of individual and collective research in general practice, especially in epidemiological problems. There is also a need to increase the number of "research practices" (some of them subsidized perhaps by the Clinical Research Board) in which the doctor is given a grant to enable him to employ trained assistance to carry out observational research into epidemiology, therapeutics or other subjects according to his bent or capacity.

Conclusion

We are living in exciting times for the medical profession, academically and politically. Everyone in our country now has a family doctor and can receive attention without financial embarrassment. There are, it is true, certain disquieting signs—excessive resort to hospitals and to specialists, the partial avoidance of responsibility by some general practitioners and their subsequent loss of efficiency, the incursions of clinics, the deadening effect of a uniform and universal capitation fee, and now money-squabbles with the State—all of which threaten the future welfare of medicine in Great Britain. We must see to it that these setbacks are only temporary. Unless conditions become such as to stimulate initiative and enthusiasm, to open out the possibilities of advancement, and to create the maximum sense of responsibility, there is a danger that many general practitioners will soon find themselves doing mainly routine sorting work.

Fortunately there are signs of a new birth too, of which I have tried to tell something in this lecture. Modern science has equipped us as we have never been before; whether we reach our patients by car, on foot in the jungle, by breeches buoy between two ships at sea, or by air as a flying doctor, we now have drugs for treating them in their own beds, or while they remain at work, that were undreamed of thirty years ago. We have many more helpers, both within the profession and outside it, co-operation with whom should bring lasting benefits to our patients in and near their homes; and several new types of group practice are being successfully tried out. The academic renaissance of general practice that is taking place throughout the world, just now, is a very real thing; and among its most convincing manifestations has been the foundation, growth, and vitality of our new College and of its sisters overseas. They have all made tremendous progress in a short time; their future is bright, and in many other places there is enthusiasm to follow their example.

We inherit from our predecessors a better concept of the art of family doctoring than any other country in the world; and a great responsibility rests on us all—doctors, laymen, and politicians alike—to ensure that here and throughout the Commonwealth the present opportunity is seized to regain for general practice its rightful place as one of the finest branches of our profession and one of the most interesting and satisfactory in which to serve.

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MANAGEMENT OF THE TUBERCULOUS DIABETIC

FOLLOW-UP OF 84 CASES FOR ONE YEAR

BY

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Pulmonary tuberculosis is a common and important complication of diabetes mellitus, but only in the last few years has there been an increasing appreciation of the necessity to ensure special treatment for patients with the combined diseases. Oakley (1947), Luntz (1947), and Lawrence (1948) advocated the establishment of special units for the treatment of tuberculous diabetics. The Central Health Services Council (1952) suggested that tuberculous diabetics should be concentrated in sanatoria where expert advice and full facilities for laboratory investigation and supervision would be available. The Ministry of Health (1953) recommended regional planning for diabetic services with special provision for tuberculous diabetics.

In September, 1951, a scheme for the management of tuberculous diabetics was introduced in Birmingham. It comprises a hospital unit of 25 beds, an out-patient clinic, and a domiciliary service, and provides continuity of treatment and supervision (Luntz, 1952, 1954).

Present Study

This report gives a one-year follow-up of 84 tuberculous diabetics who have been under my care at the Regional Diabetic Unit at Romisley Hill Hospital in Birmingham. These cases were all the patients admitted consecutively over the four years between September, 1951, and September, 1955, and have been under observation for periods ranging from five years to one year. Of the 84 patients, 66 were known diabetics in whom pulmonary tuberculosis had recently been diagnosed; in 18 patients both diseases were diagnosed

Age distribution of the series of 84 tuberculous diabetics.

simultaneously. There were 49 males and 35 females, and their age distribution is shown in the Chart. The majority of the cases fall into two main groups—40 patients aged 20–39, and 35 aged 45–64. These are the age groups at which both diabetes and tuberculosis are commonly diagnosed. The youngest patient was 13 and the oldest 71. The mean age was 41 years.

