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Why nursing education has to change

Florence Nightingale said that "Reports are not self-executive," and nothing could be more true of the many reports on nursing education. The past 50 years have seen at least six—Athlone (1938), Horder (1943), Wood (1947), Platt (1964), Briggs (1972), and Judge (1985). All made remarkably similar recommendations, and none was implemented (apart from small changes at the margins). To expect too much from the latest report—*Project 2000: A New Preparation for Practice*—would thus be (in Oscar Wilde's words) a "triumph of optimism over experience."

But *Project 2000* is different. Firstly, all sections of the nursing profession (a group not noted for its unity) appear to agree for the first time not only on the need for change but also on its key components. Secondly, the case for change this time supports the self interest of the service providers as well as the aspirations of nursing visionaries. Thirdly, the proposals come from the body that has the legal responsibility for establishing and improving the standards of training and practice of nurses; it thus has the power to implement its proposals.

Project 2000 has come from the United Kingdom Central Council for Nursing, Midwifery, and Health Visiting, the statutory body formed in 1979 by the amalgamation of all the bodies previously responsible for the education and regulation of the three parts of the nursing profession. It describes the changes needed in the training of nurses, midwives, and health visitors to enable them to meet the needs of the 1990s and beyond. The council also states its perceptions of the roles and responsibilities of nurses. Although *Project 2000* is a consultation document addressed primarily to nurses, there is no doubt about the council's commitment to change or about its main direction.

The proposals are radical, and the aim is to produce a registered practitioner (the word practitioner is used as shorthand for the cumbersome specification of the three separate parts of the nursing profession) who is competent to assess nursing needs, provide nursing care, and monitor and evaluate the care given. She is to be a "knowledgeable doer" with analytical as well as technical skills, capable of autonomous practice, and fully accountable for her decisions. A new aim is that she should be able to practise at this basic level in both institutions and the community.

The core recommendation—for a two year common foundation course followed by one year's specialisation—is a reasonable compromise between the "genericists" and those who have advocated direct entry into the specialties. It will provide a sound basis for the later training needed by new specialist practitioners, who will be the future ward sisters, team leaders, teacher practitioners, and clinical managers. This is the beginnings, at last, of a clinical career structure. There is a clear commitment to preparing nurses who will nurse—in contrast to the position now, when patients are nursed (at least in hospitals) by unqualified auxiliaries and unskilled neophytes while the qualified nurses merely supervise.

The key change here—one advocated by every review of nursing education since the 40s—is an end to the dependence of the hospital services on student labour. Separation of the funding of education from the service budget and removal of the students from the staff establishment will enable the student's clinical experience to be based on learning needs rather than the exigencies of the service. The education will become much broader, more community orientated, and based on a health orientated nursing model instead of the disease orientated medical model, which, quite properly, dominates medical practice. Those who once believed that hospitals could not survive without student labour now realise not only that students are no longer cheap (already only about 20% of their paid time is spent providing service) but also that an ever changing, unpredictable, and unskilled workforce is wasteful. *Project 2000* may succeed where its predecessors failed simply because this time the costs of doing nothing are greater than the price of change.

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Blood transfusions and cancer: anomalies explained?

Had we the ancients' respect for blood we should not think of a tranfusion as the mere replenishment of oxygen carrying capacity. We can assemble an impressive series of the unexpected consequences of transfusing blood. Older rheumatologists tell of remissions in rheumatoid arthritis begun by blood transfusion.[1] Recently spontaneous abortion has been shown to be preventable in some cases by a transfusion of husband's blood.[2] The effect of blood transfusion on renal allografts has been disputed ever since 1973, when Opelz and Teraski[3] suggested, to much scepticism,

that previous blood transfusion enhanced graft survival, but it has now become abundantly clear that they were right.[4] Suggestions have also been made that the transmission of human immunodeficiency virus to haemophiliacs and other recipients of blood products is enhanced by an immunosuppressive factor in the blood.[5]

