Though it was finally rejected it seemed to have had some metabolic effect.\textsuperscript{13} Infusions of plasma or white blood cells into patients with mucopolysaccharide storage disorders have been found to clear some of the excess accumulation\textsuperscript{14} and even to have produced clinical improvement, though it does not always work.\textsuperscript{24}

One of the most promising novelties is the invention of liposomes, which are little spheres composed of alternating layers of lipids and water within which soluble substances—proteins, including enzymes, or drugs—can be trapped. They are made of physiological materials—for example, cholesterol—can be broken down by cells, do not leak, and their contents can be washed off their surface. Injected intravenously they are removed from the blood within minutes and taken up by the liver and spleen, where they enter the cell and get into the lysosomes in usable form.\textsuperscript{25} This has happy implications for the treatment of storage diseases and, if drugs and immunoglobulins are usable, perhaps for cancer too.

Brady suggested in 1966\textsuperscript{26} that we might one day be able to control inborn errors of metabolism by feeding in the required messenger RNA or DNA, and that day seems nearer now. It has not yet been done with liposomes but attempts have been made with viruses; a bacteriophage (the \( \lambda \)-phage of \textit{Escherichia coli}) carries the gene which is missing in galactosaemia. In fibroblast culture of cells from a patient with this disease the phage was shown to provide the enzyme and prolong the life of the cells. The Shope virus causes papillomata in rabbits but it also carries arginase, the enzyme which is missing in argininaemia, and the living virus has been injected into two children in the hope of terminating this disease,\textsuperscript{27} presumably unsuccessfully as no more has been heard of it. Such a treatment if successful would be one stage further on than injecting the enzyme, being really a graft at intracellular level.

It would be a brave new world that had such creatures in it.

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Nurse Therapists in Behavioural Psychotherapy

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Summary
Five registered mental nurses (R.M.N.s) were trained over two years to become behavioural psychotherapists for adult neurotic disorders. They achieved results comparable to those obtained with similar patients and methods by psychologists and psychiatrists. Similar results were maintained when over a third year the therapists were seconded to work in four hospitals and a general practice. Patients were satisfied at being treated by nurses. After initial teaching difficulties nurse therapists became valuable members of treatment teams during both training and secondment, becoming accepted by most nurses, psychologists, and psychiatrists with whom they came into contact. The training of further nurse therapists would facilitate treatment of many disabled neurotics who would otherwise go without effective treatment. Training nurse therapists takes less time and money than training psychologists and psychiatrists because less of their education is redundant to the skills involved. The pool of R.M.N.s suitable for training is much larger than that of psychiatrists and psychologists. The nurse therapists can be integrated relatively easily into treatment teams. The present nursing structure imposes restrictions on the advancement of clinical nurse specialists and a clinical tree is badly needed parallel with present administrative and teaching hierarchies. An 18-month course in adult behavioural psychotherapy has been recognized by the Joint Board of Clinical Nursing Studies for England and Wales so that nurse therapists seem destined to be a lasting feature of future treatment teams.

Introduction
"Doctors are beginning to realize that responsibility which has traditionally been in their domain can be delegated safely to others" commented a recent editorial in the \textit{British Medical Journal}.\textsuperscript{1} Such realization applies to not only obstetrics, dental care, and paediatrics but also psychiatry. One sign of it is the

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recent approval by the Joint Board of Clinical Nursing Studies (J.B.C.N.S) for England and Wales of an 18-month course for nurses in adult behavioural psychotherapy. Such psychiatric nurse therapists are now part of the treatment scene, especially for neurosis and personality disorder. A report on the early phase of this work appeared two years ago. We summarize here three years of operational research which led to this development and discuss its implications for medicine.

Rationale and Aims of Programme

In the last decade effective treatments have become available for the treatment of some psychiatric disorders. Phobic, obsessive-compulsive, sexual, and some habit and personality disorders may now improve substantially through behavioural psychotherapy. Though the treatments are effective few trained therapists are available so that most suitable patients are denied treatment. Instead, continuing disability imposes a strain on these patients, their families, and supporting medical and social services.

Until now the treatments concerned were usually given by psychiatrists or psychologists but training enough of these to do such therapy would be wasteful as so much of their education is redundant and therefore required. Less redundancy would be incurred with the training of psychiatric nurses for this purpose. After O level schooling to become therapists nurses would need six years less education than psychiatrists and two and a half to three and a half years less than clinical psychologists. Furthermore, much of a nurse’s training is in-service, in which treatment by trainees largely offsets the costs of training. Psychiatric nurses have a sound knowledge of psychiatric disorders as a basis for therapeutic training. Training nurses also accords with the nursing profession’s desire for a more advanced clinical role; clinical nurse specialists are emerging in many branches of medicine in Britain and abroad.

