Dependence clearly is one of the most taxing problems of residential life—both physical dependence and the wider loss of autonomy.\(^3\)\(^4\) Independence at a modest level is the subject of a new research project at the Royal Hospital and Home for Incurables at Putney. After suitable nursing dependency scales for the severely disabled residents have been developed educational programmes for nursing and remedial staff will be worked out to encourage independence and to make the best use of the skills of the different staff. In general, experience there has shown that people should not be too precipitately labelled as irretrievably helpless.

In making a plea for more research, Philip Davies suggested that the clinical ideal of the randomised controlled trial puts many people off doing research studies on topics in rehabilitation, but it is not in any case appropriate. What is needed, he said, is observational research, to compare different models of care, facilities, and programmes, evaluating them in relation to the people they are for. As it is the patients themselves tend to get left out—but they can speak for themselves and their preferences and priorities should be studied, and so should those of their carers.

The theme of information was taken up by Richard Langton Hewer in his summing up—the scope for different patterns of care makes it essential to have well constructed basic data available for study and good scientific publications on the subject. More audit is needed, with defined criteria. We cannot be complacent, he said, while there are many disabled people who are not being looked after as well as possible. A salutary guideline was put forward by an earlier speaker: in providing personal care strive to give what you would want for yourself. Since spreading information about the best practices is so important, it was good to hear of the plan to set up a permanent European group to arrange meetings for discussing progress in residential care, to organise information centres, and to evaluate projects.

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Cardiopulmonary resuscitation: chances of success

External cardiac massage came into clinical use in 1960 and cardiopulmonary resuscitation is now routine both in the community and in hospitals.\(^1\) Most of the evaluation has been on cardiac arrest out of hospital, however, with little being published on resuscitation of inpatients.\(^2\)\(^3\)

The outcome from resuscitation varies among reports, largely because the series are not comparable. Somewhere between 8-2%\(^4\) and 32-0%\(^5\) of patients resuscitated are likely to go home. The likelihood of survival depends on many variables, the most important being the patient's fitness before the cardiac arrest; the underlying illness; the site of the arrest; its nature; the mechanism and duration of resuscitation; and the patient's condition after resuscitation. Patients who are housebound before the arrest are less likely to survive (4%) than those who had pursued activities outside the home (27%).\(^6\) Metabolic or respiratory acidosis before the arrest is rarely associated with survival, and this correlates with the underlying disease categories in which few patients survive—pneumonia, renal failure, acute stroke accompanied by a neurological deficit, and hypotension secondary to intrinsic myocardial failure or sepsis.\(^6\) Other workers have found no survivor in 25 patients who developed cardiac arrest from trauma or gastrointestinal haemorrhage.\(^7\)

The location of the arrest within the hospital is important, patients resuscitated in the intensive therapy unit having a hospital discharge rate of 48% as opposed to 16% of those in the ward.\(^8\) Clearly, the success rate in the intensive therapy unit greatly depends on the type of patient admitted to the unit and the severity of the illness. Patients who do particularly well are those suffering from a recent myocardial infarction associated with sudden onset cardiac arrest in the absence of preceding hypotension or cardiac failure. Ventricular fibrillation is more likely to be associated with a successful outcome than asystole.\(^4\) Asystole, however, may be reversible when there is a rapidly correctable cause of hypoxia. An arrest which lasts over 15 minutes is associated with a mortality of over 90%, and this may well reflect the potential of the heart for recovery as opposed to the efficiency of resuscitation. If the patient needs intubation, again the mortality is high.\(^5\) In some centres, however, patients are electively intubated and ventilated when there is an unstable cardiac rhythm, when maintenance of an adequate arterial oxygen tension on spontaneous ventilation is unlikely, when the patient requires numerous procedures which would be stressful if he were conscious, or when resuscitation had been prolonged and cerebral oedema is a likely complication.\(^9\) Patients who regain consciousness within 15 minutes of the arrest and who do not require vasopressors to maintain adequate cardiac output have a survival rate of over 90%.\(^5\)

Many patients who develop a cardiac arrest have had a recent myocardial infarction. In these patients ventricular fibrillation may not be preceded by warning arrhythmias;\(^10\) indeed, warning arrhythmias are not reliable indicators of ventricular fibrillation.\(^11\) The exceptions are malignant ventricular arrhythmias (three or more consecutive premature beats or R on T ventricular premature beats) occurring more than 48 hours after a myocardial infarction; these are predictive of ventricular fibrillation,\(^11\) and their suppression reduces the incidence of early cardiac death.\(^12\)