Condition on Admission.—Clinical assessment of the patient's condition was made by studying symptoms, physical findings, general condition, temperature, weight, and sedimentation rate (E.S.R., Westergren, 200 mm. reading at one hour). Table I shows the condition of the patients on

TABLE I.—Clinical Condition on Admission

		No.	%
General condition	Good	28	33
	Fair	34	40
	Poor	22	26
Temperature	Afebrile	20	24
	Febrile	56	67
	Not recorded	8	10
E.S.R. (Westergren 200 mm. reading at 1 hr.)	0–10	6	7
	11–20	2	2
	21–50	40	48
	51+	27	32
	Not recorded	9	11
Sputum	Positive on direct examination	70	83
	“ “ culture	4	5
	Negative on direct examination (no culture)	6	7
	Negative even on culture examination	3	4
	Not recorded	1	1
Total		84	100

admission and before treatment for tuberculosis was started. The general condition was poor in 22 (26%), 56 (67%) were pyrexial, the E.S.R. was raised in 69 (82%), and 74 (88%) had a positive sputum. The data indicate that clinically most of the patients were rather ill.

Radiographic Appearances at Start of Treatment.—The radiographic appearances at the start of treatment are set out in Table II. Over half the patients had bilateral disease, 68% had three or more zones involved, and cavitation was present in 87% of the cases. An assessment of the extent of cavitation was made in each case by adding the maximum diameters of the individual cavities; 34 patients had cavi-

TABLE II.—Radiographic Appearances at the Start of Treatment

		No.	%
Extent of disease	Unilateral	36	43
	Bilateral	48	57
No. of lung zones involved	1 or 2	27	32
	3 “ 4	37	44
	5 “ 6	20	24
Principal type of shadowing	Discrete	20	24
	Intermediate	26	31
	Confluent	38	45
Radiographic assessment of disease activity	Acute	27	32
	Intermediate	44	52
	Chronic	12	14
	Miliary	1	1
Total		84	100
Cavitation	Absent	11	13
	Present	73	87
	Total diameter:		
	Less than 2.5 cm.	11	15
	2.5 cm.—4.9 “	28	38
	5 “ 7.4 “	13	18
		73	100
	7.5 cm. or more	21	29

tion of an extent greater than 5 cm. Twenty-seven (32%) had acute disease and one had miliary tuberculosis. The principal type of shadowing was confluent in 45% of the cases.

Results During the Year

Clinical, radiographic, and bacteriological assessments were made regularly, and those at three months, six months, and one year are presented.

Mortality.—During the year there was one death, and this was non-tuberculous. The patient, a 58-year-old man, died in the fifth month of treatment. Necropsy revealed an aneurysm of the bifurcation of the aorta with a massive thrombosis of the aorta, the common iliac arteries, and the inferior vena cava.

Disease Status at One Year.—The disease status in the 83 survivors at 12 months was classified as quiescent or active (Table III). One year is a short period when assessing the progress of tuberculous patients, but quiescence was

TABLE III.—Survival and Disease Status at One Year

TABLE IV.—SICKNESS AND DEATH DURING ONE YEAR.											
Dead		Alive								Total	
		Active						Quiescent			
		Improved		Stationary		Worse					
No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1	1	11	13	0	0	2	2	70	83	84	99

