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Puerperal Psychoses: A Long Term Study 1927–1961

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Introduction

There exists a vast literature on the puerperal psychoses. Most of it is incomplete in that rarely is any definition of the "puerperal period" made; frequently there is no attempt to differentiate between the various clinical syndromes seen when aetiology is considered, and little consideration is given to the extent of constitutional predisposition to psychiatric illness in the probands.

The nature of the puerperal psychoses and their relationship to childbirth are still matters of controversy, although, in clinical practice, they are now generally treated as the accepted functional psychoses or toxic-confusional states which have occurred in the post-partum period. This attitude is based mainly on the recognition of the similarities between the clinical syndromes and the general reference, often vague, to histories of other psychotic illness in the probands and relatives.

The principal objects of this study, presented in four parts, were:

1. To consider changes in clinical features and outcome of the puerperal psychoses over the period 1927–1961.

2. To examine the incidence and types of non-puerperal psychoses from which probands with puerperal psychoses may suffer at some time.

3. To examine the incidence and types of psychotic illness occurring in the first degree relatives of the same probands.

4. Using the information thus obtained, other data collected, and assistance from existing literature, to attempt to define the nature of the puerperal psychoses and relate their occurrence to childbirth as well as to comment upon treatment and other problems which may arise in management.

Of necessity this was a retrospective study, as it is impractical to perform a prospective study with a 35 year follow-up. Difficulties must obviously arise over nomenclature, as it appears that to use (without modification) the present commonly accepted terms, such as affective psychosis, schizophrenia and organic psychosis to describe the clinical syndromes seen in the puerperium implies an acceptance of aetiological concepts which it was one of the objects of this study to investigate. They are therefore used in the sense of describing reaction types only, without any implication of disease process. Jacobs (1943), in a study of puerperal psychoses, adopted the same approach and so did Stengel *et al.* (1958) in a study of the post-operative psychoses.

I. Clinical Features, Treatment and Outcome

The Material and Diagnostic Criteria

This study was concerned with patients who, between the beginning of 1927 and the end of 1961, developed puerperal psychoses resulting in admission to St. Nicholas Hospital, Newcastle-upon-Tyne. Cases were included only when it was undoubtedly known that the onset of the illness occurred in the *six weeks* following labour. This represents no denial on the part of the author that psychoses occurring after a longer period may be related to parturition, but a group so selected is one most likely to be aetiologically related to parturition and unlikely to contain cases in which the relationship is purely coincidental.

Cases were found by searching through the notes of all female admissions during that time. It is likely that a small number were missed where there had been no mention of recent parturition, or there was no indication made as to the duration of period between parturition and onset of psychosis, but there is no reason to believe that the cases included are not

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representative of all the patients admitted with puerperal psychoses during this period.

During the early years few patients were admitted directly; most came from observation wards within the catchment area after a stay of two to ten days. At that time no specific treatment was available for such illnesses, and even when sulphonamides and antibiotics were introduced, they appear to have been rarely used on patients eventually admitted to St. Nicholas Hospital. The observation wards appear to have fulfilled the function of holding the patients while arrangements were made for certification and transfer to the mental hospitals where any available treatment was instituted.

In all, 134 cases were found to satisfy the criteria for inclusion in this study.

The diagnoses were then considered and made on the basis of—(1) Mainly the history and symptoms and signs at the time of admission; (2) sometimes the progress of the illness. Some patients first exhibited many of the features of the delirious reaction but gradually developed the obvious symptoms and signs of an affective or schizophrenic psychosis. Where this occurred the diagnosis made was that of the functional psychosis.

All cases were given one of three diagnoses: affective psychosis, schizophrenia or organic psychosis. The latter term included the syndromes referred to as delirium, toxic-confusional states, etc.

The symptoms and signs from which diagnoses were formulated are those generally described in the accepted major textbooks of psychiatry such as that by Mayer-Gross, Slater and Roth (1954 and 1960).

The diagnosis of organic psychosis depended upon the psychiatric syndrome, the presence of some discernible organic lesion, the progress and outcome of the illness. The outcome of delirium is usually considered to be either quick recovery or death. In the classical study of 106 cases of delirium made by Wolff and Curran (1935), three-quarters of the patients had recovered within one month, and of the remainder some developed symptoms suggestive of the accepted functional psychoses, while others obviously had chronic physical illness which could well persist and perpetuate the delirium. Throughout the older literature on puerperal psychoses, cases of "delirium" are commonly quoted which lasted for months and sometimes years without any discovered lesion.

The Puerperal Illnesses Under Study

The period 1927–1961 is divisible into seven smaller periods of five years, and at times this division is used to indicate whether or not changes had occurred in aspects of the illness.

Age and Marital Status

The average age of patients at admission was 28·3 years, the youngest being 18 years and oldest 43 years. The age distribution (Table I) does not indicate that the younger or older age groups are more likely to dominate admissions, most coming from the age group 22–28 years.

No significant change appears to have occurred in the average age of onset over the

TABLE I

Age and Marital Status of Patients at Onset of Illness

Period	No.	Average age	Range	Marital status	
				Married	Single
1927–1931	18	29·6	20–43	17	1
1932–1936	17	25·4	18–33	13	4
1937–1941	17	28	18–40	15	2
1942–1946	12	29·7	24–42	12	0
1947–1951	26	27	20–39	25	1
1952–1956	28	27·8	19–40	28	0
1957–1961	16	31·7	19–41	15	1
1927–1961	134	28·3	18–43	125	9

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TABLE II

Parity of Patients at Onset of Illness Included in this Study

Parity ..	..	1	2	3	4	5	6	7	8–12	Total
1927–1941	..	37	4	4	1	1	1	2	2	52
1942–1961	..	43	21	9	2	2	3	1	1	82
1927–1961	..	80	25	13	3	3	4	3	3	134

period of study. This is in spite of the many social changes, earlier marriage, increase in illegitimacy and pre-marital conception. Five patients only were under 20 years. Nine patients were single at the time of admission, seven being admitted before 1942 (and constituting approximately 14 per cent. of the cases up to that time). Between 1942 and 1961, inclusive, only two of 82 women were admitted unmarried.

Parity of Patients

Table II shows the parity of the patients at the time of admission in this series. It is obvious that although a puerperal psychosis may follow any pregnancy, whether first or twelfth, most admissions are primiparae, 60 per cent. If it is taken into consideration that 11 of the whole group had previous puerperal psychoses necessitating hospital admission and 9 of them had their first illness following their first pregnancy, then 89 of these 134 women developed a puerperal psychosis following their first pregnancy, i.e. 66 per cent.

The Clinical Syndromes

The criteria upon which the diagnoses are based have been previously dealt with. Comparing my findings, as displayed in Table III, with those of some previous authors, three differences stand out. (*i*) The low percentage of organic states diagnosed up to 1942. (*ii*) The high ratio of affective to schizophrenic states in the whole series. (*iii*) The presence of 19 cases of various degrees of mania.

Two patients of this series were also known to be epileptics, although at the time of admission one (case 64) had a typical manic illness which has recurred since, and the other schizophrenia (case 6). Four patients are known to have been of sufficiently low intelligence to be rated as mentally subnormal.

Symptoms and Signs

Where accounts were available from relatives and notes, patients were usually described as being well immediately after the birth. Some women were described as then passing through a phase of being surprisingly quiet, appearing perplexed, fearful, and sometimes suspicious, before it became obvious to those around that they were ill.

The presence of clouding of consciousness was difficult to assess from the older case histories, as terms such as "confusion" were not used with the same meaning as is the practice at the hospital today and has been at least since the late 1940's, i.e. meaning disorientation in time and place and lack of general awareness of surroundings. However, it is my impression that it was more commonly seen between 1927 and 1941 than between 1942 and 1961.