Both nursing and medical personnel should be aware of which of their patients are considered unsuitable for cardiorespiratory resuscitation, since doubts should not arise at the time of the arrest. The outcome of resuscitation appears to be related to the underlying disease and not to age.\(^5\) In critically ill patients factors which may precipitate an arrest must be corrected in the hope that it may be prevented. Factors of particular importance include electrolyte imbalance, hypotension with attendant inadequate cellular oxygenation, and respiratory failure associated with hypoxia with or without retention of carbon dioxide. Patients with such conditions should be assessed by a senior clinician, and where the underlying illness is potentially reversible but correction requires skilled supportive care arrangements should be made for the patient to be managed in an intensive therapy unit.
Ideally patients designated at risk from a cardiopulmonary arrest should be located in areas where preventive measures may be taken and where resuscitation may be introduced promptly and efficiently. Such measures should reduce the frequency of cardiac arrest, increase the success rate, and decrease the incidence of hypoxic cerebral damage after resuscitation.

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7 Johnson AL, Tanser PH, Ulan RA, Wood TE. Results of cardiac resuscitation in 552 patients. Am J Cardiol 1967;20:831-5.

The usefulness of these new analyses is enhanced by the attempt to separate off so called "period of death" effects from "generation" effects. A rise or fall in mortality which affects all age groups more or less simultaneously is termed a period effect. Improvements in treatment and diagnostic procedures and changes in death certification practices tend to produce such effects. So too will a widespread environmental change over a short period, such as that resulting from the 1956 Clean Air Act. In generation or cohort effects, on the other hand, a change in mortality results from the changing mortality experience of successive generations, who show progressively higher or lower death rates at any particular age. Such effects arise from gradual change in exposure of successive generations to an aetiological influence.

Contrary to the popular belief that our worsening environment is causing an increase in cancer, combined mortality rates for all cancers have decreased in recent generations. The decrease began among men born around 1900 and women born around 1925 and has continued through subsequent generations. It is strongly influenced by lung cancer, which remains the most common cancer in men but from which mortality in recent generations is falling. This probably reflects, in part, a fall in the tar content of cigarettes smoked.

By contrast, mortality from cancer of the breast, the most common cancer in women, is rising—with gradual increases in both period and cohort values. Possible explanations include a fall in the number of pregnancies, earlier menarche, later menopause, and increased consumption of fat.

Cervical cancer and testicular cancer show remarkable generation effects. Three generations have experienced sharp increases in cervical cancer mortality. The first two generations were women who matured during the two world wars—times of freer sexual relationships. The third was women born from around 1940 onwards, among whom there has been an appreciable change in sexual behaviour. These generation trends for cervical cancer can be correlated with changes in the incidence of sexually transmitted diseases, supporting the hypothesis of a sexually transmissible infection causing the tumour. The last steep upward trend in mortality is continuing.

Cohort values for testicular cancer fell steeply to reach a minimum in the generation born around 1920. Thereafter they have risen again. Since survival from this cancer has recently improved, the death rates increasingly underestimate the rising incidence of the tumour. There is no explanation of the trends, but testicular cancer is now the most common cancer in men under 35.

Other cancers that are becoming more common include malignant neoplasms of the brain and pancreas and malignant melanoma. Some at least of the rise in pancreatic and brain tumours must be due to improved diagnosis as a result of new imaging techniques. The upsurge in melanoma parallels that in other countries populated by light skinned peoples, where mortality has almost doubled in the past 20 years and incidence has increased even more swiftly. Increased exposure to ultraviolet light owing to changes in clothing or outdoor recreation, is suspected as the cause.

Among cancers that are becoming less common are those of the stomach, bone, lip, corpus uteri, and thyroid. Mortality from cancer of the stomach is declining in almost every country for which data exist. This trend is contrary to what would be predicted from some aetiological hypotheses, notably exposure to nitrate derived from fertilisers, but accords with a decline in the consumption of preserved foods.

These new analyses are of obvious relevance to issues of public health—for example, evaluation of the impact of

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**Time trends in cancer mortality in England and Wales**

Epidemiological findings based on mortality are viewed with suspicion by many doctors. This is right, for the death certificate is primarily a legal document, not a record for medical research, and the accuracy of the diagnostic data is unknown. Furthermore, for most diseases mortality is an imperfect indicator of incidence. Analysis of mortality statistics is therefore a limited epidemiological method, but such analyses have made a useful contribution in the past and for this reason a new publication, jointly produced by the Medical Research Council Environmental Epidemiology Unit and the Office of Population Censuses and Surveys, is worthy of comment.1

The report presents time trends in cancer mortality in England and Wales over the 30 year period 1951-80. Many of the changes are interesting; some are startling: but in interpreting trends in the rates for cancers at particular sites account needs to be taken of influences which change the relation between recorded mortality and incidence. These include improvements in treatment, such as has happened in Hodgkin's disease, changes in diagnostic procedures, such as the introduction of scanning to detect brain tumours, and alterations in the way doctors certify death.