TABLE IV.—Progress in Clinical Condition After the Start of Treatment

	At 3 Months		At 6 Months		At 1 Year	
	No.	%	No.	%	No.	%
Clinical condition:	(84)*		(84)		(84)	
Considerable improvement ..	14	17	29	35	41	49
Moderate “ ..	45	54	46	55	38	45
Slight “ ..	20	24	4	5	1	1
No change ..	5	6	4	5	2	2
Deterioration ..	0	0	0	0	1	1
Death ..	0	0	1	1	1	1
Weight:	(83)		(81)		(82)	
Gain 21 lb. (9.5 kg.) or more ..	9	11	33	41	51	62
14–20 lb. (6.4–9.1 kg.) ..	21	25	18	22	13	16
Gain 7–13 lb. (3.2–5.9 kg.) ..	33	40	21	26	10	12
“ less than 7 lb. (3.2 kg.) ..	15	18	7	9	5	6
No change ..	4	5	0	0	1	1
Loss less than 7 lb. (3.2 kg.) ..	1	1	1	1	1	1
“ 7–13 lb. (3.2–5.9 kg.) ..	0	0	1	1	1	1
Average gain in weight (lb.) ..	11.45		18.32		25.57	
Temperature:	(56)		(55)		(55)	
Afebrile ..	47	84	48	87	50	91
Temperature fall (including fall to normal) ..	53	95	52	95	53	96
Sedimentation rate:	(69)		(67)		(66)	
Fall to normal (0–10) ..	15	22	25	37	34	52
“ (including fall to normal) ..	67	97	67	100	64	97

* The figures in parentheses indicate the total number of patients upon which the percentages are based.

attained in 70 (83%). Of these, 31 had neither collapse therapy nor resection. Thirteen patients still had active disease, but in only two was the disease worse.

Clinical Assessments.—The changes in clinical condition and in weight, and the resolution of pyrexia and the lowering of the E.S.R., are set out in Table IV. Seventy-nine (94%) of the patients had improved clinically at three and six months, and 80 (95%) by a year, considerable improvement being recorded in 17%, 35%, and 49% of patients at these three intervals respectively. The average gain in weight was 11.5 lb. (5.2 kg.) at three months, 18.3 lb. (8.3 kg.) at six months, and 25.6 lb. (11.6 kg.) at one year. Only two patients had lost weight at one year. Of a total of 56 febrile patients in the week before the start of treatment, 47 (84%) were afebrile at three months, 48 (87%) at six months, and 50 (91%) at one year. Of 69 patients with an initial E.S.R. of 11 or more, a fall occurred in 67 (97%) at three months, in 100% of 67 at six months, and in 97% of 66 at one year, the sedimentation rate being normal in 15 at three months, in 25 at six months, and in 34 at one year.

Radiographic Changes.—Radiographic assessments (Table V) were made by a physician who was unaware that the radiographs were those of tuberculous diabetics. Moderate,

TABLE V.—Radiographic Assessments at Three Months, Six Months, and One Year

Radiographic Changes	At 3 Months		At 6 Months		At 1 Year	
	No.	%	No.	%	No.	%
Exceptional improvement ..	1	1	11	13	27	32
Considerable ..	28	33	42	50	38	45
Moderate ..	34	40	20	24	13	15
Slight ..	17	20	7	8	3	4
No change ..	1	1	0	0	0	0
Slight deterioration ..	2	2	1	1	1	1
Moderate ..	1	1	2	2	1	1
Considerable ..	0	0	0	0	0	0
Death ..	0	0	1	1	1	1
Total ..	84	98	84	99	84	99

considerable, or exceptional improvement had occurred in 75% of the patients at three months, in 87% at six months, and in 93% at a year, considerable or exceptional improvement having been recorded in 35%, 63%, and 77% of patients at these three intervals respectively. There were three deteriorations at three months, three deteriorations and one death at six months, and two deteriorations and one death at a year. An analysis of the timing of the radiographic changes showed that the greatest radiographic improvement occurred in the first three months in 56 (67%) patients and in the second three months in 17 (20%). In 7 (8%) patients improvement was evenly divided between the first and second three-month periods. In only two cases did the greatest improvement occur in the second six months. One patient improved steadily throughout the 12 months.