	No. of cases	No. "Clouded"	No. diagnosed organic states
1927–1941	52	27 (52%)	5
1942–1961	82	19 (23%)	1

TABLE III

Diagnostic Categories of Patients Admitted 1927–1961

Period		Affective states		Schizophrenia	Organic states	Total
		Depression	Mania			
1927–1941	..	24	9	14	5	52
1942–1961	..	48	10	23	1	82
Total	..	91		37	6	134

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Undoubtedly the general physical condition of patients at the time of admission was much worse in the former group, because of persistence of stupor, uncontrollable excitement and infections, usually minor and not sufficient to be the causative factor of the illness, but possibly adding an organic "colouring".

Some patients became obviously depressed and apathetic and gradually lapsed into stupor and had the usual appearance associated with the depressive syndrome of manic-depressive psychosis, others became elated, with the usual features of the manic syndrome. However, a number of patients who undoubtedly suffered from an affective illness rapidly alternated in mood between depression and mania, sometimes within the same day, giving an impression of incongruity, since delusional thinking seemed to lag behind the change of affect. This "mixed affective" picture was particularly noted early in cases of very acute onset, but usually settled if left untreated, as in the pre-1942 group, into a more constant affective state. Schizophrenics were either incongruous or on the whole blunted in affect, not necessarily at first but becoming gradually so over several weeks.

Delusions and hallucinations were commonplace in all states. The content of the affective states usually concerned the patient, infant and father. In depression, common morbid delusions were of the patient having venereal disease and infecting the child, of having been unfaithful, lacking in love for baby or husband, the baby being dead or deformed, or inability to care for the child. In schizophrenia, the guilt-ridden content tended to be absent, "tricks" were being played, the baby had been exchanged, the baby was not born by natural processes, there were certain religious significances attached, etc. Hallucinations were common in affective and schizophrenic illnesses, but closer scrutiny of the complaints of "others talking" by many of the depressives showed "voices" to be far less specific: commonly they were illusionary misinterpretations of noises round about them. As with non-puerperal forms of schizophrenia, hallucinations in puerperal illnesses frequently consisted of several voices frequently contradicting each other. Visual hallucinations or illusions were common in cases of very acute onset and particularly in those where clouding of consciousness was present—patients saw dead husbands, shadowy figures, stealing into the ward intent on harming the baby, etc.

Although thought disorder was present early in some cases of schizophrenia, it was usually noted some weeks after onset of illness as with the more gross forms of disorder of affect.

Table IV shows the interval between labour and onset of symptoms, judged as near as possible from the notes. The findings are similar to those reported by most previous authors, i.e. most occur within the first two to three weeks following labour.

Physical Complications

All patients had a thorough physical examination on admission and note was made of the physical complications occurring in pregnancy, labour or puerperium. When follow-up interviews have occurred, the patient has been asked for information regarding any possible psychological or physical cause. Rarely has any cause of psychological significance been demonstrated. A few women blamed being left alone while in labour; two mentioned that husbands were away from home at the time. If a "cause" was given, in retrospect, it was usually "milk fever". Most could think of none.

Table V indicates that in 28 per cent. of the whole material there was some form of complication suggesting a physical disturbance which might have played some causal part in these illnesses, one-third of the 1927–1941 group and

TABLE IV

Interval between Labour and Onset of Puerperal Psychosis

Period	1 wk.	1–2	2–3	3–4	4–5	5–6	Total
1927–1941 ..	16	18	11	5	1	1	52
1942–1961 ..	26	27	21	2	4	2	82
1927–1961 ..	42	45	32	7	5	3	134

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TABLE V

Known Complications of Pregnancy, Birth and Puerperium in 134 Patients with Puerperal Psychoses

Complicating Factors	1927–1941				1942–1961			
	Affective	Schizophrenic	Organic	Total	Affective	Schizophrenic	Organic	Total
Toxaemia of pregnancy			2	2	2	1	1	4
Prepartum haem.					1			1
Multiple pregnancy (twins) ..	1			1	2	1		3
Caesarean section		1		1		1		1
Still birth or neonatal death ..	1	1		2	2	1		3
Urinary tract infection	5	1	2	8	1			1
Pyrexia untraced	1	1		2		1		1
Breast abscess	1			1	1			1
Pulmonary T.B.			1	1	1	1		2
Valvular disease of heart.. ..					1	1		2
Totals	9	4	5	18	11	7	1	19

one-quarter of the 1942–1961 group. In no particular group of states other than the organic, are they outstanding.

Treatment

Little or no treatment other than general medical and nursing care and a little sedation was given to these patients prior to 1943. One patient is known to have been given hexamine for a urinary tract infection in 1939, and another patient, a schizophrenic admitted in 1932, was several years later given Cardiazol therapy with no obvious improvement. Another patient admitted in 1938 was given E.C.T. in August 1945, and a summary of her illness is well worth recording.

CASE HISTORY

Case No. 45

A married woman of 32 years was admitted to hospital under certificate in April 1938, having first passed through the observation ward of the local Public Assistance Institution. Three to four weeks after the birth of her seventh child she had become depressed and sleepless. At the time of admission "tears were trickling down her face" and she was auditorily hallucinated, the voices saying that she was bad and was to be burnt alive. She remained apathetic, retarded and asocial. A little improvement was noticed in November 1944. In August 1945 she was given a course of E.C.T. and at the end of this was greatly improved, mixing on the wards, talking freely, etc. She was given extended leave in December 1945 and discharged in January 1946.

Since then she has had two further children with no psychiatric complications, and has had no other psychiatric disturbance. When interviewed in 1962, she was obviously a rather timid woman, tending not to mix very well, but she showed no signs of mental illness and obviously cared well for her large family. She could remember little of her stay in hospital during the 7½ years prior to being given E.C.T., but much of the few months following.

From 1944 onwards, physical treatments were used, first E.C.T., then insulin from 1947 onwards up to 1956, and from 1956 onwards chlorpromazine and other drugs. They may have been used alone or in combinations. No specific psychotherapy has been given at any time and no hormonal therapy has been administered. Following their introduction, antibiotics, tranquillizers, and anti-depressive drugs have been used when considered necessary.

From Table VI it will be seen that since 1943 16 of the 82 patients admitted, had no more than "general care and attention". Most of these were patients admitted between 1942 and 1948, when E.C.T. appeared more of a major procedure than it does now and the medical staff were more doubtful about its indications.

The amount of E.C.T. given varied from 3 to 14 applications, a common number being 8 or 9.

The usual number of insulin comas given was 30.

Outcome of Admissions

Table VII shows the final outcome of the admissions in terms of the patients discharged,

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TABLE VI

Treatment Given to 134 Patients with Puerperal Psychoses, 1927–1961

Admitted	General care and attention	E.C.T. alone	E.C.T. and deep Insulin	Insulin only	Drug therapy	E.C.T. and drug therapy	Leucotomy	Total
1927–1941 ..	50	1 (1945) 1 Cardiazol	0	0	0	0	0	52
1942–1961 ..	16	47	6	3	4	5	1	82

TABLE VII

Outcome of Admission

		Recovered	Improved	Unchanged	Died	Total
Affective Psychoses	1927–1941	29	2	1	1	33
	1942–1961	52	4	2	0	58
Schiz. Psychoses	1927–1941	3	2	0	9	14
	1942–1961	12	9	0	1 (1*)	22
Organic Psychoses	1927–1941	2	0	0	3	5
	1942–1961	1	0	0	0	1
All Psychoses	1927–1941	34 (65%)	4	1	13	52
	1942–1961	65 (79%)	13	2	1 (1*)	81
	1927–1961	99 (74%)	17 (13%)	3	14 (1*)	133

* One patient remains in hospital and is likely to do so until she dies.

recovered and improved, and those who died in hospital. The mental state at the time of discharge has been assessed on the basis of the last note entered in the case notes and the patient's and relatives' opinions when later seen.

When relapse occurred soon after discharge and re-admission was necessary, the admissions together were considered as the period before discharge as a hospital in-patient.

Fourteen of the whole group of 134 women, i.e. 10·4 per cent., died while in hospital, but 13 of these deaths occurred amongst the 52 women admitted during the years 1927–1941. This constitutes 25 per cent. of that group. The last death occurred in 1950 of a patient admitted in 1943.

