

# A computerized audit of a screening programme to establish rubella immunity

FREDERICK DIFFORD, MRCGP  
General Practitioner, Bristol

**SUMMARY.** *This paper reports the use of a practice computer to help establish rubella immunity in all women that are likely to bear children. The rubella status by serological testing for each woman in the practice together with the date of the test is entered in the computer by ancillary staff as soon as results are obtained. The computer audit can be carried out by practice staff and takes half an hour. The resulting print-out gives details of rubella immunity for all women aged 14–39 years and also for all women at the beginning of pregnancy. Results of successive audits show consistent increases in the numbers of women with established rubella immunity.*

## Introduction

FOLLOWING the policy of many practices<sup>1</sup> this partnership has been trying to increase the uptake of rubella vaccination in teenage girls and to establish immunity by testing for rubella antibodies before pregnancy in all women that are likely to bear children. The uptake of vaccination in the local schools has been satisfactory enough to allow the practice to adopt a supportive role only and efforts have been directed at establishing rubella immunity at a later stage. The practice computer, which is employed for the control and audit of repeat prescribing, morbidity statistics, performance review and screening,<sup>2</sup> has been used to assist in this procedure. An electronic data base and associated interrogation program provide an easy tool for screening, but this paper describes the value of a computer program specifically designed to bring together relevant performance indicators.

## Method

In this practice the major problems of new and existing patients are summarized on the RCGP pink summary card and these data are entered into the computer in a coded form. One such code is rubella status by serological testing which is entered together with the date of the test. It is sometimes difficult to determine the rubella status from the manual records when the titre is included with other information or is recorded on laboratory forms from outside the area. Ancillary staff enter rubella results in a patient's data base on a regular basis when they receive the appropriate form. The data base also records the expected date of delivery for the babies of all maternity patients, dates for family planning visits and details of laparoscopic sterilization and vasectomy.

In order to initiate the audit it was necessary to ensure that data capture was complete so that an improvement in figures could not result from more data being found. Routine interrogation software was used to list all women of the appropriate age who were not rubella immune and had not been sterilized. Over 1000 sets of notes had to be scanned for rubella status but the opportunity was used to record other data and no further update was required.

Rubella status can be determined on the following occasions:

1. When venepuncture is required for other purposes, usually full blood count.
2. When girls are offered rubella antibody testing and poliomyelitis immunization on reaching 14 years of age. This is usually done by the practice nurse and produces the best response.
3. During visits for contraceptive services. Checks of patients of unknown rubella status due in the following month can be picked up by a computer search and a partially completed form inserted in the notes to prompt the doctor or nurse.
4. During consultations with patients presenting with gynaecological and psychosexual problems.
5. When patients notify a change of name on marriage.
6. By cohort screening in women approaching the peak child-bearing age in the practice. Patients in this practice are not sent for but prompts are inserted in the notes.

On serological testing only a small number of patients are found to have a low titre and to be rubella susceptible (8% over a six-month period at the time of the study and falling). These patients sometimes give a history of rubella infection or vaccination. They are followed up personally and are classified as 'at risk' rather than entered as having negative rubella immunity.

## The audit

The computerized audit can be carried out by practice staff from a sub-menu of performance review options. The print-out shown in Figure 1 is produced in half an hour. Each one-year cohort from 14 to 39 years is shown separately in order to identify areas of priority where the practice can most effectively apply its resources. Column 2 gives the number of women shown to be immune in each cohort. Of the remaining non-immune patients, the computer identifies those who have received family planning services from the practice in the last 18 months in column 3. These numbers keep to a minimum because of the regular contact with these patients. Column 4 shows those patients whose immunity has not been established but who have been sterilized so that rubella status is irrelevant. Column 5 shows those women whose partner in the same household has had a vasectomy so that there is no need to raise the subject of rubella status with these women. Column 6 gives those patients for whom knowledge of rubella status is required in many cases. Clearly it includes many women, especially older women, for whom rubella status need not be of concern, although this is a subjective matter that cannot be computerized.

The computer further analyses the current maternity cases in the practice by age to establish the frequency of pregnancy by age. The numbers of women at each age in whom immunity has been established prior to the pregnancy is calculated. The final figure, the percentage of pregnant women for whom rubella immunity was established before conception, is the object of the audit. Susceptible patients are listed by the program prior to printing the results, and are included in the non-immune column in the print-out.

