they had single fixed symptoms, the illness showing a fluctuating intensity, and because there was evidence of a good basic personality, as shown by their ability to carry on with their work despite their illness.

With the final analysis of the results it has been possible to distinguish further prognostic criteria. Those helped most were frequently between 30 and 50 years of age. Body-build seemed particularly important. By far the best results were obtained in those of athletic build. These tolerated the treatment well, while the asthenic and the pyknic, especially the young obese patient, were not helped. They proved particularly sensitive to the injections and became easily frightened.

The treatment was certainly contraindicated in patients whose anxiety was overt in nature. Such people complained of palpitations, breathlessness, diarrhoea, vomiting, and frequency of micturition. Many of them showed a marked emotional immaturity, and a tendency to project their symptoms typical of so many of those suffering from anxiety hysteria. Table II shows the poor results obtained in this group.

The chief response noted when treatment was successful was a gradual lessening of tension—the emotional component of the phobia or obsessive thought decreased, and it became less troublesome. Schizoid patients showed an improvement in rapport and sometimes reported an increased clarity of thought.

The benefit alcoholic patients derived from the treatment was in keeping with the fact that they often have an obsessive personality; indeed, their drinking is often of a compulsive nature. They are usually tense individuals experiencing a great deal of subjective anxiety.

It might be argued that the typical patient who has shown a good response to treatment is basically the person of good personality and body build who does well with any form of non-specific therapy. Such patients have good driving personalities; they have mastered various stresses successfully, and they are able to contain their anxiety. But many of them present notoriously difficult problems from the point of view of treatment, and their illnesses may last a long time. It has been our experience that these patients are usually untouched by psychotherapy, E.C.T. makes them worse, and the use of sedatives may result in a build-up to undesirably high and prolonged dosages. A small number of such patients were given injections of normal saline in the same way as other patients were given acetylcholine. No response occurred until acetylcholine was substituted for normal saline. It seemed, in fact, that acetylcholine was often able either to shorten the attack or to produce a more complete remission of symptoms. Our results in this respect were therefore found to confirm those reported by Lopez Ibor (1952).

Summary and Conclusions

An investigation has been described in which intravenous acetylcholine was used in the treatment of varied forms of neurosis. The patients who were helped most fell within a specialized group of obsessive or obsessional tension states, which have been defined. Of 104 patients in this group, 70.2% were improved by the treatment.

It has also been found useful in certain patients as a treatment complementary to E.C.T., modified insulin, and the emetine aversion treatment for alcoholism.

Over 6,000 intravenous injections of acetylcholine have so far been given. The treatment, with the precautions described above, has been found to be a safe one, and is relatively simple to use on an out-patient basis.

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THE PREVENTION OF CONGENITAL SYPHILIS

BY

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The incidence of early acquired syphilis reached its peak in England and Wales in 1947. This was followed by a rise in the incidence of congenital syphilis in the years 1948 and 1949, since when there has been a fall in the number of reported cases. The Ministry of Health report for 1951 revealed, however, that during that year 1,127 cases of congenital syphilis were seen for the first time at venereal disease clinics in England and Wales. The figure for 1952 was 946. Since congenital syphilis is now regarded as an almost 100% preventable disease (Aron *et al.*, 1947; Cole *et al.*, 1950; MacFarlane, 1950; Marinkovitch, 1951), these figures are alarmingly high. The more especially is this so when they are compared with 699 (1951) and 375 (1952) notifications for diphtheria, a comparably controllable infection.

No data are available to allow an estimate to be made of the number of congenital syphilitics born in the years 1951 and 1952 in whom the disease is as yet undetected, nor are there figures to show the number of abortions and miscarriages in which syphilis played a primary or contributory part.

Early infectious syphilis is now comparatively rare in adults, but many untreated or inadequately treated infections acquired during and after the late war are at present in the latent stage. Many of the females in this category are of child-bearing age, and while their syphilis is not contagious it is transmissible to the foetus. Kampmeier (1946) estimated that, irrespective of the stage of syphilis, 70% of foetuses born of syphilitic mothers are infected. The best hope, therefore, of prevention and ultimate eradication of congenital syphilis depends on detection and treatment of such women during the antenatal period.

