introduction of solids cannot be elicited from the data of Fergusson *et al* because they defined early feeding with solids as before 4 months of age, and details of feeding patterns in this time are not available.^{15 16} Continued follow up of our cohort may clarify this issue as the prevalence of eczema and other allergic disorders peaks in later childhood.²⁶ Fergusson *et al* have now followed up their study group for 10 years¹⁶ and confirmed their earlier report, which associated early feeding with solids and eczema.¹⁵

This study has shown that, after data were adjusted for confounding variables, early feeding with solids is less harmful to the infant than previously indicated. Apart from a less than twofold increase in respiratory illness no other consistent adverse effects were detected during the first two years of life. Longer follow up is required, but, in the meantime, a more flexible approach to the introduction of solids should be considered, with advice being focused on the specific needs of individual mothers and infants.

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How frequently should basic cardiopulmonary resuscitation training be repeated to maintain adequate skills?

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Adequate skills in cardiopulmonary resuscitation can be achieved and maintained almost entirely by training with manikins.¹ Such skills tend to deteriorate with time and are presently maintained at considerable cost and effort.² It would therefore be useful to determine the minimum frequency of training sessions necessary to maintain adequate skills. We are not aware of any systematic study of the decline of basic skills in resuscitation with time and assessed the optimal interval between reinstructions. The aim of this study was to assess how different intervals between reinstructions affect the maintenance of basic skills.

Subjects, methods, and results

A group of 180 nurses from general non-cardiac wards of a teaching hospital were invited to participate and the 141 who agreed were randomly assigned to being given reinstruction at intervals of three (group A), six (group B), or 12 months (group C). At the first training session the participants were asked to perform a resuscitation attempt alone on a manikin (Laerdal Recording ResusciAnne) for two minutes. For the last 30 seconds of the attempt essential variables were recorded. These were compression rate, compression: relaxation ratio, impression, depth, ventilation volume,

and breathing interval. Correct placement of the hands was judged visually. The participants were then given instruction in cardiopulmonary resuscitation according to the standards of the Dutch Heart Foundation. Immediately afterwards they were asked to perform another resuscitation attempt for two minutes, which was scored as before, and the results were used as the reference score. Thereafter the participants were asked to return every three, six, or 12 months to perform a resuscitation attempt as described above and to attend a refresher course. The overall quality of the resuscitation attempts was assessed with a scoring system, in which penalty points were assigned for aberrations from the normal values of the variables which characterise resuscitation skills according to the guidelines of the American Heart Association.³

Of the 96 nurses who completed the 12 months' study and could be analysed, 27 belonged to group A, 35 to group B, and 34 to group C. The nurses (11 men and 85 women) had a mean age of 28.7 (SD 7.1) years. They had worked in health care for 7.2 (6.1) years and in that time had attended 3.3 (6.9) resuscitation attempts. All the participants had received instruction in cardiopulmonary resuscitation before the study, their most recent training having been 33 (24) months previously.

The reference scores achieved by the three groups after completing the first instruction session were not significantly different (Kruskal-Wallis test), indicating that their baseline skills were similar (figure). All the groups amassed significantly higher numbers of penalty points just before their second reinstruction compared with their reference scores (Wilcoxon's rank sum test), indicating a decline in skills. After reinstruction, however, skills improved and were maintained during subsequent testing of groups A and B. The distribution of scores within every groups was consistent over time (Friedman's test). No correlation was

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Mean (standard error) number of penalty points accrued by subjects during resuscitation attempts immediately before and after initial instruction and then at regular intervals of three (group A), six (group B), or twelve months (group C)

found between the participants' scores or pattern of scores over time and their gender, age, working experience, number of actual resuscitation attempts attended, or number of instruction courses on resuscitation received (Spearman's test).

Comment

After the first instruction course our subjects obtained results similar to those of other studies.⁴ Reinstruction of groups A and B led to an improvement in performance which did not decline thereafter. This suggests that resuscitation skills are maintained at a stable level by three or six monthly refresher courses. Our results suggest that an interval of 12 months is probably too long since, for most of that time, a person's skill would be insufficient. We did not, however, measure subjects' skills after the first year of the study.