The D.H.S.S. funded a three-year operational research programme (directed by I.M.M.) to train five registered mental nurses (R.M.N.s) to become therapists in psychological treatment. Originally 18 months’ training followed by 18 months’ study of the product of training was envisaged, but institutional anxieties about nurses treating sexual problems led to these being included only towards the end of training, which required the training period to be extended to two years. In the third year of research the trained nurse therapists were seconded to four hospitals in the London area, representing a broad spectrum of psychiatric facilities, and a general practice in north-west Kent.

The training aimed to produce nurses with a broad knowledge of the theory and practice of behavioural psychotherapy so that they could work more autonomously than technicians and need only limited consultation with psychiatrists and psychologists. It was hoped that this would lead to a nationally recognized course and smooth those problems which might hamper the introduction of a new kind of nurse into therapeutic teams in different settings.

Selection and Training of Therapists

Five R.M.N. qualified nurses (three men and two women) were selected from 26 applicants on the basis of a day-long selection procedure which tried to assess clinical knowledge, initiative, and capacity for independent work and responsibility. Mean intelligence (scored after selection) was 119. The training programme assessment of research results absorbed the full-time energies of a research psychiatrist (initially J.C. and then R.F.) and a research psychologist (R.S.H.). A full-time secretary coped with the great secretarial load generated in the treatment unit.

Training began with two weeks of introductory tutorials on psychiatric syndromes and principles and methods of behavioural psychotherapy. Small group tutorials continued throughout training. The mainstay of training, however, was by trainees observing their supervisor carrying out treatment and then taking over the therapeutic role from him so that they become the main therapists. One-way observation screens and closed circuit television with video facilities were used. Within a few weeks of beginning training each trainee had a patient in treatment, starting with simple phobics and progressing to patients with more difficult problems such as agoraphobia, which was often complicated by marital and sexual disorders. Training followed the apprenticeship model used in the training of trainee psychologists. At every stage the therapists were given an introduction to the therapeutic technique which was helped by regular ratings of patient progress on target problems and detailed records which trainees kept of every treatment session. All patients were fully rated before and after treatment and at follow-up at one, six, and 12 months. These ratings formed the criteria by which the overall effectiveness of training and treatment was judged.

Trainees attended 43 formal seminars and a weekly group supervision of patient problems. Supervision occupied almost 50% of trainee’s time at the start of training but dropped to only half an hour’s consultation a week when the therapists were seconded to hospitals two years later. As well as the principles of behavioural psychotherapy the therapists were also trained in analysis and measurement of patient problems, selection of treatment, documentation of progress, organization of work load, and methods of communication between therapist, patient, relatives, and other members of staff. The trainees thought that they learned most from their actual treatment of patients and their formal instruction in relevant theory and practice and less from the teaching of psychiatric phenomenology, much of which they already knew. Therapists’ attitudes were measured and showed a heightened self-reliance during the first six months and increasing respect for active rather than interpretive psychotherapy.

Selection of Treatment for Patients

Patients were selected by the supervising and other psychiatrists on the grounds of their suitability for brief behavioural therapy (expected to respond in fewer than 25 sessions) and willingness to participate in the treatment programme. During the two years 274 patients were assessed for possible behavioural psychotherapy. Of these 21%, were considered unsuitable for behavioural psychotherapy. Of the 217 patients who were offered treatment 39 rejected the offer (14% of the total seen). Thus 65% of all patients were offered, accepted, and given treatment. Of these 178 patients a further 9% changed their minds after initial assessment and 14% did not complete an adequate trial of treatment. The drop-out rate was due to a variety of causes, not least of which was the failure of some of the patients to respond. The variety of patients seen and the wide range of problems is shown in Table 1.

The table shows that the general practitioners who referred all patients over the whole period essentially referred those patients who were suitable for psychological treatments and found in 80% of instances they were suitable for medical treatment. Of the patients referred by other sources, 78% were considered suitable for treatment, and 147 (81%) of the 179 patients entering treatment completed an adequate trial of treatment. Most patients (85%) were treated entirely as outpatients, requiring an average of 12 treatment sessions each. The other 15%, mainly obsessive-compulsives, received inpatient treatment at some stage. As a group these inpatients required three times more sessions than outpatients. The table summarizes the types of patients treated during training.