## Discussion

The overall figures for established immunity are still quite low but the results of successive audits at three-monthly intervals are encouraging. The change in non-immune figures is a more

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 Analysis of rubella status of female patients. List size 9374 patients

Age Rubella immune		Rubella status unknown					Total in cohort
(1)	(2)	FP in practice (3)	Sterilised (4)	Vasectomy in partner (5)	Rubella status problematical (6)	(7)	
14	34 (56%)	0			27 (44%)	61	
15	61 (78%)	0			17 (22%)	78	
16	64 (71%)	5			26 (29%)	90	
17	45 (53%)	15			40 (47%)	85	
18	11 (15%)	21			60 (85%)	71	
19	16 (22%)	18			56 (78%)	72	
20	13 (21%)	23			50 (79%)	63	
21	13 (17%)	25			65 (83%)	78	
22	15 (20%)	17			36 (47%)	58	
23	24 (35%)	20			44 (65%)	68	
24	24 (41%)	17			33 (57%)	58	
25	46 (56%)	11		1	36 (44%)	82	
26	23 (33%)	19	2		45 (64%)	78	
27	33 (56%)	4	1		25 (42%)	59	
28	35 (49%)	13	1		36 (50%)	72	
29	35 (51%)	9	5	2	27 (39%)	69	
30	45 (53%)	20	1		39 (46%)	85	
31	26 (46%)	2	5		25 (45%)	56	
32	21 (39%)	8	5	7	21 (39%)	54	
33	29 (42%)	12	4	2	34 (49%)	69	
34	22 (47%)	1	1	5	15 (32%)	47	
35	31 (44%)	1	9	7	24 (34%)	71	
36	22 (33%)	5	10	8	27 (40%)	67	
37	19 (28%)	5	14	9	26 (38%)	68	
38	14 (18%)	4	19	18	34 (44%)	77	
39	12 (14%)	6	19	13	41 (48%)	85	

Immune status of interest in 999 (50%)

NB Immune figures are for rubella antibody titre only. Figures for family planning and sterilisation are for unknown immunity only.

Rubella status at beginning of pregnancy

Age - Maternity Cases -	Number - Immune BEFORE pregnancy
17	2 1
18	2 1
19	5 2
21	2 0
22	4 2 * 2 still unknown
23	6 3
24	4 3
25	9 6 * 1 still unknown
26	6 4
27	5 4 * 1 still unknown
28	7 4 * 1 ? susceptible
29	8 5
30	3 2
31	4 4
32	2 2
33	4 4
34	2 2
35	1 1
36	2 2
39	1 1

Number out of 79 maternity cases immune before pregnancy is 53 (67%)

Figure 1. Sample print-out showing rubella status of all female patients aged 14 to 39 years and of all pregnant women.

useful measure than the total since the latter depends on the size of the age range selected. On each occasion there has been an improvement of several per cent in the figures. From 1 March 1985 through 18 October 1985 to 2 April 1986 the percentage of women with 'problematical' immunity fell from 62% through 54% to 50%, while the percentage demonstrated to be immune before pregnancy rose from 53% through 61% to 67%. If the rate of improvement dropped it would be immediately apparent and the best corrective options chosen from the latest print-out. It should be possible to establish immunity in 90% of patients before pregnancy.

There is a level of under-recording, however, which could be as much as 5%; records may be incomplete or may not have arrived from another practice and it is unreasonable to test patients again if further pregnancy is improbable.

By training practice staff to use the computer in this way, both screening to detect rubella susceptible women and the audit of its progress have become simple and routine practice activities. The purpose-written report linking immunity, pregnancy and potential fertility in table form cannot be emulated by general reporting programs. With the use of computers performance review of the more measurable parameters of practice activity can be easily carried out by ancillary staff. In order to do this there is a pressing need 'to install and use computers in general practice within the next five years'.<sup>3</sup> It is difficult to see how the

contribution to performance review from the family practitioner committees<sup>4</sup> can fill the gap, even at the relatively superficial level of the audit described here.

References

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4. Parr CW. Performance review: contribution from the family practitioner committees. *J R Coll Gen Pract* 1985; 35: 460-461.

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Address for correspondence

Dr F. Difford, 326 Wells Road, Knowle, Bristol BS4 2QJ.

**COMPUTER APPRECIATION COURSES FOR GENERAL PRACTITIONERS AND PRACTICE MANAGERS/SENIOR PRACTICE STAFF**

The RCGP Technology Centre, in conjunction with its Information Service, is pleased to offer a series of computer appreciation courses for general practitioners and their senior practice staff. These events are held at 14/15 Princes Gate, where overnight accommodation is available if required.

The course content and presentation assume that participants have either only superficial or no knowledge of computing. The principles, language and technology of computing are discussed in lay terms, with particular emphasis on the problems of, and potential solutions to, the introduction and management of the new technology in the practice.

The cost of the course for members and their staff is £160 (inclusive of Friday's residential accommodation) and for those not requiring overnight accommodation, the cost is £135. For non-members, the course fees are £180 inclusive of Friday's accommodation, and £155 exclusive. The fee includes all meals, refreshments and extensive course notes.

These courses are zero-rated under Section 63. Under paragraph 52.9(b) of the Statement of Fees and Allowances, practice staff attending the courses may be eligible for 70% reimbursement. Staff should confirm eligibility for reimbursement with their FPC.

The dates of forthcoming courses are as follows: 12-13 September, 17-18 October, 21-22 November 1986.

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