However, in our patients it was those who had taken the drug for the longest time who were the most severely affected. None of our patients had any blood relations taking thalidomide, so we cannot speculate on the possibility of susceptibility to thalidomide being on a genetic basis.

Little is yet known about the metabolism of thalidomide in the body after absorption. Its mode of action in producing both the desirable sedative and the undesirable toxic effects is unknown. Our investigations have not thrown any light on the mechanism of this neuropathy. There is no evidence as yet to suggest any interference with carbohydrate metabolism or other known enzyme mechanisms, though further study along these lines will be made if any new cases are seen. It is interesting that similar toxic effects have not been reported in patients taking glutethimide ("doriden"), which is chemically very similar. It is also interesting that several observers suggested, when seeing some of these patients before thalidomide toxicity was suspected, that the clinical features resembled those of neuropathy associated with malignant disease.

Two further articles have recently appeared in the German literature (Raffauf, 1961; Scheid *et al.*, 1961) in which 14 and 9 cases with neurological abnormalities attributed to thalidomide toxicity have been reported. The clinical features of these cases are similar to those reported here.

Summary

The neurotoxic effects of thalidomide in 13 patients are described.

Symptoms developed in from 2 to 18 months after starting regular medication, in doses varying from 50 to 400 mg. nightly.

The disorder was predominantly a sensory peripheral neuritis, but there was evidence of more widespread effects on the nervous system.

We thank Dr. R. W. Gilliatt, Dr. A. Willcox, Dr. A. Bloom, and Dr. J. Colover for referring patients to us; Dr. R. W. Gilliatt for help in interpreting the nerve-conduction tests; and Dr. D. M. Burley, medical adviser to the Distillers Company, for helpful discussions.

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The Derbyshire village of Eyam recently held its Plague Commemoration Service in the same spot where their forefathers met for church services nearly 300 years ago when plague killed hundreds of villagers. Tradition has it that the disease was brought to the village in a box of clothing that came from London in 1665 after London's great plague. The address was given from the rock platform once used by Rector William Mompesson, who was the village leader at the time. He had closed the church because of the risk of infection. Many of the plague victims lie buried in the fields near the spot where the service was held. (*Northern Whig*, August 28.)

VENEREAL DISEASE IN ADOLESCENTS

BY

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Recently attention has been focused on reports of increasing promiscuity among adolescents. As an index of this promiscuity much has been made, both here and in America, of the "increasing incidence of venereal disease" in the younger age-groups. King and Wisdom (1960) have discussed adolescents who attended for diagnosis at a venereal disease clinic in London in 1958 and 1959.

The *Concise Oxford Dictionary* defines an adolescent as "a person growing up between childhood and manhood (14-25) or womanhood (12-21)." Common usage restricts the top limit of the age-groups to the twentieth year.

The present factual study was planned because of the widespread concern over published reports and because of the absence in Britain of any recent comparative survey of venereal disease involving the younger age-groups. No attempt has been made to analyse the reasons underlying any increase shown, apart from drawing attention to some of the factors that have influenced the general trends of venereal disease during the period under review. The study was undertaken in Manchester and Salford, where, until 1954, two venereal disease clinics served a large part of the area. These were amalgamated in 1954 at St. Luke's Clinic, which now serves the same area. The age-group chosen was 15-19 years in both sexes. Accurate statistics are not available, but Table I shows the estimated adolescent population in Manchester and Salford in the years studied. It will be noted that a considerable decrease in the numbers at risk has occurred.

The records of patients attending the two clinics in 1938, 1939, 1949, and 1950, and St. Luke's Clinic in 1959 and 1960 have been studied. The years 1938 and 1939 were preferred to 1939 and 1940 because of the increasing influence of wartime conditions in the latter year. Only new patients who had had no previous treatment were included.

There are now suggestions that many genital infections formerly classified as non-venereal should be included among venereal diseases. Whether this is desirable is a moot point, since the lay mind tends to dwell too much on the venery and not enough on the disease. In a significant proportion of cases many such conditions, although genital and perhaps sexually acquired, are not associated with promiscuity. To make a true comparison over the years under review, only cases of early infectious acquired syphilis and acute gonorrhoea were included. The number of infections in each year was used, not the number of individuals involved.

TABLE I.—Estimated Adolescent Population (15 to 19 Years), Manchester and Salford

Year	Manchester		Salford		Totals	
	Males	Females	Males	Females	Males	Females
1938	31,565	33,517	8,100	8,100	39,665	41,617
1939	31,401	33,210	8,000	8,100	39,401	41,310
1949	22,580	23,314	5,850	5,900	28,430	29,214
1950	22,784	23,431	4,450	5,600	28,234	29,031
1959	21,963	22,140	5,400	5,400	27,363	27,540
1960	21,788	21,875	5,600	5,600	27,388	27,475

It should be noted that statistics supplied by venereal disease clinics can only show trends in the population and do not represent an accurate incidence of the disease.