The mainstay of treatment of phobic and obsessive-compulsive disorders was prolonged exposure to real-life situations. A few phobics were treated mainly with exposure in fantasy and a few obsessive-compulsives were treated mainly by self-regulation techniques. Many of these patients also required training in social skills and management of sexual, marital, and family problems. Thirty-six percent had some domiciliary treatment. Flexibility of approach tailored to the needs of each patient was emphasized rather than a cook book of techniques. Treatment was aimed at not merely reducing target problems but also improving the social functioning of the patient and his family when these were seriously disrupted.

Twenty-two patients with sexual dysfunctions were treated, usually as couples, by a programme of sexual retraining which, where necessary, included desensitization for heterophobia and contract therapy for marital difficulties. Nine patients with sexual deviations were treated with various techniques such as faradic aversion or covert sensitization and attention to social difficulties or specific sexual deviations. In 21 patients the main problems were habit or personality dysfunctions
such as stuttering, enuresis, or hypochondriasis; these had a wide variety of behavioural treatments.

Twenty-five patients (15% of those completing treatment) were referred back to the supervising psychiatrist for a fresh medical opinion. Sixteen of these had intercurrent depression, 10 of whom responded well to antidepressant medication. Four patients required continuing support from the supervising psychiatrist for problems not amenable to or resistant to behavioural psychotherapy.

Measures and Outcome

Before treatment began each patient agreed with his therapist the main (target) problems which were to be treated. These were clearly defined and rated on a 0-8 scale (8 denoted maximum dysfunction) at the start and end of treatment and after one, six, and 12 months, follow up. Ratings were made by patients themselves, the therapist, and, in 70 cases, by an independent assessor (a clinical psychologist) outside the training scheme. Reliability among the three raters for phobic targets was high (mean r = 0.91) during training and secondment. In addition to the target problems patients were also rated on work and leisure adjustment and, where relevant, on a specially constructed fear survey schedule, obsessive check list, and measures of sexual behaviour and attitude.

Results

TREATMENT OF PHOBIC PATIENTS

Fig. 1 shows mean ratings of phobias by patient and therapist. Patients improved substantially in their main phobia after a mean of 11 treatment sessions by exposure in vivo or other methods, and most of this improvement was maintained over follow-up. A retrospective cohort analysis of patients who returned for late follow-up compared with those who did not suggested that returners and non-returners were not materially different in outcome at the end of treatment or their latest follow-up point. Specific phobics improved significantly more than agoraphobics (P < 0.05).

Nurse therapists continued to obtain at least as good results in similar patients when they were seconded to four other hospitals and a general practice after completion of training. This was not due to therapists over-rating improvement, as patient ratings were comparable. Furthermore, this improvement in phobias was obtained in less time than during training (8 v. 11 sessions; 13 v. 14 hours of exposure; 14 v. 17 hours of total treatment time).

Another question is whether nurses are as effective as other professionals. Fig. 2 compares the result in mixed phobics obtained by nurse therapists and by other professionals in comparable populations, using similar treatments and the same measures of outcome. Some of the studies were reported on an apparent five-point scale rather than our nine-point scale, but the two scales are identical as half points were used in the former. Thus 1.5, 2.5, 3.5, and 4.5 on the five-point scale correspond to scores of 1, 3, 5, and 7 respectively on the nine-point scale. Direct comparison is therefore legitimate. All results in fig. 2 are on the same scale for the main phobia, combining the mean rating by the patient and by the independent assessor. Where the latter was not available the rating of the therapist was used instead. For Gelder et al.2 the self-rating was not available in the form required so that only the psychiatrist's rating is shown. Three of the studies used exposure in vivo in a manner similar to the nurses.1-3 The remaining studies used mainly exposure in fantasy.

The results obtained by nurse therapists were at least as impressive as those obtained by psychiatrists, psychologists, and medical students in England and Canada. Though at first sight nurse therapists and
medical students actually do better than other professionals it should be remembered that their patients had individually tailored treatment from the start whereas the treatment of patients in controlled treatment studies might have at first been constrained by the requirements of research designs and therefore been less effective. Furthermore, during training nurse therapists and medical students need extensive supervision. The important point is that nurse therapists do at least as well as other professionals treating similar patients by related methods. The result seems sufficiently clear to make an expensive randomly controlled trial to clinch this point of doubtful value.

Work adjustment was measured on a 0-8 scale with 8 denoting complete disability. Less complete data was obtained on this scale than on target problem ratings. Fig. 3 shows the results for patients who scored two or more, of whom there were 43 phobics and 11 obsessives. The former group presentation was 100% (scored 0-4) whereas 30% of the latter were omitted from this analysis; they comprised 24 phobics and only one obsessive, and their good work adjustment continued during follow-up.