Some patients were transferred to other mental hospitals and were subsequently discharged or died. Only one patient is still in hospital, a patient admitted in 1944 suffering from schizophrenia.

Of the whole group, 74 per cent. were considered fully recovered at the time of discharge and 13 per cent. as being improved. There is a difference of 14 per cent. between the fully recovered of the 1927–1941 group and the 1942–1961 group, some of this difference being due to the deaths occurring in the former group amongst those patients suffering from schizophrenia and organic psychoses and not surviving to be included in the recovered or improved groups. The final recoveries for affective psychoses

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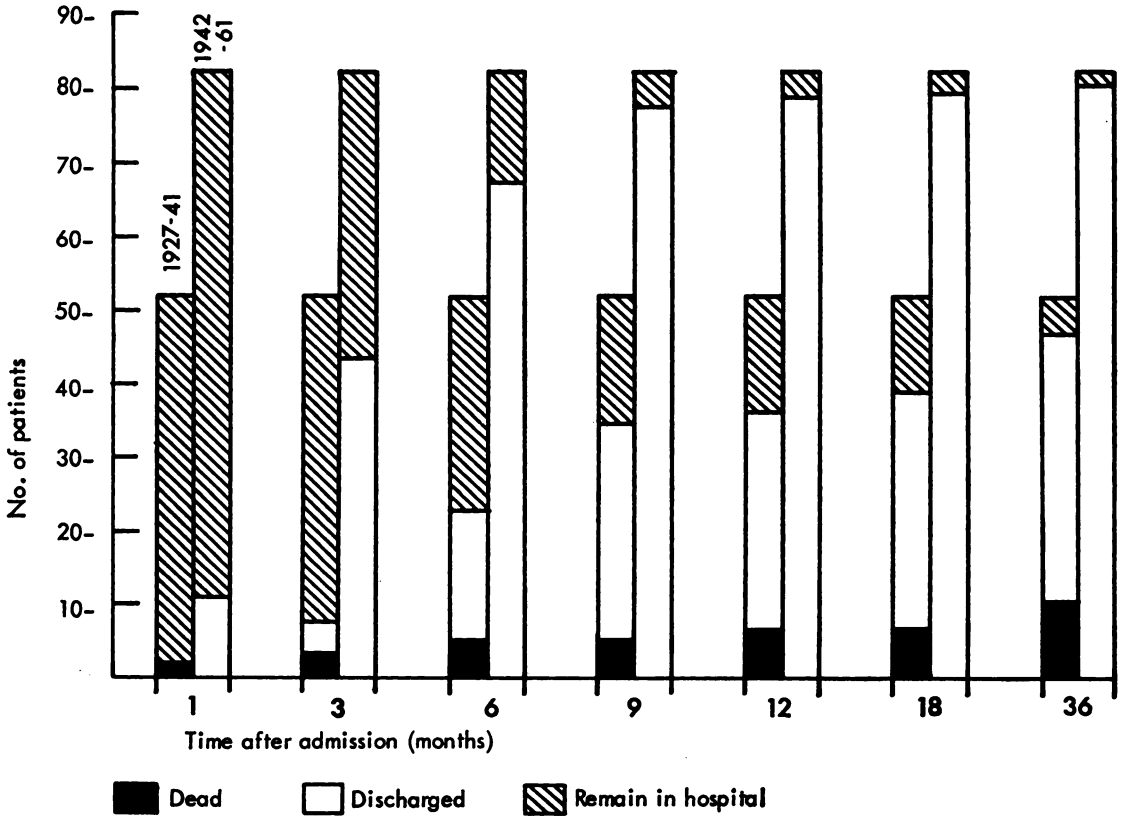
TABLE VIII

Patients Leaving Hospital Alive and Dying in Hospital According to Diagnosis

Period from admission (Months)	Affective psychoses				Schizophrenic psychoses				Organic psychoses				All psychoses			
	1927–1941		1942–1961		1927–1941		1942–1961		1927–1941		1942–1961		1927–1941		1942–1961	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
0–1 ..	0	0	9	16	0	0	1	4	0	0	1	100	0	0	11	13
0–3 ..	2	6	35	60	0	0	7	30	2	40			4	8	43	52
0–6 ..	13	39	50	86	0	0	16	69					15	29	67	82
0–9 ..	26	79	57	98	1	7	19	83					29	56	77	94
0–12 ..	26	79	58	100	2	14	20	87					30	58	79	96
0–18 ..	27	82			3	21	20	87					32	62	79	96
0–36 ..	31	94			3	21	21	91					36	69	80	98
0–36+ ..	32	97			5	36	21*	91					39	75	80*	98
Deaths in hospital ..	1	3	0	0	9	64	1	4	3	60	0	0	13	25	1	1

* One patient remaining alive in hospital excluded.

FIG.1. ADMISSIONS FOR ALL CATEGORIES OF PUERPERAL PSYCHOSIS. OUTCOME.



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alone differs insignificantly, being 88 per cent. and 89 per cent. respectively.

Table VIII and Figure 1 show the periods elapsing between admission and ultimate discharge from hospital or death for all the cases of puerperal psychosis.

Of the 1927–1941 group, only four women had been discharged alive within three months, and two of these were suffering from organic psychoses. Within six months 15, i.e. 29 per cent., were discharged, 2 with organic psychoses. The 1942–1961 group differs greatly. Within three months, 52 per cent. have left, six months 82 per cent. Three years after admission two patients only remained in hospital, one a chronic schizophrenic who has now spent twenty years in hospital and is unlikely ever to be discharged, the other a schizophrenic admitted early in 1943 who was not given any of the physical treatments and died in 1950.

Table VIII and Figures 2 and 3 show the outcome in the affective and schizophrenic psychoses. Only one death occurred in the affective psychoses within three years of admission and this was in the 1927–1941 group. Within three months of admission the 1942–1961

FIG.2. ADMISSIONS FOR PUERPERAL AFFECTIVE PSYCHOSIS. OUTCOME.

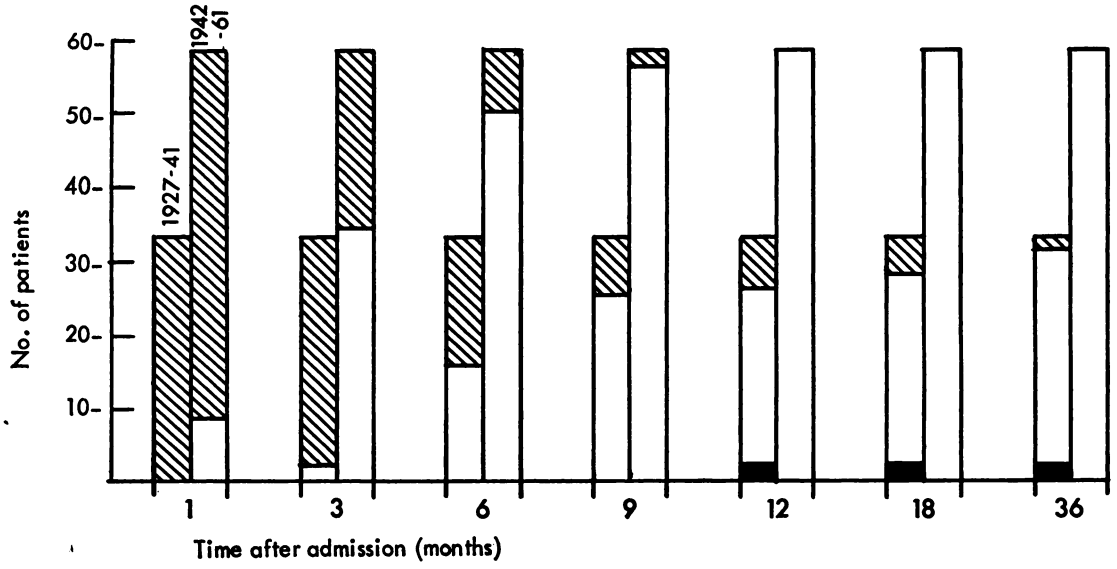
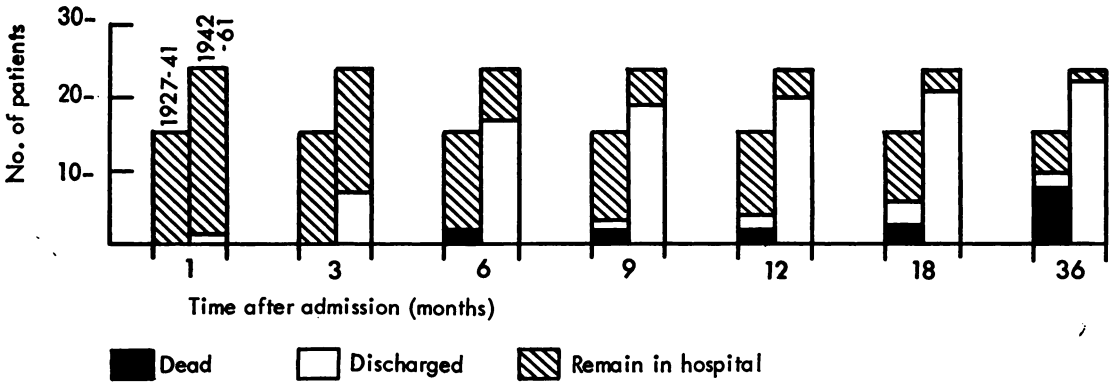