Results

Table II summarizes the results. The findings have been grouped under the headings of syphilis and gonorrhoea and combined to give a total of venereal infections. The number in the adolescent age group is compared with the total number of infections in all age-groups. Table III gives the ages of infected adolescents in 1938 and 1960, and Table IV shows the distribution of venereal infection in all age-groups for the same years. It should be noted that in Table IV five-year groups are used till age 29, thereafter ten-year groups.

In 1938 the number of infections occurring in males aged 15-19 was 39, or 3.1% of the 1,227 males of all ages treated. The proportion rose slightly in 1939 and fell in 1949, coincident with the general decline in

venereal disease and also possibly because of the large numbers of young men on active service overseas at that time. In 1959, in the adolescent group, there were 62 (4.8% of 1,249), and in 1960 56 (4.9% of 1,123) treated. In the two decades, therefore, there has been an increase of 58% in the proportion of venereal infections treated in adolescent males.

In females, the increase is more dramatic. In 1938, of a total of 229 infections treated in females, 16 (6.9%) occurred among adolescents. In 1939, coincident with rumours of war, and war, 225 infections in females were treated, and of these 23 (10.2%) were in adolescents. Apart from a fall in 1950, the proportion of younger women treated has climbed steadily, until in 1959, of 315 infections, 75 (23.8%) were in adolescents, and in 1960 an almost exactly similar number. The proportion of infections treated in adolescent females has in the two decades increased by 345%.

Table III shows no significant trends except that, as would be expected, more venereal infections occurred in the older adolescents of both sexes. Table IV shows for 1960 an increase in the proportion of males infected in the 20-24 age-group: 30.8% of the total as compared with 22.4% in 1938. In the females the significant feature is the shift of the bulk of the venereal disease to the younger age-group.

Of 56 venereal infections in adolescent males treated in 1960, only 37 (66%) occurred in youths born in the United Kingdom. Of the remainder, 9 (16%) were in white immigrants from Eire, France, Turkey, Cyprus, and Mexico; 9 (16%) were in coloured immigrants from the Caribbean area and West Africa; and 1 (1.8%) was in a Pakistani.

Of 78 venereal infections treated in adolescent girls during 1960, only 4 (5.1%) were in immigrants—all from Eire. It is noteworthy that this series of adolescent females contained no coloured girls. In the same group, however, 13 (16.6%) infections were known to have been transmitted to or from coloured male consorts. Twelve of these infections were in girls from the United Kingdom and one in a girl from Eire. Many girls are reluctant to divulge details of consorts, and in 42 (53.8%) of the group no reliable information regarding consorts was available.

In males in 1960, the 56 infections in adolescents occurred in 51 individuals. Of the 5 (9.8%) who had repeat infections, two were from the United Kingdom and each had one further infection during the year, as had one Jamaican and one Mexican. One from the United Kingdom had two further infections during the year. In addition, the Jamaican had been treated for gonorrhoea on one occasion during the year at a near-by clinic.

The 78 infections in adolescent females during 1960 occurred in 72 individuals. The 6 (8.3%) who repeated were all from the United Kingdom and each had one further infection during the year.

Discussion

The above figures and the trends which they illustrate indicate an increase in venereal infections in adolescents during the period under review, especially in females (six times the increase in males). Practically one-quarter of the venereal infections in females treated in St. Luke's Clinic in 1960 occurred in this young group, and in males one-twentieth of the total was in adolescents.

TABLE II.—Incidence of Venereal Infection in Adolescent Males and Females, 1938-60

Year	Early Syphilis			Gonorrhoea			Total		
	Total All Ages	15-19		Total All Ages	15-19		Total All Ages	15-19	
		No.	%		No.	%		No.	%
<i>Males</i>									
*1938	141	4	2.8	1,086	35	3.2	1,227	39	3.1
*1939	141	2	1.4	916	39	4.2	1,057	41	3.8
*1949	247	6	2.4	1,064	28	2.6	1,311	34	2.5
*1950	133	—	—	897	27	3.0	1,030	27	2.6
1959	5	1	20	1,244	61	4.9	1,249	62	4.8
1960	6	—	—	1,117	56	5.0	1,123	56	4.9
<i>Females</i>									
*1938	20	1	5	209	15	7.1	229	16	6.9
*1939	27	4	14.8	198	19	9.5	225	23	10.2
*1949	59	11	18.6	230	36	15.6	289	47	16.2
*1950	38	7	18.4	146	20	13.6	184	27	14.6
1959	2	—	—	313	75	23.9	315	75	23.8
1960	3	—	—	326	78†	23.8	329	78	23.7

*Combined figures for Regent Road Clinic, Salford (since closed) and St. Luke's Clinic, Manchester.

