreads

How did you get on this week? Do you refer all your diabetic patients at least once to the nutrition or dietetic department for detailed advice?