FIG.3. ADMISSIONS FOR PUERPERAL SCHIZOPHRENIC PSYCHOSIS. OUTCOME.



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group show a far better recovery rate, 60 per cent. against 6 per cent., but by nine months spontaneous remission occurring in the 1927–1941 group has brought the rates much more even, 98 per cent. and 79 per cent. The changes in management occurring since 1942 have markedly shortened the overall hospital stay of these women. The average hospital stay for women suffering from affective puerperal psychoses and discharged within three years was 8 months for the first ten years of the study (1927–1936) and 2·4 months for the last ten years (1952–1961). During the latter period all but 4 of the 32 patients with affective psychoses were given E.C.T., sometimes with a tranquillizer or anti-depressive drug.

The outlook for women with puerperal schizophrenic psychoses in the pre-1942 period was obviously bad: 5 only of the 14 women comprising the 1927–1941 group were ever discharged alive, 3 being recovered while two still had residual symptoms. Six of these women died within three years of admission. Of the 23 women admitted in the 1942–1961 period, 21 had been discharged within three years, and the two remaining were referred to above when dealing with the outcome of the puerperal psychoses as a whole. The average stay in hospital during the last ten years of the study was 3·8 months. Norton (1961) described a similar pattern of change in outcome, the mortality and duration of stay, for patients admitted to Bexley Hospital, Kent, with functional puerperal psychoses. The last patient to die as a result of a puerperal psychosis was admitted there in 1942. He attributed these changes to the introduction of E.C.T.

Deaths

Nine of the 14 deaths occurred more than nine months after onset of the psychosis and admission to hospital. Three cases admitted with organic psychoses died within two months of admission. Patients died of diseases such as pulmonary tuberculosis and bronchopneumonia or vague conditions described as myocarditis, myocardial degeneration or cerebral atrophy. The deaths before 1940 appear to have resulted from the inability to control the spread of hospital infections and the poor nutrition of patients who remained withdrawn or excited.

Summary

From the case notes of a medium sized psychiatric hospital, 134 women were found to have been admitted with puerperal psychoses between the years 1927 and 1961 inclusive.

Over this period there has been no change in the average age of onset of illness. In the pre-1942 period 14 per cent. were unmarried compared with only 2·25 per cent. between 1942 and 1961. This change in incidence of psychoses associated with illegitimate births bears out the findings of earlier authors (Partridge, 1911; Armstrong-Jones, 1923) who claimed a high incidence, and more recent workers (Vislie, 1956; Sim, 1963) who have claimed it to be very low in spite of the increasing illegitimacy rate.

Sixty-six per cent. of the whole group had a first puerperal illness following first pregnancies.

The clinical syndromes consisted of 91 affective reactions, 37 schizophrenic, and 6 organic. This marked preponderance of affective states supports the views of Hemphill (1952) rather than those of some authors of more recent years who claim schizophrenic states to be more common. The symptoms and signs were very similar to those seen in the usual functional psychoses of acute onset, clouding of consciousness being commonly present.

Twenty-eight per cent. of the whole group had some kind of complication in pregnancy or labour, but in few, other than the six organic states, were these at all outstanding. Evidence of particular psychological trauma was absent in most.

Two only of the 52 women admitted before 1942 received treatment other than general care. Twenty-five per cent. of those women died in hospital, mainly from diseases attributable to general conditions existing in mental hospitals at that time. The last death occurred in a patient admitted in 1943. The introduction of physical treatments has generally lessened the period of in-patient stay for patients with affective states (from 8 months to 2·4 months average) and even more so for schizophrenics (4 years to 3·8 months).

II. The Follow-Up

Attempts to trace and follow-up these patients were made between early 1961 and March

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1964. No attempt was made to trace relatives of the fourteen patients who died in hospital, neither was it thought prudent to attempt to trace the seven single women who were eventually discharged from hospital alive (two of the hospital deaths occurring in single women). However, one of these single women was known to the author as having had frequent re-admissions to hospital and so no difficulty arose out of the follow-up in her case.

There were, therefore, 114 women left to be traced who had been admitted to hospital over a period of 35 years. Some had relatively recent admissions or re-admissions to St. Nicholas Hospital. The majority, however, had to be found.

Firstly, a proforma was sent to the last known address, and if this was not returned the address was visited. Where no contact could be made with probands, addresses of relatives or friends, as shown on hospital records, were visited or written to. Some help was obtained from the Housing Departments of Local Authorities, and the Ministry of Pensions and National Insurance, but surprisingly little from the local Medical Executive Councils. Finally, names of untraced patients were searched for in the records of the four other psychiatric hospitals serving the North-East and the psychiatric clinics in the local general hospitals.

The result was that in 105 of the 114 cases further information was gained; 85 were actually interviewed, almost all with relatives, and in 20 cases information was obtained by proforma from the patient only, from the relatives or, in a few cases, from general practitioners, as for the two patients not prepared to co-operate.

A number of patients had died since leaving hospital. Some had emigrated or moved too far away to be interviewed.

Tables IX and X show the number of patients traced, interviewed, etc. If the fourteen patients who died in hospital are included, it is reasonable to say that the histories for serious mental illness, necessitating hospital treatment or long term treatment from a General Practitioner, is known in 119 of the 134 probands. Of the 15 patients not traced following discharge from hospital, it is unlikely that the nine married women have been treated at local hospitals, the single probands may have since married and been re-admitted under different names. Amongst those traced it is more likely that further mental illness will have been denied or ignored rather than admitted if there has been any conscious, or otherwise, wish to mislead.

Condition at Time of Inquiry

Table XI shows the condition of probands at the time of inquiry or when last known of.

Of the 37 patients originally admitted to hospital with puerperal schizophrenia, in 33 cases the outcome was known: 11 had died in a psychiatric hospital; 11 were well and symptom free; 3 were in a psychiatric hospital as a result of the initial illness or further illness; 5 were living at home but had residual features of schizophrenia; and 3 had died at home since discharge. In two-thirds of those admitted the long term outcome was poor. However, most of the deaths during the initial admission occurred during the pre-E.C.T. era, and the prognosis with regard to mortality in hospital could be confidently expected to be different today.

TABLE IX

Sources of Information in Follow-up

Period	Admitted	Died in hospital	Discharged or still in hospital	Single discharged	Traced	Seen	Information from relatives or G.P. only	Proforma only completed by patient	No further information	Outcome known of the original admission
1927–1941 ..	52	13	39	5	29	21	6	2	10	42
1942–1961 ..	82	1	80+ (1 still in)	2	75	64	10	2	5	77
Whole Period	134	14	119+ (1 still in)	7	105*	85	16	4	15	119

* One remains in Hospital.