Those patients whose work adjustment was disturbed before treatment had improved substantially by one month follow-up. Ratings at later follow-up points were too incomplete for analysis. Thus, patients not only improved in their target problems but also in related areas of life function.

For sexual and obsessive disorders direct comparison of nurse therapists with other professionals was not possible as measures from the literature in this area are less standardized than in phobics. Nevertheless, close observation of the process and outcome of treatment of many patients with these problems indicated that the nurses treated such difficulties competently. The two case histories given below illustrate this.

**CASE 1**

The patient was a 23-year-old single bank employee living with her parents. For the past five years she had feared that she might become pregnant from toilet seats or during petting though she was a virgin. She was engaged. For 18 months she feared that a wart on her finger was cancerous for herself and others. She began to avoid urination for as long as possible, washed her body and hair repeatedly to avoid contaminating others, took three hours to shower, washed her hands 125 times a day, and used at least three bars of soap daily.

In treatment the patient was exposed to situations which might "contaminate" her or those around her; the nurse therapist initially contaminated herself and encouraged the patient to do likewise. The patient was also instructed in self-regulation to reduce the amount and duration of ritual cleansing. She was admitted for 10 weeks for frequent treatment sessions, and given homework assignments on weekend leav. At first the therapist simply asked the patient to limit herself to using one bar of soap per day in whichever manner she preferred but to eliminate washing under a running tap and to use a plug in the sink instead. The patient decreased the number of washes and the time they took. On the ward was a nurse who had had mastectomy for cancer which provided a focus of contamination for treatment. With the nurse's consent the patient watched the therapist touch the mastectomy scar and touch herself and surrounding objects. The patient then did the same. After such contamination the patient was asked to desist from washing and later prepared meals and ate with the nurse therapist and the nurse. The patient was also asked to limit the items in the checking sequences one by one, restricting herself to checking each item just once.

The fear of punishment was dealt with by persuading the patient to touch and handle her fiancé's pyjamas, towel, and underwear. Eventually she wore his pyjamas, used his towel, and slept with his underwear in her bed and under her pillow. The couple were coaxed to touch each other more intimately each weekend until they achieved their previous level of petting with less dread and more pleasure. The parents and fiancé reported back on progress after each weekend.

After 25 hours of treatment given over 47 sessions the patient returned to work, soap usage remaining at one bar every two weeks. Her improvement remained at one year follow-up. Soap usage was normal as was sexual foreplay. She went abroad on holiday without the contamination fears which had formerly made such trips impossible. She was promoted at work and was able to be in charge of the normal security routine in her bank, which involved 13 locks. She allowed her parents to go on holiday and leave her alone in charge of the home, which she could not contemplate formerly. She was able to shop regularly without her mother's presence being necessary to drag her away from checking rituals, and at home helped with preparation of meals, which contamination fears had previously prevented her from doing. There were no residual compulsions.

**CASE 2**

The patients were a 40-year-old clerk and her 46-year-old husband, who was an engineer; both were employed by the G.P.O. The marriage was unconsummated after 10 years' marriage due to both vaginismus and premature ejaculation, sexual relations being confined to weekly mutual masturbation. Both partners had been sexually naive before marriage. The wife had always been timid and nervous, agoraphobic for 15 years, and in the last year could not leave the house alone.

In treatment the first half of each session was devoted to conjoint interview of both patients by the nurse therapist on the sexual problem and the second half to individual treatment of the wife's agoraphobia. A sexual training programme was devised. Home sessions involved the patients to caress one another's bodies, including their genitals, for 15 minute periods over three days but without having sexual intercourse. By the next (3rd) session two weeks later she reported sexual arousal and less anxiety during caressing. The wife had exceeded instructions in allowing her husband to insert one finger into her vagina. They were now asked to prolong their caressing from 15 to 30 minutes, and to use a lubricant, and with its aid to increase digital exploration of the vagina first by the wife and then by the husband. Different finger widths were to be used as vaginal dilators. Cotsus was still banned. By three weeks later (session 5) the husband had achieved one inch of penile insertion with intra-aginal ejaculation for the first time. More homework was set with further mutual caressing and finger exercises to dilate the vagina. The husband was to try deeper and more prolonged penile penetration but not to move during intromission.