Changes in Cavitation.—The changes in the extent of cavitation were assessed from postero-anterior and lateral radiographs (Table VI). Considering the patients with

TABLE VI.—Changes in Cavitation

Changes in Cavitation	At 3 Months		At 6 Months		At 1 Year	
	No.	%	No.	%	No.	%
Disappearance of cavitation ..	(73)*	34	(72)	58	(72)	83
Cavities smaller or fewer ..	25	58	28	39	11	15
No change in cavitation ..	6	8	3	0	0	0
Cavities larger or more numerous	0	0	0	0	1	1

* The figures in parentheses indicate the total number of patients upon which the percentages are based.

initial cavitation, cavitation was no longer visible in 34% of 73 patients at three months, in 58% of 72 patients at six months, and in 83% of 72 patients at one year. Only one patient had more cavitation at a year than at the start of treatment.

Bacteriology

If available, sputum was examined monthly by direct smear and by culture; when there was no sputum, laryngeal swab cultures were sometimes performed. The results in Table VII are biased in favour of positivity, since regular

TABLE VII.—Examination of Sputum for Tubercle Bacilli

Presence of Tubercle Bacilli in Sputum (or Laryngeal Swab Cultures)	Pre-treatment		At 3 Months		At 6 Months		At 1 Year	
	No.	%	No.	%	No.	%	No.	%
Positive direct ..	70	83	19	23	8	10	5	6
.. culture only ..	4	5	1	1	1	1	1	1
Negative direct, culture not examined ..	6	7	12	14	19	23	11	13
Negative direct, negative culture ..	3	4	46	55	46	55	62	75
Not recorded ..	1	1	6	7	9	11	4	5
Total ..	84	100	84	100	83	100	83	100

examinations were performed only in patients considered at all likely to be positive bacteriologically. Examinations were often omitted in patients considered very likely to be negative bacteriologically. It is noteworthy that whereas 83% of 83 patients were initially positive on direct examination only 6% of 79 patients still had a sputum positive on direct examination at a year; 78% of the 79 patients were known to be negative even on culture.

Treatment of the Tuberculosis

Rest in bed together with chemotherapy was the basis of treatment for nearly all the patients. Chemotherapy with an effective combination in full dosage was begun as soon as possible after diagnosis. The combinations used were streptomycin plus para-aminosalicylic acid (P.A.S.), streptomycin plus isoniazid, P.A.S. plus isoniazid, and all three drugs. Two patients had no chemotherapy. The average duration of chemotherapy was 28 weeks, the shortest course being six weeks and the longest 52 weeks.

Collapse therapy or resection was undertaken in 47 patients. The procedures are set out in Table VIII. Minor collapse therapy was undertaken in 29 patients, major sur-

TABLE VIII.—Collapse Therapy (Induced and Maintained) and Surgery During the Year

Artificial pneumothorax ..	2
.. pneumoperitoneum ..	9
Phrenic crush and artificial pneumoperitoneum ..	13
Thoracoplasty ..	5
Resection { Lobar ..	7
.. Segmental ..	3
Total patients with collapse therapy and resection	8

47

gery in 18 patients (thoracoplasty in 7 and resection in 11). No difficulty was encountered with major surgery, and all the operative procedures were well tolerated. Physician and surgeon collaborated closely in the management of the patients undergoing thoracic surgery. The physician was present in the theatre during the operation, and the following procedure was adopted.

Resections were carried out first thing in the morning at the beginning of a list. Long-acting insulins, such as protamine-zinc insulin and insulin zinc suspension, were discontinued and soluble insulin was substituted. A dose of 20–30 units of soluble insulin was given at 7 a.m. together with 50–60 g. of glucose and the resection carried out under general anaesthesia some two hours later. Blood-sugar levels were estimated at intervals throughout the day, and small doses (10–20 units) of soluble insulin were begun in the evening together with 25-g. carbohydrate feeds at four-hourly intervals. Four or five doses of soluble insulin were given the day after operation and continued for the next three to four days. The carbohydrate requirements were supplied in the form of glucose until the patient was able to take light solids. The patients were generally back on their usual regime of a mixture of soluble insulin and

protamine-zinc insulin in the morning with or without a further dose of soluble insulin in the evening within a week and often by the fifth day.