TABLE X

Original Puerperal States of Those Traced

Admitted	Schizophrenic	Affective	Toxic-Confusional	Total
1927–1941 ..	4	24	1	29
1942–1961 ..	19	56	1	76

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TABLE XI

Condition of All Cases at Time of Inquiry

	Original puerperal psychoses			
	Affective	Schizophrenic	Organic	Total
Died in hospital during illness under study	1	10	3	14
Died since original discharge:				
In psychiatric hospital	0	1	0	1
At home	4	3	0	7
Alive in psychiatric hospital:				
Original illness	0	1	0	1
Further illness	2	2	0	4
Alive at home:				
With symptoms	4	5	0	9
Symptom free	69	11	3	83
Untraced since original discharge	11	4	0	15
Total	91	37	6	134

TABLE XII

Condition of Puerperal Schizophrenics at Time of Inquiry

	Puerperal schizophrenics		
	1927–1941	1942–1961	Total
Died in hospital during illness under study	9	1	10
Died since original discharge:			
In psychiatric hospital	1	0	1
At home	1	2	3
Alive in psychiatric hospital:			
Original illness	0	1	1
Further illness	1	1	2
Alive at home:			
With symptoms	1	4	5
Symptom free	0	11	11
Untraced since original discharge	1	3	4
Total	14	23	37

This is clearly indicated in Table XII. It is impossible to deduce whether treatment has made any difference to the conditions (at the time of follow-up) of these patients ultimately discharged from hospital, as so few admitted in the 1927–1942 era were discharged.

Of the 80 traced patients originally admitted with affective psychoses, 69 (86 per cent.) were found to be well and symptom-free. With or without treatment, their psychiatric state at the time of inquiry was obviously superior to that of the patients originally admitted with schizophrenia. One patient, however, who had discharged herself against advice, had committed suicide within a few days of leaving hospital.

Marital Harmony

Six in all of the patients traced and alive at the time of the inquiry had separated from their spouses, 3 being divorced and 3 legally separated.

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Only one had not formed some other union, two being remarried, while three (all of low intelligence) lived with paramours. Almost all lived in reasonably well kept homes.

Further and Previous Psychotic Illness

In almost all cases having further psychotic illnesses after the index psychosis the diagnoses given to the further illnesses were the same. The author attempted as far as possible not to be biased by the original diagnosis attributed to the index psychosis, and when follow-up information on probands came in quickly and easily the diagnoses of further illnesses were made without reference to notes of the original illness. However, as the search for whereabouts of probands became more difficult, involving much correspondence, several visits to various addresses, and repeated examinations of old documents for clues as to possible sources of information, the index illnesses became very familiar and some bias must have existed. As the term affective psychosis covered manic and depressive psychoses, different diagnoses were attributed to further illnesses in three cases only. These were originally diagnosed as suffering from puerperal schizophrenia, but further illnesses as undoubted affective psychoses. When the original notes were reviewed the author considered the original diagnoses wrong and changed all three to that of affective psychosis.

Of the 105 women traced, 104 left hospital and have been exposed to having further psychiatric illness. Table XIII gives the period of follow-up of these women before leaving observation as a result of death or when last known of alive. Of the 104 women discharged, 49 had at least one further psychiatric illness needing hospital in-patient or out-patient treatment, or prolonged treatment from a general practitioner; 14 (13 per cent.) had further puerperal psychoses, while 40 (39 per cent.) had non-puerperal psychoses at some time later; 5 had both. A more complete picture of the psychiatric histories of these women is obtained if we bear in mind that a number had suffered illness prior to that which resulted in inclusion in this series. Of the 134 women, 20 had previous histories of such, 11 having puerperal psychoses. Two of these 11 were not included in the 104 patients traced in Table XIII, because one has not been traced since discharge from hospital following three admissions for the illness specifically included in the series and the other has never been discharged.

Sixty-one probands are known to have had 149 further full-term pregnancies after their first ever puerperal psychosis, and 25 have had further puerperal psychoses. Of the 15 having previous puerperal schizophrenic illnesses who had further pregnancies (30 in all), 7 had further puerperal psychoses. Of the patients with previous affective states, 44 had subsequent pregnancies, 18 had further puerperal psychoses, 3 having three illnesses in all and 1, four illnesses. Thirty further puerperal illnesses were shared by 25 women. Accepting that the figures are small, there does not appear to be

TABLE XIII

Further Psychotic Illness Occurring in the 104 Women Traced of the 119 Women who left Hospital Alive

Period of follow-up before leaving observation	No. leaving observation			No. having further psychotic illness			
	As dead	Alive	Total	Puerperal	Non-Puerperal	Both	Total
2 years	2	1	3	0	1	0	1
2–5 years	1	10	11	1	1	0	2
5–10 years	1	23	24	1	10	1	12
10–15 years	0	13	13	2	3	0	5
15–20 years	0	25	25	4	10	2	16
20–25 years	2	3	5	0	4	0	4
25–30 years	1	11	12	1	3	1	5
30+years	2	9	11	0	3	1	4
Total	9	95	104	9	35	5	49

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any marked difference in susceptibility to further puerperal illness between the schizophrenic and affective states and there does not appear to be any more likelihood of illness occurring with the first than second subsequent pregnancy, etc.

The indexed illness was the first puerperal psychosis for 95 of the 104 women who left hospital and were traced. Of these women, 53 had, between them, 121 further pregnancies, and 14 women shared a further 18 puerperal psychoses. Obviously some women are more susceptible than others to develop further puerperal psychoses, but these figures, admittedly small, suggest the chances as being approximately one in six or seven of a recurrence with a further pregnancy.

Non-puerperal psychoses occurred in 43 of the 106 women at some time after the first puerperal psychosis. Of the whole group of 134 women, it is known that 44 women had at least one non-puerperal illness at some time before or after their first puerperal psychosis. In this series, no women who developed a schizophrenic illness in the puerperium had previously had a non-puerperal illness, although eleven of the affective states had (Table XIV).

Stengel *et al.* (1958), in their study of post-operative psychoses, found that 3 of their 57 female probands had previously had puerperal psychoses. None of the women of this study are known to have had post-operative psychoses, but one (case 78) had a depressive psychosis precipitated by steroid therapy at the age of 57 years. This woman's illness responded well to imipramine.

The ages of onset of first non-puerperal psychosis (Table XIV) experienced by these women tend to be lower than is usual in the affective states, a little higher in the schizophrenic.

Summary

Of 114 women traced, one had remained in hospital since admission in 1941. Of the remaining 113, 104 women were traced. Of these, 49 had at least one further psychotic illness, 14 had further puerperal illnesses, 40 had non-puerperal psychoses and 5 had both. If the previous illnesses of the whole group are considered, recurrence of psychotic illness in association or not with the puerperium is much greater.

The likelihood of a puerperal illness occurring in a further pregnancy in individual manic-depressive and schizophrenic probands is much greater than that of the pregnant woman who has not suffered a previous puerperal psychosis. Of the 95 probands traced whose indexed psychosis was the first puerperal illness, 53 had a total of 121 further pregnancies and 14 had a further 18 puerperal psychoses between them. Recovery from further manic-depressive states

TABLE XIV

Ages of Onset of First Non-Puerperal Psychosis in 44 Women of Whole Group known to have had at least one Illness before or after Puerperal Psychosis. No Schizophrenic Proband had a Previous Illness

Ages	Schizophrenic	Affective		
	After 1st puerperal	Before 1st puerperal	After	Total
15–20 ..	—	3	—	3
20–25 ..	—	5	—	5
25–30 ..	—	1	1	2
30–35 ..	3	2	3	5
35–40 ..	—	—	7	7
40–45 ..	1	—	5	5
45–50 ..	1	—	5	5
50–55 ..	—	—	5	5
55–60 ..	1	—	1	1
Total ..	6	11	27	38

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was excellent, but a number of the schizophrenic probands passed into chronic residual states.