Everson and Cole in 1976 reviewed 176 well documented cases of spontaneous remission of cancer and suggested that blood transfusion was the trigger for the remission in some cases, particularly of melanoma.[6] On the other hand, Israel and others have claimed that removing plasma from patients with metastatic cancer may induce remissions.[7] The first report of an adverse effect of blood transfusion on survival came from Burrows and Tartter, who looked retrospectively at 122 patients who had undergone "curative" operations for colorectal cancer. Those who had not received a blood transfusion before, during, or after their operation survived longer without tumour recurrence.[8] Similar figures have been produced for carcinoma of the breast,[9] lung,[10] kidney,[11] and uterine cervix,[12] and for soft tissue sarcomas.[13] Other retrospective studies of colorectal cancer have confirmed the original observation,[14 15] but some have not.[16-20]

Now a report from Leicester suggests that an apparent survival advantage in patients with renal cell carcinoma who had not received a perioperative blood transfusion was due to differences in the stage of the tumour (p 537). That such an unperceived difference in stage might account for differences in survival in colorectal cancer is clearly an important concern and has been voiced by Taylor.[21] No matter how the figures are arranged, patients require blood transfusions not because of the whim of the surgeon or anaesthetist but because their tumour is more advanced or more difficult to remove or because of some other technical reason likely to worsen prognosis.

In an attempt to avoid these objections Blumberg and others have compared the survival of those patients with colorectal, cervical, and prostatic cancer who received perioperative transfusion of whole blood with those who received only packed red cells or nothing at all (p 530). The results show that those who were not transfused were less likely to have recurrent disease or to die from their tumour, but, surprisingly, that those who received three or fewer units of packed cells and no whole blood also had this advantage. The decision to use packed cells instead of whole blood was almost certainly made on grounds of local tradition or availability, and this result therefore suggests that there may be a factor in plasma which enhances metastatic spread.

Although we may be reluctant to think ill of an old friend, there is experimental support for this hypothesis. Francis and Shenton showed that rats inoculated with a chemically induced sarcoma had a faster rate of tumour growth if they had been transfused previously with compatible allogeneic blood.[22] Similar studies in Japan have shown that, though red cell transfusions had no effect, infusions of plasma accelerated tumour growth more than any other blood component.[23] Since this observation might explain the discrepancies between different retrospective studies, perhaps the time has come to examine the question in a prospectively randomised trial.

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Iron and the outcome of infection

Anything that retards microbial growth during the early phase of infection will favour resolution rather than overt disease. Though the host's immune system clearly plays a major part, another important factor is that the host's iron should not be available to the invading micro-organisms.

"Free" or ionic iron in the body hardly exists. Nearly all of it is found intracellularly in either haemoglobin or the iron storage protein ferritin, and the small but rapidly exchanging extracellular iron pool is bound to the serum glycoprotein transferrin. These various forms have several functions: they maintain iron in a soluble form, prevent potential toxic effects, and allow its use in metabolism. Nevertheless, their extremely high affinity for binding iron confronts invading micro-organisms with the problem of how to acquire enough of it to allow growth. Only lactobacilli can grow in the total absence of iron,[1] and many pathogenic bacteria need a substantial amount.

Successful pathogens must therefore possess some means of overcoming the problem of obtaining iron. Bacteria secrete a variety of low molecular weight compounds known as siderophores. Usually derivatives of either catechol or hydroxamiic acid, these can bind iron as strongly as the host iron binding proteins.[2] Once the siderphores have obtained iron the complexes are taken up by the micro-organisms through outer membrane receptor proteins,[3] and the iron is then released.

Siderophores and their membrane receptors are usually produced as a response to iron deprivation, and in some cases they are encoded by plasmids, whose presence correlates with increased virulence.[4 5] That siderphore mediated iron uptake is important in the establishment of pathogenic