Thoracoplasty, on the other hand, was carried out under local analgesia in the afternoon, the patient having had his usual dose of insulin in the morning and his ordinary breakfast and an early lunch. In this way no meals were missed. In the evening a small dose of soluble insulin (10-20 units) was given together with a carbohydrate feed. On the day after thoracoplasty control of the diabetes was maintained with four or five doses of soluble insulin together with two-hourly 25-g. carbohydrate feeds. The patients were back on their usual routine by the third or fourth day.

Treatment of the Diabetes

From the beginning of treatment the patients were placed on a diet whose calorific value and food components were considered suitable for their needs. The diet depended on their age, bodily habitus, weight, and state of nutrition. Three main diets were used as set out in Table IX. As the

TABLE IX.—Three Types of Diet Used

Diet	Calorie Value	Proportions of Three Main Component Foodstuffs	At Start of Treatment		At 3 Months		At 6 Months		At 1 Year	
			No.	%	No.	%	No.	%	No.	%
Basic	2,500	275 g. carbohydrate 100 „ protein 110 „ fat	63	75	63	75	60	72	57	69
Maintenance	2,000	200 „ carbohydrate 90 „ protein 90 „ fat	17	20	16	19	18	22	18	22
Restricted	1,750	183 „ carbohydrate 81 „ protein 77 „ fat	4	5	5	6	5	6	8	10
Total			84	100	84	100	83	100	83	101

body weight increased the patients were sometimes given a lower calorie diet. The majority of patients (never less than 69%) received the 2,500-calorie diet. Few (5-10%) received the 1,750 calorie diet.

When the patients first came under the care of the unit at the start of treatment they were receiving a variety of insulin combinations. These are set out in Table X. The

TABLE X.—Combinations of Insulin when Patients First Came Into the Scheme and Subsequently at Three Months, Six Months, and One Year

Morning Insulin	Evening Insulin	Total Patients							
		Start of Treatment		At 3 Months		At 6 Months		At 1 Year	
		No.	%	No.	%	No.	%	No.	%
S.I.	S.I.	24	29	6	7	4	5	3	4
P.Z.I.	—	6	7	3	4	1	1	1	1
Globin	—	3	4	1	1	0	0	0	0
S.I. + P.Z.I.	—	29	35	16	19	15	18	18	22
S.I. + P.Z.I.	S.I.	11	13	39	46	40	48	35	42
S.I.	S.I. + P.Z.I.	0	0	4	5	6	7	7	8
I.Z.S.	—	7	8	15	18	17	20	19	23
None	None	4	5	0	0	0	0	0	0
Total		84	101	84	100	83	99	83	100

three main combinations were soluble insulin (S.I.) morning and evening, S.I. and protamine-zinc insulin (P.Z.I.) in the mornings, and S.I. plus P.Z.I. in the mornings with a further dose of S.I. in the evenings. Four patients were receiving no insulin.

Insulin requirements were then determined with the help of regular urine examinations for sugar and acetone and estimations of blood-sugar levels. The main treatments used were S.I. plus P.Z.I. in the mornings in approximately a fifth of the cases, and S.I. plus P.Z.I. in the mornings together with a further dose of S.I. in the evenings in half the cases. Insulin zinc suspension was used in seven patients

at the start of treatment and 19 patients at one year. The insulin requirements were steadily increased during rest in bed and also as most patients were having too little to begin with. It is difficult to express the average insulin requirements for a group of patients receiving several insulins in a number of combinations. A rough assessment of insulin requirements expressed in terms of soluble insulin showed that the average was 68 units at the start of treatment and 96 units at one year. For insulin zinc suspension the corresponding figures were 37 units and 66 units.