At the time of follow-up, 61 probands were known to have had 149 further pregnancies. All but 6 of the 104 probands discharged were living, or had lived up to the time of death, in satisfactory marital harmony and reasonably well-kept homes. The mental state of those admitted with manic-depressive illnesses was superior to that of schizophrenic probands. Two-thirds of the schizophrenics originally admitted had a poor outcome, particularly due to deaths in the pre-1942 era. Fifty per cent. of those ultimately discharged and traced were well and symptom free, whereas of the manic-depressive group 86 per cent. were symptom free.

III. Genetical Studies

Family histories were collected from probands, relatives where possible, and hospital notes of probands and relatives. The ages of parents and siblings when last known of alive or at death were obtained in 79 cases suffering from puerperal affective psychoses and 19 cases suffering from puerperal schizophrenia. In a small number of cases, the exact ages of siblings who died in childhood could not be given but could be deduced near enough to fit into the age groupings of five-year intervals. The high death rate occurring amongst the probands with puerperal schizophrenia before 1942 accounted mainly for the lack of sufficiently accurate information about the relatives of more of these probands. The proband material is, therefore, a little selective in that it does not include patients who died in hospital and few of those admitted single.

Psychiatric illness amongst the relatives was only noted when there was definite information of hospital admission, suicide, of a long period of incapacity at home and treatment from a doctor. For the purpose of this study, functional psychotic illnesses and epilepsy only are tabulated. Diagnoses attributed to illnesses of relatives were on the whole those given on the hospital notes or by the doctor treating them. Sometimes the diagnosis was obviously inappropriate and the diagnosis considered most likely by the author was given, without any reference to the probands notes. In some cases it was obvious that relatives were mentally ill, but information was not sufficient for a definite diagnosis. The illness was then classified as "uncertain".

The age distribution amongst the relatives of probands and the selection of suitable risk periods for affective psychoses and schizophrenia, so as to include almost all relatives suffering from these illnesses at some time, allow the use of Weinberg's (1925) shorter method of calculation of the number of risk lifetimes, commonly known as the "Bezugsziffer". The morbidity risk amongst the relatives was thus calculated—

$$q = \frac{a}{b - bo - \frac{1}{2}bm}$$

where

q = morbidity risk.
a = number of affected individuals.
b = total number of individuals.
bo = number of individuals who have not reached the age of manifestation.
bm = number of individuals within the manifestation or risk period.

When using the simple formula—

$$\text{Standard error} = \sqrt{\frac{q\,(1-q)}{b - bo - \frac{1}{2}bm}}$$

the standard error is a little underestimated, but with the percentage morbidity risks determined in this study, little more than 10 per cent. and usually less, the degree of underestimation is so small as to be negligible, as pointed out by Larsson and Sjögren (1954).

No correction has been attempted for excess mortality which may have occurred.

Psychoses amongst Relatives of Probands with Puerperal Affective Psychoses

Table XV shows the numbers of certain and uncertain cases of functional psychoses occurring amongst the parents and siblings of the probands suffering from puerperal affective psychoses. Cases referred to as "uncertain" were probable rather than possible. A number of relatives were described as mentally ill in one way or another,

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TABLE XV

Psychotic Illness Occurring Amongst Relatives of Probands with Puerperal Affective States

	Father	Mother	Brother	Sister	Total
Non-puerperal affective psychosis—certain	6 (3S)	4	4	6	20
Non-puerperal affective psychosis—uncertain	4 (1S)	7	2	2	15
Puerperal affective psychosis—certain		2			2
Schizophrenic psychosis—certain			1		1

S = Suicide.

but information was not considered definite enough to include them.

Two mothers had puerperal psychoses which were considered to be affective. The 79 mothers of the affective probands had at least 386 full term pregnancies (307 siblings of probands+ 79 probands). Two or three cases of puerperal psychoses per 1,000 births is probably the highest incidence of puerperal psychosis ever quoted in the general population. Two cases in 386 pregnancies is not statistically significant if the incidence of these illnesses occurring in the normal population of women is two cases per thousand births. It would, however, be reasonable to expect a higher morbidity risk amongst the mothers of these probands, since many of them would have the genetic predisposition towards the functional psychoses (see below). One sister was admitted to a psychiatric hospital in the puerperium and died three months later. Post mortem revealed tuberculomata in both ventricles of the heart. She has not been included as a secondary case of functional psychosis. It does not appear that any specific genetic predisposition to puerperal psychosis exists. Undoubted schizophrenia occurred in the brother of one proband (case 114), who had a clinically typical depressive illness in 1958. She responded quickly and well to E.C.T. and has remained well since.

The father and sister of one proband (case 85) have both spent many years in a psychiatric hospital with epilepsy and accompanying behaviour disorder.

Other conditions such as alcoholism, psychopathic disorder and neurosis obviously occurred amongst the first degree relatives, and histories of suicide and admission to psychiatric hospital were not infrequent amongst grandparents, aunts and uncles. The daughter of case 31 (mania) was treated in a psychiatric hospital for a puerperal depression following her first pregnancy.

Table XVI indicates the morbidity risks for affective psychoses amongst parents and siblings of these probands. The risk period of 20 to 60

TABLE XVI

Morbidity Risks for Non-Puerperal Affective Psychosis among Relatives of Probands with Puerperal Affective Psychoses (Risk Period: 20–60 years)

Relatives	Certain cases			Certain and uncertain		
	Risk lifetimes	No. affected	Morbidity risk %	Risk lifetimes	No. affected	Morbidity risk %
Fathers	71·5	6	8·4±3·3%	71·5	10	14·0±4·1%
Mothers	71	4	5·6±2·7%	71	11	15·5±4·3%
Brothers	95	4	4·2±2·1%	95	6	6·3±2·5%
Sisters	63	6	9·5±3·7%	63	8	12·7±4·2%
Fathers and brothers ..	166·5	10	6·0±1·6%	166·5	16	9·6±2·0%
Mothers and sisters	134	10	7·5±2·3%	134	19	14·2±3·0%
Parents	142·5	10	7·0±2·1%	142·5	21	14·7±3·0%
Siblings	158	10	6·3±1·9%	158	14	8·9±2·3%
Parents and siblings ..	300·5	20	6·7±1·6%	300·5	35	11·7±1·8%

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years was used to calculate the risk lifetime, and almost all the relatives experienced their first illness during this period. No attempt was made to differentiate between manic-depressive illness and involutional depression.

The morbidity risk for certain and uncertain cases taken together among siblings is 8·9± 2·3 per cent., among parents 14·7±3·0 per cent. with 11·7±1·8 per cent. for both siblings and parents. Puerperal psychoses in mothers have not been included in the calculation of morbidity risks, but not counting them the risks are estimated higher in female relatives than male, 14·2±3·0 per cent. and 9·6± 2·0 per cent. respectively. It would be unwise to infer that this might be significant in any way, since depressive illnesses occurring in males might well have been expressed in alcoholism, and males always show more reluctance to attend hospital, etc. Considering "certain" cases alone the difference is very little.

When calculating morbidity risks for affective psychoses among relatives of probands, different investigators have used different risk periods, but usually 20–50 years (Strömgren, 1938; Slater, 1938; Sjögren, 1948) or 20–60 years (Stenstedt, 1952). To gain more accuracy in determining the "Bezugsziffer", weighting methods have been used as described by Strömgren and Slater, and corrections have been made for excess mortality occurring among relatives due to the presence of the disease. Whether or not manic-depressive illness has been considered as a separate entity from involutional melancholia, morbidity risks are little changed (Stenstedt, 1952). As Stenstedt states, results of most investigations agree that the morbidity risks for manic-depressive psychosis among siblings, parents and children of manic-depressive probands are between 10 and 15 per cent. Both he and Strömgren (1938) consider the latter figure to be the most likely.