Latent syphilitic infections can be adequately diagnosed only by the Wassermann or similar serological test.

MacFarlane found 515 (0.7%) of 71,645 antenatal Wassermann tests to be positive during the years 1944–9. Even with the apparent decline in early syphilis he was still able to detect 45 (0.28%) cases among 15,812 antenatal Wassermann tests made during 1952 (personal communication).

While antenatal Wassermann testing (and, where omitted, post-natal Wassermann testing) has become the established routine in almost every hospital and local authority obstetric practice, the Report of the Venereologists Group of the British Medical Association

tion (1952), which analyses the figures from 200 venereal diseases clinics in the United Kingdom, shows that routine antenatal Wassermann testing was uncommon in other than organized antenatal services. This fact has been underlined by MacFarlane, who has applied himself to this problem in the Tyneside area. He found that in 1952 (personal communication), when the estimated Tyneside birth rate (including stillbirths) was 31,705, of 15,812 (50%) antenatal Wassermann tests performed only 491 (3%) were made by general practitioners, who according to the local executive councils were remunerated for the care of 15,178 pregnancies.

Conditions in Stockport County Borough

Arrangements have been sought, by the closest possible liaison between all branches of the medical services, to improve the local rate of antenatal Wassermann testing. Such success as can be claimed (see Table I) is largely due to the co-operation between general practitioners and municipal midwives, the midwives with the medical officers staffing the borough antenatal clinics, and these latter in turn with the venereologist at the venereal diseases clinic of the hospital service. Direct liaison exists between the maternity department of the local hospital and the venereal diseases unit.

TABLE I.—Incidence of Serological Tests for Syphilis (S.T.S.) in Stockport County Borough Residents

Year	Birth Rate, including Stillbirths	S.T.S. Performed at Local Authority Clinics	S.T.S. Performed at Hospital Antenatal Clinics	Total S.T.S.	Detected Syphilis Cases
1951	2,019	1,102	600 (approx.)	1,702 (85%)	11 (0.54%)
1952	2,101	1,002	700 (approx.)	1,702 (81%)	11 (0.52%)

It has been the practice to make antenatal clinic services available to all practitioners even if only for the purpose of taking a sample of the patient's blood. The busy practitioner, especially during the winter, is relieved of the time-consuming task of preparing for, taking, and dispatching single samples of blood. An increasing number of general practitioners undertaking care of antenatal cases now use this service as a routine—the practitioner himself, or, in most cases now, the midwife "booked" for the confinement, arranging the appointment at the antenatal clinic. This single sample of blood is also available for rhesus determination and estimation of the haemoglobin content.

Cases are usually referred to the venereal diseases clinic as soon as a routine Wassermann or Kahn reaction has been found "positive" or "doubtful." In all cases in which clinical signs are absent it is the practice to confirm the positive result before starting treatment. This precaution eliminates the possibility of clerical error and places the diagnosis beyond reasonable doubt.

During a five-year period covering 1947–52, 42 cases of previously undetected antenatal syphilis were referred. The stage of infection in these cases was: seropositive primary, 4; secondary, 8; latent syphilis, 25; congenital syphilis, 5.

The average age of the women was 25.6 years, with extremes of 17 and 37. The average duration of pregnancy at the time of first attendance at the venereal diseases clinic was 5.14 months, with extremes of 2 and 8½ months.

Management of Antenatal Syphilis

The aim of treatment is not only to protect the foetus but to continue treatment after parturition, with a view to curing the mother. The first problem is the patient's anxiety regarding the diagnosis. The patient has been told the undisguised facts in words best suited to her intelligence and educational standard. It is important that she should fully understand the terms "V.D.," "venereal disease," and

"syphilis," and what they imply. Reassurance is given that if she attends regularly a healthy baby may be expected. The need for the baby to attend later is stressed. The rapport established at these early interviews and examinations is important in securing co-operation in treatment during the months that lie ahead.