The insulin dosage was altered when indicated by urine tests and blood sugar pattern throughout the day, and by the occurrence of hypoglycaemia. Even when good control of the diabetes was established, blood-sugar estimations were carried out at weekly or two-weekly intervals. Studies of the diurnal variations were performed so that the overall control could be more accurately assessed.

There was usually a fall in insulin requirements when the patient was allowed up, and in anticipation the dosage of insulin was reduced beforehand.

Discussion

A one-year follow-up is given of 84 tuberculous diabetics treated in the special unit for patients with the combined diseases. The patients, the majority with poorly controlled diabetes, had recently diagnosed pulmonary tuberculosis. On average they were ill and many had acute and extensive lesions. They were admitted to the unit without delay. The immediate response to treatment and the progress one year after the start of treatment have been very satisfactory. The success achieved may be ascribed to the fact that prompt and adequate treatment for both diseases was given in a hospital unit with adequate laboratory facilities, where the detailed attention required for the careful and precise management of both diseases was possible.

Results published during the past 25 years report a poor prognosis for the combined diseases, with a high death rate. The great majority of patients died within three years of diagnosis of the pulmonary lesion. In 18 published reports, set out in Table XI, there were 1,061 (52.8%) deaths in a total of 2,010 patients. Some of these reports include deaths up to five years, but, even so, the immediate mortality when presented was very severe. All but two of these reports concern the pre-chemotherapy era.

This very bad prognosis in tuberculous diabetics has improved with the use of modern chemotherapy according to the two reports so far published. Thosteson and Tibbits (1953) reported on the results in 294 tuberculous diabetics discharged between 1940 and 1952 in Detroit and had an overall mortality of 58%. They divided their cases into the pre-chemotherapy (1940-6) and chemotherapy (1947-52) eras. Of 167 discharged in the former period, 50 (30%) are living. Of 127 cases discharged in the era of anti-tuberculous antibiotics, 73 (57%) are living. Reaud (1953), describing the results of treatment of 38 patients in Cuba

TABLE XI.—Mortality Rate in Tuberculous Diabetics

Author	No. of Cases	Period of Observation	Mortality	
			No.	%
Fitz (1930)	35	3 years	26	74
Lorenzen (1931)	116	3 „	96	82
Kennedy (1933)	41	2 „	21	51
Root (1934)	245	3 „	160	65
Myers and McKean (1935)	80	1½ „	35	44
Wiener and Kavee (1936)	218	2 „	102	47
Himsworth (1938)	29	5/12-4 „	6	21
Mark <i>et al.</i> (1942)	349	5 years	115	33
Banyai and Cadden (1944)	115	Not stated	67	58
Poulsen (1946)	100	5 years	91	91
Gauld and Lyall (1947)	17	3 „	11	65
Lawrence and Whittaker (1948)	110	Not stated	39	35
Ferrara (1952)	53	4 years	29	55
Munkner (1953)	15	2 „	9	60
Jacobs <i>et al.</i> (1953)	55	4 „	55	100
Gais (1953)	100	5 „	24	24
Thosteson and Tibbits (1953)	294	5½ „	171	58
Reaud (1953)	38	2½ „	4	11
Total	2,010		1,061	53

during 1950-2, showed that 19 (50%) were improved, 15 (40%) were unimproved, and 4 (11%) died during their stay in the sanatorium. Little can be drawn in the way of conclusions from these reports. The bad prognosis given in the literature is no longer justified and should be regarded as largely of historical interest only.

In view of the high mortality previously reported the single death in the present series of 84 patients is particularly noteworthy. Mortality figures alone, however, give an incomplete picture of the effects of treatment, and it is important to know the clinical condition of those who survived and the activity of their tuberculosis. At the end of a year 70 of the patients have quiescent disease, and of the 13 with active disease improvement has occurred in 11. A total of 47 (56%) of the patients had collapse therapy or resection as part of their treatment, and these played an important part in helping to control the disease. Major thoracic surgery has proved perfectly safe in the well-controlled tuberculous diabetic.