Gradually penile intromission became deeper and longer, though ejaculation remained slightly premature. Both partners enjoyed coitus and felt content though coital frequency was only once a week. After the 7th session both said they were satisfied with the progress they had achieved and did not want further treatment.

The wife's agoraphobia was treated individually during the second half of each of the seven sessions. Her most disabling fear was crossing a moderately busy street and shopping alone. Treatment was by graduated exposure to these situations, first with other without the therapist, with homework exercises to continue along these lines between sessions. She was asked to cross roads of gradually increasing difficulty regarding traffic, parked cars, and restricted visibility for crossing. At first she was accompanied by the nurse therapist and then was supervised from a short distance away. Exposure sessions evoked high anxiety with each new situation, but she became used to the exposure during the sessions. She improved to the point where she was able to leave her home and shop alone in the centre of town.

Altogether the seven treatment sessions involved nine and a half hours devoted to the non-consummation and five hours (including three hours of exposure in vivo with the therapist) to the agoraphobia. At six-month follow-up the couple were pleased with the continuing improvements in their sexual adjustment and the phobia and felt no need for further treatment of their residual difficulties.

**WORK OUTPUT OF THERAPISTS**

During training and early secondment nurse therapists spent about 13 hours a week in contact with patients, a figure similar to that spent with patients by psychiatrists in training. Each therapist had 12-18 patients in active treatment at a time and discharged one to two patients a month.

Clinical time was restricted in this project because it required time-consuming research data to be collected by nurse therapists so that their work could be evaluated. Therapists also taught other nurses and paramedical staffs including together a total of 320 hours training and a half of years of this programme. In fact, nurse therapists were in constant demand by hospitals round Britain for teaching. Towards the end of their secondment they supervised nurses and psychiatric registrars who took on patients for behavioural psychotherapy.
RELATIONS WITH OTHER STAFF

At first nurse therapists encountered good-humoured scepticism in new work environments. Nevertheless, when they proved their abilities by treating patients effectively they became more readily accepted by staff and increasing calls were made on them to teach their techniques. A few difficulties with psychologists at secondment hospitals probably reflected the fact that the hospitals had initially been chosen for the accepting attitude of their medical rather than their psychological staff. Patients readily accepted nurses as their main therapist and several patients wanted to refer friends and relatives to their nurse therapist for treatment. Only once did a patient complain that he was being treated "only by a nurse." The nurse therapists coped sensitively with a wide spectrum of behavioural problems including sexual disturbances.

All nurse therapists were offered incentives to remain at their secondment hospitals and the general practice when the research programme finished, and several other hospitals offered them jobs. Consultant psychiatrists at the secondment hospitals regarded the nurse therapists highly and found that many patients who were previously denied adequate treatment facilities could be treated. About 10% of their routine outpatients were suitable for treatment by the nurse therapists. All the nurse therapists were pleased with their new-found autonomy and felt that the scheme as a whole represented a significant advance for the nursing profession.

Professional Implications

Three members of the research programme were recruited by the J.B.C.N.S. on to a panel which devised a post-certificate syllabus in adult behavioural psychotherapy. Construction of this syllabus was greatly helped by findings from the operational research programme. The 18-month syllabus has been approved nationally by the J.B.C.N.S. for England and Wales so that other hospitals may run this course. The advent of sufficient nurse therapists could make significant inroads into meeting the treatment needs of a substantial proportion of the neurotic population. The second course at the Maudsley Hospital started in April 1975; there were 33 applications for the six places available on the course. The high calibre of applicants posed problems for selection but augured well for the future of nurse therapy.

Nurse therapists not only add to the attractiveness of nursing as a profession but also extend the therapeutic arm of doctors and psychologists in whose teams they work. During their secondment the nurse therapists needed only half an hour's consultation (rather than supervision) a week with the team leader. Leaders of teams in which nurse therapists work need a fair knowledge of behavioural psychotherapy and the training of doctors and psychologists may feel threatened by this new breed of nurses but studies into the composition and operation of treatment teams for neurotic problems in hospitals and the community are needed. One nurse therapist worked successfully in a group general practice and nurse therapists may have a useful part to play in general practice, perhaps working alongside community nurses.

One problem remains to be solved. At present nursing is arranged so that promotion involves rising either through an administrative or a teaching ladder. Neither ladder allows nurses to retain much clinical contact with patients after promotion above the level of charge nurse/sister. In this respect nursing is different from medicine or clinical psychology, whose practitioners can retain their clinical function even at the top of their professional hierarchy. As the British Medical Journal concluded recently, "It is up to the nursing profession to provide the necessary career structure for the clinical nurse."

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