The majority of the cases have been treated with penicillin, arsenicals, and bismuth. Penicillin, as the oil-wax preparation and more recently as the procaine salt in suspension, was given in 4 to 6 mega-unit courses spread over eight to ten consecutive days. Two cases developed generalized urticaria and another had weals at the injection site. All three were readily controlled with antihistamine drugs. One patient had a "terror" reaction like that described by Batchelor *et al.* (1951). In spite of this reaction, penicillin was continued and the patient completed the prescribed course uneventfully. The earlier cases were admitted to hospital for daily penicillin therapy, but this is now rarely thought necessary, and no apparent complications have occurred from such practice. No patient attending daily at the venereal diseases clinic defaulted from the prescribed course. If arsenicals were given it was as neoarsphenamine or arsphenamine, 0.45 g. intravenously at weekly intervals. One course consisted of 10 injections. Two cases of neoarsphenamine dermatitis, readily controlled by dimercaprol, were the only complications seen. Bismuth was given as bismuth oxychloride in suspension in 0.2-g. doses deep intramuscularly at weekly intervals, a course consisting of 10 injections.

Of the 42 cases, 29 received penicillin, arsenicals, and bismuth, 15 of them completing one course of each drug or more. Of the 14 who did not complete a full course of each, two developed neoarsphenamine dermatitis, two defaulted, and 10 came to treatment in the last 10 weeks of pregnancy. Of the remaining 13, 2 received arsenicals and bismuth only, and one defaulted before treatment was begun. Seven others, the most recent in the series, received penicillin and bismuth alone.

If the patient was referred early in pregnancy treatment was continued right up to the expected date of confinement. Expectant mothers attended regularly and the opportunity was used to give as much antispecific treatment as time permitted. Earlier experience showed that once the baby arrived domestic problems ensued and these were frequently used as excuses for non-attendance. If the puerperium was spent in hospital it was therefore arranged for the patient to have a further course of penicillin. This meant that the mother need attend the venereal diseases clinic only weekly at the most for the first two to three months after she returned home with the baby.

Twenty patients of the series had 25 subsequent pregnancies. Many of these occurred while the patients were still under treatment. The aim in such cases was to give the mothers at least one course each of penicillin, arsenic, and bismuth, and more recently one course at least of penicillin and bismuth only. If the patient became pregnant after completing adequate treatment for her syphilis, but before she had completed two years' satisfactory surveillance, an "insurance course" of penicillin only was given. Those mothers who had completed treatment and two years' satisfactory surveillance received no further treatment, but were kept under Wassermann review throughout the pregnancy. The babies were examined routinely in all these cases (see below).

When patients defaulted they were persuaded to return to treatment or surveillance by letter, or, if this failed, by visits by the municipal health visitor. Such visits were arranged through the medical officer of health, who has a statutory responsibility for venereal diseases cases much the same as he has for the tuberculous.

Investigation of the Family

The question of following up the patient's family is the task of the venereologist. Stokes *et al.* (1944) estimated that up to 40% of the members of such families may be

found to be infected. The discovery of unsuspected syphilis causes an immediate stir in the family, and as little delay as possible should be allowed before all the other members are examined. Irrespective of the clinical findings, a specimen of blood was taken from each member of the family who attended. It was noted that delay appears to give husbands time to rationalize their position, and when it has been necessary to visit such men they say in effect, "I feel nothing wrong. Therefore there is nothing wrong. Therefore there is no need for a blood test." The position is often rendered more difficult as a wife's diagnosis of syphilis may not be revealed to her husband without her prior consent.

Altogether 27 husbands were examined: there was a history or finding of syphilis in 13, while 14 gave no history and were serologically negative. Of the 15 not examined, five refused to attend, three were separated from their wives and could not be located, while four were consorts of single women and could not be traced. The remaining three were husbands of congenitally syphilitic wives. Once the husband's co-operation was obtained little difficulty stood in the way of examination of children of the marriages concerned (see below).

Outcome of the Pregnancies

Of the 42 pregnancies, 41 ended in live births. There was one miscarriage. Twenty-seven infants were found Wassermann-negative at 3 months of age or older; 12 were not seen at 3 months of age or older, either because the parents refused to bring the children or because the family moved to another locality. Two infants were diagnosed as having congenital syphilis.