Results at one year can only be regarded as a short-term evaluation, but the attainment of quiescent disease was closely linked to the immediate clinical and radiographic response to treatment. Even patients with features usually indicative of acute or extensive disease made striking progress. Quiescent disease was attained in the presence of such individual factors as an initial pyrexia of over 100° F. (37.8° C.) (in 77% of 13 patients), a high E.S.R. (in 78% of 27 patients), involvement of five or six zones of the lungs on a standard radiograph (in 75% of 20 patients), and even in the presence of all of these features in five patients. In these cases most of the radiological improvement occurred in the first six months with chemotherapy. It can be said that the prognosis depends on the early response to treatment, and where the clinical and radiological response in the first six months with chemotherapy is good the outlook may be regarded as favourable. Acute bilateral pulmonary tuberculosis in a diabetic is a serious complication to be regarded as a medical emergency. It calls for immediate treatment in a special hospital unit with an effective dosage of combined chemotherapy for the tuberculosis and stabilization of the diabetes as a matter of great urgency. The start of chemotherapy should not be delayed until the patient is admitted to hospital.

In conclusion, the immediate response to treatment in this group of cases as judged by the results at one year has been very satisfactory. The progress of the pulmonary tuberculosis—despite the diabetes—compares very favourably with the progress in the non-diabetic. As with the non-diabetic, however, it is necessary to follow these cases for several years before the final picture will be clear.

Summary

A one-year follow-up of 84 tuberculous diabetics is presented. Clinically most of the patients were ill. The pulmonary tuberculosis was bilateral in 48 patients, and 57 had involvement of three or more zones; 27 had acute disease, and cavitation was present in 73.

By one year there was only one death and this was non-tuberculous. Quiescence of the tuberculosis was attained in 70 patients. The average gain in weight per patient was 25.6 lb. (11.6 kg.) at a year. At least moderate clinical and radiological improvement occurred in over 90% of patients. Cavitation had either disappeared in 83% or become less evident in a further 15%. Only 5 of 83 patients still had a positive sputum on direct examination.

Rest in bed and chemotherapy, with an effective combination of anti-tuberculosis antibiotics in full dosage, was the basis of treatment for the tuberculosis in nearly all cases, and 47 had collapse therapy or resection, major surgery being carried out in 18 patients. In addition the diabetes was carefully controlled. Three diets were used, but the majority of patients had a 2,500-

calorie diet. The commonest combination of insulin used was a mixture of S.I. plus P.Z.I. in the mornings and a further dose of S.I. in the evenings.

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PERIODIC DISEASE: PERIODIC FEVER REPORT OF A CASE

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Disease conditions manifesting rhythmic recurrence of symptomatology of diagnosable organic origin are well known in medicine—notably epilepsy, Hodgkin's disease, malaria, and brucellosis, to mention a few. The natural history of such illnesses is known and some of them are curable.

However, a distinct group of conditions with periodic symptoms and signs which elude exact diagnosis has been reviewed by Reimann (1951) and called periodic disease. These conditions may occur in childhood or adult life and recur regularly over several years, sometimes for a decade. Various systems may be involved, and symptoms are so regularly cyclic as often to be predictable. The general health is unaffected and patients have been fully investigated without a correct diagnosis or cure being made. They have sought advice from numbers of physicians and have been known at times to seek the help of unorthodox practitioners.

Reimann has included such conditions as periodic fever, periodic abdominal pain, periodic arthralgia, and perhaps periodic (cyclic) vomiting and Behcet's syndrome (recurrent ulceration of oral and genital mucosa with hypopyon) in his description of periodic disease. Several cases of periodically occurring fever closely resembling Reimann's description of periodic fever are to be found in the literature (Wolf and Wolff, 1942; Albahary and de Villeroy, 1951; Hitzig and Fanconi,