Accepting this, the morbidity risks for affective psychosis amongst the parents and siblings of the puerperal affective probands of this study suggest that these probands are likely to have a genetic predisposition to manic-depressive psychosis similar to that of any group of non-puerperal probands with manic-depressive psychosis.

Psychoses amongst Relatives of Probands with Puerperal Schizophrenic Illnesses

As mentioned above, sufficient information was obtained in the follow-up to estimate the morbidity risk for schizophrenia amongst the relatives of 19 probands only. The number of parents and siblings was 119. For calculations of the number of risk lifetimes the risk period of 20–50 years was used. This included the known ages of onset of illness for the relatives with certain and uncertain psychoses, other than two fathers who were obviously schizophrenic at 58 years and 60 years. Stenstedt (1952) chose the same period. The total number of risk lifetimes was 86·5.

TABLE XVII

Psychoses Occurring Amongst Relatives of Probands with Puerperal Schizophrenia (Risk Period 20–50 years)

Psychosis	Father	Mother	Brother	Sister	Total
Non-puerperal schizophrenia certain	4	1	2	1	8
Non-puerperal schizophrenia uncertain	1 (S)				1
Puerperal schizophrenia certain					
Puerperal schizophrenia uncertain		1			1
Affective psychosis certain	1				1
Affective psychosis uncertain			1		1

S = Suicide.

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TABLE XVIII

Morbidity Risks for Non-Puerperal Schizophrenia among Relatives of Probands

	Risk lifetimes	Certain cases	Morbidity risk %	Uncertain cases + certain	Morbidity risk %
Parents and siblings	86·5	8	9·3±3·1%	9	10·4±3·3%

Amongst the parents and siblings there were 8 cases of certain schizophrenia and one uncertain (Table XVII). The latter was a man who became suspicious and paranoid in his late 40's and committed suicide at 50 years. One uncertain case of puerperal psychosis occurred in a mother. One father had an endogenous depression, and the brother of the same case (76) suffered from an illness which had mixed features of an endogenous and neurotic depression. The mother of this patient had undoubted schizophrenia. The daughter of case 88 developed schizophrenia at the age of 18 years, but no other cases of psychotic illness are known amongst children.

In view of the small total number of risk lifetimes, the morbidity risk for schizophrenia was calculated for parents and siblings together (Table XVIII), using certain cases only 9·3± 3·1 per cent., certain and uncertain being 10·4± 3·3 per cent. The morbidity risk for schizophrenia in the general population is usually quoted as between 0·7 per cent. and 1 per cent. and that for first degree relatives of schizophrenics as approximately 10 per cent. As with the probands developing puerperal affective psychoses, this study indicates that first degree relatives of probands developing puerperal schizophrenia have the same morbidity risk for non-puerperal schizophrenia as would be expected amongst the relatives of non-puerperal schizophrenics.

Summary

Satisfactory family histories were obtained of 79 probands and 19 probands suffering from puerperal affective psychoses and puerperal schizophrenic psychoses respectively. Weinberg's (1925) shorter method for calculation of the risk lifetimes was used. The risk period for manic-depressive psychosis was accepted as 20 to 60 years, for schizophrenia 20 to 50 years.

The morbidity risks amongst parents and siblings of probands for non-puerperal psychoses were similar to those described for relatives of patients with non-puerperal manic-depressive illness and schizophrenia. No specific genetic predisposition to puerperal psychoses, as such, could be demonstrated.

IV. Discussion and Conclusions

The Nature of the Puerperal Psychoses

Gradually it has been accepted by most clinicians that the puerperal psychoses are not in themselves an entity. This realization has evolved from the clinical experience that the symptomatology of the psychoses has much in common with non-puerperal forms of acute organic psychoses, manic-depressive illness and schizophrenia. Many studies have noted the relatively high incidence of psychiatric illness amongst the relatives of probands and the tendency of women who suffer from puerperal illness to develop non-puerperal psychoses. Some investigators have carried out comparative studies using as controls non-psychotic women in the puerperium and/or women of similar age and marital status who have developed psychoses not associated with childbirth (Tetlow, 1955; Foundeur *et al.*, 1957; Seager, 1960). All tend to confirm that no entity such as a puerperal or post-partum psychosis exists. This study, with its long-term follow-up and emphasis on family history of mental illness, has evidence to offer under three headings:

(1) The clinical features.
(2) The predisposition to non-puerperal psychoses.
(3) Family history of mental illness.

The symptoms and signs of probands in this study were in keeping with those found in the non-puerperal psychoses, providing it is accepted that symptoms and signs of the functional

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psychoses vary with the acuteness of onset and rapidity of progression. Most of these cases were of acute onset. The criteria under which they were admitted to the study created bias in this direction, as those of more gradual onset are admitted after periods more remote from the time of labour, and their notes contained little reference to it or little information upon which it was possible to time the actual onset of illness. Clouding of consciousness was a more common finding in the pre-1942 patients with functional psychoses, but was still not uncommon in the 1942–1961 group, as found by several other authors (Strecker and Ebaugh, 1926; Karnosh and Hope, 1937; Jaffe, 1951). Rapid changes in mood occurred in the affective states. When these patients were left untreated, however, they gradually lost these superadded features commonly associated with delirium and settled into the more characteristic clinical pictures of the functional pyschoses. Degrees of mania were not as uncommon in this series as reported in many others, there being 19 cases. It is of interest that three women with more than one puerperal illness had both mania and depression following different pregnancies. The commonly accepted treatments for non-puerperal psychoses were just as effective in these cases.

With regard to the predisposition of the probands to non-puerperal functional psychoses, 44 of the 134 women experienced them at some time; this incidence would undoubtedly have been larger if at the time of follow-up all had passed through the risk period. However, a number had died and others were still in their thirties and forties. The characteristics of these non-puerperal psychoses were similar to the puerperal illnesses, except in content and sometimes the presence of clouding of consciousness. In a number of probands with puerperal affective psychoses who later developed non-puerperal illnesses, paranoid and hysterical features related to the pre-morbid personality were present in both.

Previous follow-up studies of puerperal psychoses are few and of short duration. The findings of Vislie (1956), White *et al.* (1957), Martin (1958) and Seager (1960) suggest that the chances of having a further puerperal psychiatric illness in the puerperium are about one in five or six. As for the risk of non-puerperal psychotic illness, the follow-up studies have been too short for any reasonable estimate.

Authors of previous studies have usually commented on the high incidence of psychiatric illness amongst relatives of probands. However, this incidence has been expressed in terms of the percentage of probands with a family history of such and morbidity risks for parents and siblings have not been calculated. Piker (1938) found a positive family history of psychiatric illness in 17 per cent. of his cases; Hemphill (1952) states that of his total of 116 cases 14·5 per cent. had a definite family history of illness, whereas amongst those 24 cases diagnosed as suffering from schizophrenia it was as high as 25 per cent. Tetlow (1955) and Martin (1958) quoted a high incidence of psychiatric illness amongst relatives, but include grandparents, aunts, cousins, etc. Seager (1960) and Jansson (1964) compared findings amongst probands suffering from puerperal psychiatric illness, psychotic and neurotic, with matched controls of women having psychiatric illnesses not associated with pregnancy. Seager found family histories of psychiatric illness in 26·2 per cent. and 31 per cent. respectively, and Jansson found the same incidence in both groups.

In this study, family predisposition to psychotic illness has been shown to be within the same order as that found in families of probands with non-puerperal functional psychoses. The morbidity risk for parents and siblings of affective probands was $11 \cdot 7 \pm 1 \cdot 8$ per cent. and schizophrenic probands $10 \cdot 4 \pm 3 \cdot 3$ per cent. No evidence was found for there being any specific familial predisposition to puerperal psychoses.

These findings can leave no doubt that functional puerperal psychoses occur in women predisposed to the usual manic-depressive and schizophrenic psychoses and that the illnesses are the same when taking into consideration pathoplastic factors.