The diagnosis of infantile congenital syphilis often seems to present difficulties. It is not generally appreciated that many pregnant women reach confinement with a strongly positive Wassermann reaction in spite of antisyphilitic treatment. In these cases there is often a "carry over" of the mother's reagin into the infant's blood. Thus cord blood or venous blood taken from the infant in the first few weeks of life may well give a positive Wassermann result in spite of the absence of congenital syphilitic infection. The Wassermann titre in such cases usually falls to negativity in four to six weeks. Only when a Wassermann reaction remains strongly positive beyond 12 weeks of age can it be taken as a sure sign of congenital infection. The presence of definite clinical or radiological evidence of congenital syphilis of course makes a diagnosis possible irrespective of the infant's age or the Wassermann titre.

The practice here has been to take a specimen of blood from the babies at 1 month and at 3 months of age. As indicated, the test at 1 month is of little value. It is felt, however, to be important for the mother to bring the child for clinical examination at this age. Experience has shown that if the baby is left until it is 3 months old difficulty may be experienced in persuading the parents of the need to bring along their apparently healthy child.

In regard to the two cases in this series diagnosed as congenital syphilis, one was diagnosed elsewhere on serological evidence only at 6 weeks of age. In the other case the mother completed a 4-mega-unit course of penicillin a few days before her confinement. This baby was first seen at 1 month of age with mucocutaneous syphilis.

Previous and Subsequent Pregnancies

Kampmeier (1946) noted the high morbidity and mortality in untreated syphilitic women. He found 24% of pregnancies ending in miscarriage or stillbirth; 56% of the infants were born with syphilitic infection, and about a quarter of these died within the first month of life.

Wammock *et al.* (1950) pointed out that women treated for syphilis have a better chance in pregnancy than non-syphilitic women. He found an unsatisfactory outcome in 12.4% of 5,596 infants born to non-syphilitic mothers, but in only 3.8% of 271 infants born to 267 treated syphilitic

mothers. It is of some interest, therefore, to compare the outcome of previous and subsequent pregnancies in this series. Eighteen of the women had had 40 previous pregnancies and 20 had 25 subsequent pregnancies (Table II).

TABLE II.—*Outcome of Previous and Subsequent Pregnancies*

Outcome of Pregnancies	Previous Pregnancies	Subsequent Pregnancies
Miscarriages	4	Nil
Stillbirths	2	Nil
Premature baby (died) ..	1	Nil
Wassermann-negative at 3 months of age or later ..	21	21
Not examined	11	3
Diagnosed congenital syphilis	1	1
	40	25

Although the series is small, the high miscarriage and stillbirth rates in the previous as compared with the subsequent pregnancies seem in line with the findings of others. The case of congenital syphilis among the subsequent pregnancies was due to failure, in spite of letters and visits, to persuade the expectant mother to attend for continuation of treatment.

Summary

Although almost 100% preventable, congenital syphilis is still very much with us.

Antenatal Wassermann-testing offers the best hope of early eradication of this infection.

The management of antenatal syphilis is illustrated by a series of 42 cases.

The need is emphasized for close co-operation by all concerned in antenatal care if a high percentage of antenatal Wassermann tests are to be performed.

Thanks are due to the nurses and doctors working in all the branches of medical services in the County Borough of Stockport. Their day-to-day co-operation has made this study possible. I am especially indebted to Dr. Marion W. Davies, assistant medical officer of health, who assisted with the treatment of many of these cases.

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The War Office has published a report of the first five years' work of the Army Tumour Registry at the Royal Army Medical College, Millbank. The Registry was established in April, 1948, thanks to the foresight of the late Lieutenant-Colonel J. MANIFOLD, at the pathology department of the College, under Major (now Lieutenant-Colonel) D. W. BELL. For many years this department has been regarded as the Army histological reference laboratory, and it receives specimens from medical officers serving in many parts of the world. The Registry has three primary objects: (1) To ensure accuracy of diagnosis; (2) to assist in the follow-up of cases of malignant disease; and (3) to act as a scientific record of the types of tumour encountered by Army pathologists. A fourth object, which is held out as a hope for the future, is to supply medical officers with sets of representative sections as does the Armed Forces Institute of Pathology in Washington. Unfortunately, incompleteness of registration, lack of detailed information, and small numbers greatly limit the statistical usefulness of the collection.