It has been suggested that poor retention of skills may depend on the instructor.⁵ We eliminated this factor by rotating the instructors and reinstructing them regularly. We can therefore conclude that

reinstruction at six monthly intervals is sufficient to maintain adequate skills in cardiopulmonary resuscitation. These results should be relevant to all members of the public interested in maintaining resuscitation skills as well as the medical profession.

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Nurses' knowledge of the resuscitation status of patients and action in the event of cardiorespiratory arrest

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Cardiopulmonary resuscitation has become an integral part of hospital practice. The outcome varies with setting, type of arrest, and underlying disease but only about 10% of patients who have cardiac arrests in hospital survive to be discharged.¹

Since cardiopulmonary resuscitation is a traumatic procedure for both patient and doctor patients with little to gain from it often have "Do not resuscitate" written in their notes. At the time of a cardiac arrest, however, there is often confusion over an individual patient's resuscitation status. This can result in resuscitation being started and then stopped, sometimes after a considerable time, when someone finds a do not resuscitate order in the notes. This study set out to determine how nurses' knowledge of resuscitation status and proposed action in the event of a patient suffering a cardiac arrest agreed with the documented resuscitation status.

Subjects, methods, and results

The study was conducted on all five acute medical wards at two linked district general hospitals. At the end of nursing handover without warning all the nurses on the ward were given a questionnaire with two questions. All the nurses were taken in a group around all the patients (or appropriate half of ward in sectioned wards) and were allowed 10 seconds to answer both questions before the group moved on to the next patient. The questionnaire asked, firstly, whether in the event of a cardiac arrest the nurse knew the resuscitation status of this patient to be: (a) for resuscitation, (b) not for resuscitation, or (c) "unknown to me." Secondly, it asked whether in reality if the nurse saw the patient arrest she would (a) initiate basic life support and put out a crash call, (b) not initiate basic

life support and not put out a crash call, or (c) try to ascertain the resuscitation status by asking someone or looking in the notes before initiating life support and putting out a crash call. The response of one nurse on one patient was deemed to be one resuscitation decision. The medical and nursing notes were then examined for evidence of do not resuscitate orders. The exact wording of such orders and the time since last written were recorded. If no orders were found in either the medical or nursing notes we assumed that the patient should be resuscitated. In the results the percentage agreement indicates the proportion of nurses' responses that agreed with documented evidence.

This study questioned 41 nurses (17 qualified, 24 unqualified) about 113 patients (mean age 72 years, 59 women, mean duration of stay 21 days (range 1-92)). Do not resuscitate orders were found in both the medical and nursing notes of 23 patients. Four patients had such orders only in the medical notes and seven only in the nursing notes. All 27 of the medical orders were written as "Not for resuscitation" or "not for 3333" (the local cardiac arrest emergency number), or both. The mean time since the last do not resuscitate order was written was 18 days. Do not resuscitate orders were recorded in the same way on the first page of the nursing notes with the addition of a red dot. Only six nursing orders were dated.

Knowledge of and response to patients' resuscitation status among qualified and unqualified nurses: results are percentage agreement between nurses' judgments and presence or absence of do not resuscitate (DNR) orders in medical notes

	Patients with no DNR orders		Patients with DNR orders	
	Knowledge of status	Action in arrest	Knowledge of status	Action in arrest
No of patients	86		27	
No of nurse/patient decisions	443		141	
Qualified	191		60	
Unqualified	252		81	
<i>Nurses' answers (% agreement)</i>				
Resuscitate	76.7	74.5	14.2	14.9
Qualified	82.2	79.6	11.5	11.5
Unqualified	72.6	70.6	16.3	17.5
Do not resuscitate	14.2	17.6	75.2	68.8
Qualified	13.6	15.7	78.8	77.0
Unqualified	14.7	19.0	72.5	62.5
Don't know	9.1	7.9	10.6	16.3
Qualified	4.2	4.7	9.8	11.5
Unqualified	12.7	10.3	11.3	20.0