Categories of Illness Comprising the Puerperal Psychoses

There have always been differences in the reported incidence of the various states comprising this group. Organic psychoses are now

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rarely seen, and the present differences arise over the ratio of affective to schizophrenic psychoses. This study finds the ratio to be approximately 2·5 : 1 respectively, a ratio very similar to that found by Hemphill (1952) and earlier writers such as Kilpatrick and Tiebout (1926), Gregory (1924) and Boyd (1942). Other authors, such as Foundeur *et al.* (1957), Madden *et. al.* (1958) and Seager (1960) found the reverse, a preponderance of schizophrenic psychoses. The findings of this study have been confirmed by the recurrence of similar psychoses during the long follow-ups and the more elaborate family studies.

Unexplained Features of Puerperal Psychoses

This retrospective study cannot be particularly informative with regard to the question of precipitation of puerperal psychoses. However, no evidence was found that any specific psychological stress precipitated these illnesses, and there does not appear to have been any common physical pathology.

What, then, does precipitate a psychosis following one pregnancy and not another, and why is it that women who are obviously genetically predisposed to the functional psychoses can have many children and yet not have a puerperal psychosis? Exactly the same questions can be asked about the post-operative psychoses which appear to have so much in common with the puerperal psychoses (Stengel *et al.*, 1958). Kleist (1916) referred to the post-operative psychoses as the "interval psychoses" because of the latent period of 3 to 4 days following operation before the psychosis presents, the puerperal psychoses have this same characteristic.

In recent years hormonal imbalance occurring in the puerperium, acting as a "trigger" mechanism in predisposed women, has been postulated as the precipitant (Venning and Beck, 1959; Reifenstein, 1956; Jacobides, 1957). It may also be that the degree of individual predisposition to functional psychoses is itself cyclical. Whether a psychosis occurs in a particular puerperium may, therefore, depend on a chance hormonal imbalance and the degree of susceptibility of the patient at that time.

Management

Coinciding with the introduction of physical treatments, particularly E.C.T., the outlook in terms of mortality and period of stay in hospital has greatly changed. Most authors now consider the affective psychoses to have an excellent prognosis, but there is some difference of opinion over the prognosis in schizophrenia. With the use of E.C.T. and tranquillizers there is no doubt that the period of stay in hospital is shortened. In this series, the results of treatment for puerperal schizophrenia since 1942 have neither been as poor as Hemphill's (1952) nor as good as Martin's (1958). In this group they appear to compare favourably with the prognosis given in most of the standard textbooks of psychiatry for the non-puerperal forms of illness.

Many, particularly in the United States, claim that any improvements in outcome for patients with functional psychoses are not the result of treatment with physical methods but of the rediscovery of "moral treatment", the open-door policy, industrial rehabilitation, the establishment of day hospitals, etc. I can find little tangible evidence of change in St. Nicholas Hospital before 1950, and after this there was only a very gradual change up to the late 1950's. It is extremely doubtful whether the dramatic improvement in immediate prognosis for these women with puerperal psychoses, more so the manic-depressive, could be accounted for otherwise than through the introduction of physical methods of treatment.

Any acute functional psychosis, whether depression, mania or schizophrenia, is quickly controlled if not completely relieved by E.C.T., particularly with the addition of appropriate drugs. It is thought that the tendency to relapse is greater with puerperal depression than the non-puerperal variety. Before physical treatment existed, approximately six to nine months was needed for spontaneous recovery in most cases of depressive illness, and it may well be worth while continuing with an anti-depressive drug such as imipramine for this period in view of the suggestion that it prevents relapse.

No complications have arisen in this study as a result of giving E.C.T. within the first few weeks of labour. Like Martin (1958), the author

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can see no need to hesitate in its application as is sometimes advised in the literature, advice seemingly based on one case of embolism from pelvic veins reported by Feldman *et al.* in 1946.

Hormonal therapy was not used in this study, but the literature on this matter does not indicate that it would be of value except where there are obvious physical signs of endocrine abnormality.

In spite of the great changes of a humanitarian nature in the attitude towards psychiatric patients, their need for physical comforts, etc., few hospitals have yet provided facilities for babies to be admitted with their sick mothers, although it is common practice for mothers to be admitted to hospitals with sick babies. Little proof exists that this would aid in the recovery of the mothers, although Baker *et al.* (1961) believe this to be so in schizophrenics. However, it most certainly helps in inducing patients to enter hospital without using compulsory procedures and thus helps to avoid resentment and ensure co-operation from patients and relatives. It also allows continuation of contact between mother and baby as the mother improves, and the author believes hastens the resolution of feelings of antagonism or guilt towards the child. Otherwise these feelings frequently remain when mothers leave hospital after being separated from their babies, and several months may pass before the appearance of the usual feelings of warmth towards the baby and confidence in being able to care for it.

A small unit for admission of babies with mothers was opened at St. Nicholas Hospital in May 1964. There is a separate nursery for the babies, and mothers care for them when able, under supervision. No complications have arisen; it has undoubtedly been welcomed by the mothers and the medical and nursing staff, and there is good reason to believe that the fact that normal babies can now be admitted to a mental hospital is helping to resolve the stigma associated with such hospitals within the region.

Further Psychiatric Illness

The chance of women who have had a puerperal mental illness developing a non-puerperal illness at some time is obviously very high; 43 of the 106 women traced for some period following their first puerperal illness are known to have had such. If a correction were made for the fact that many of these women have not yet completed the accepted risk period for non-puerperal schizophrenias and affective states, the morbidity risk would be well above 50 per cent. As for further puerperal psychoses, one can say in general that the chance of having such is as high as 1 in 5, although some women are obviously more susceptible than others; three women had two further illnesses, while another had three.

Possible environmental precipitants of these illnesses are non-specific and so often lacking that besides giving patients the recognized best ante-natal and post-natal care there is nothing at present that can be done to prevent the onset of them. Their development is strongly dependent upon genetic predisposition and possibly on some internal mechanism commonly occurring in the puerperium.

The question of termination of pregnancy on psychiatric grounds is highly disputed within the profession, as was indicated by the correspondence in the *British Medical Journal* which followed Sim's article "Abortion and the psychiatrist" in July 1963, and more recently by opinions expressed in medical journals and newspapers, on radio and television, in anticipation of reform of the law on abortion. It has become evident that a psychiatric opinion in favour of such an operation depends as much, if not more, on the personal attitude of the psychiatrist as on the degree of morbidity, present or anticipated, in the patient.

The author does not believe that the findings in this study have much relevance to the question of termination of pregnancy. He does not assume, as did Sim, "that the main issue facing the psychiatrist is whether the mother is likely to develop a puerperal psychosis and the effects of such on her future health". If this were so, the question of therapeutic abortion would not exist as such a vexing matter to most psychiatrists, since such patients are rarely referred for opinion.

In this study, the long-term outlook for most women developing puerperal affective psychoses was very good, although one woman

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committed suicide after leaving hospital against advice, one had four puerperal illnesses and three others three illnesses.

Before the introduction of physical treatments the outlook for many women who developed puerperal schizophrenia was very bad. Between 1927 and 1941 fourteen such women were admitted and five only were discharged from hospital alive, and two of these had long-standing residual symptoms. One of those discharged as symptom-free (case 43) had a second puerperal illness with a second child and has remained an in-patient in a mental hospital since 1946.

Of the 15 women of the whole group who had puerperal schizophrenia and further pregnancies, seven developed a second puerperal mental illness, three of these cases (cases 43, 55 and 105) becoming markedly deteriorated and being what most could consider "mental wrecks", a fourth remaining suspicious and unfriendly towards neighbours and relatives. All of these women received physical treatments for their second illness. It would seem, therefore, that therapeutic abortion in these cases might well have prevented a recurrence of schizophrenia, at least at that time, and its long-term disastrous effects. Which particular women will develop a second schizophrenic illness with a further particular pregnancy cannot be predicted, but the chance of any one woman doing so is as great as 1 in 5. This surely gives her and her family the right to expect us to give very serious consideration to the matter and not accept such a general prejudgement as "there are no psychiatric grounds for termination of pregnancy" (Sim, 1963).

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