† This figure includes one girl of 14 years 9 months.

TABLE III.—Age of Infected Male and Female Adolescents, 1938 and 1960

1958 and 1960							
		Age in Years					Total
		15	16	17	18	19	
<i>Males</i>							
1938 {	No.	1	4	5	13	16	39
	%	2.5	10.2	12.8	33.3	41.0	100
1960 {	No.	1	—	7	23	25	56
	%	1.7	—	12.5	41.0	44.6	100
<i>Females</i>							
1938 {	No.	1	3	4	1	7	16
	%	6.2	18.7	25.0	6.2	43.7	100
1960 {	No.	1*	4	16	25	32	78
	%	1.2	5.1	20.5	32.0	41.0	100

*This girl was aged 14 years 9 months.

TABLE IV.—Proportion of Infections in Males and Females by Age Groups. 1938 and 1960

		Age Groups						Total
		15 19	20 24	25 29	30 39	40 49	50 +	
Males								
1938	No.	39	276	353	395	110	54	1,227
	%	3.1	22.4	28.4	32.1	8.9	4.4	100
1960	No.	56	347	297	319	89	15	1,123
	%	4.9	30.8	26.5	28.4	7.9	1.3	100
Females								
1938	No.	16	72	48	75	14	4	229
	%	6.9	31.4	20.9	32.7	6.1	1.7	100
1960	No.	78*	124	66	49	10	2	329
	%	23.7	37.6	20.0	14.8	3.0	0.6	100

*This figure includes one girl of 14 years 9 months.

A general increase in venereal infections (especially gonorrhoea) has been reported by the treatment centres during the past few years. Some of this is due to factors which can readily be understood and which also play a part in the increase among adolescents.

Propaganda and publicity regarding venereal diseases have brought their existence to the notice of adolescents. Propaganda may not have a deterrent effect on their sexual adventures, but at least it informs them of the possible nature of their illness when it is contracted. They then seek advice early, often in the secrecy of a venereal disease clinic, rather than from their own practitioner, who may know the family intimately.

Recently, much more energetic steps have been taken to bring to treatment the source or any possible contacts of venereal infection. In St. Luke's Clinic, both contact slips and personal visits by a full-time social worker have been used. Neither method has been outstandingly successful, but some results have been obtained and female patients who might otherwise have gone untreated have been brought to the clinic. In females also the improvement and general use of cultural methods have resulted in more efficient diagnosis of gonorrhoea.

During national service adolescent males who contracted venereal disease were treated in military establishments. The run-down of national service during 1959 and 1960 may have influenced the number of young men treated in civilian clinics during these years.

Probably the most important single factor in the general increase of venereal infections in this country in recent years has been large-scale immigration (Watt, 1958). Some immigrants from Europe and Asia, especially students, waiters, and domestic helps, are adolescents.

In the mid-1950s immigration of West Indians and West Africans began and has continued on an increasing scale. Male immigrants greatly outnumber females and venereal disease has become very prevalent among the coloured males. Many become infected shortly after arrival in this country and become habitual attenders at venereal disease clinics. The vast majority of these coloured immigrants are in the older age-groups but some are adolescents.

This study has shown that in 1960 one-third of venereal infection in adolescent males occurs in immigrants. In 1956, in the same clinic, it was shown that over half the gonococcal infections in males of all age-groups occurred in immigrants (Watt, 1958). In white female adolescents a significant proportion of infection occurs after association with coloured males, all of older age-groups than the girls themselves. The exact incidence of such infection is difficult to determine.

In 1938, at the dawn of the chemotherapeutic era, only certain cases of gonorrhoea were as yet being treated with the sulphonamides, and infection entailed long weeks or months of therapy. As has been stated previously (Watt, 1958), this meant that in any one year one individual was limited in the number of gonococcal infections that could possibly be acquired. Because of the speed and efficacy of modern treatment, and since, at least for the present, gonorrhoea is the major problem, multiple reinfections have tended to increase the number of infections notified by the treatment centres.

In adolescents, as indeed in many adults, glib reassurance by the original consort that there is nothing wrong or that treatment has been obtained may lead to early resumption of sexual relations and further infection. Repeat infections do not appear to be a significant feature in the increase of adolescent venereal infection, and this may reflect again the relatively small proportion of coloured immigrants in the group.

Conclusions

The reasons given above may account for some of the increase in venereal infection among adolescents but cannot by themselves be held totally responsible. If it is accepted that trends in venereal disease mirror trends in promiscuity the inevitable conclusion must be that the increase in infection among adolescents during the period under review represents increased and possibly increasing adolescent promiscuity. Discussion of the reasons for this is outside the scope of this study.

The results are representative of trends in one highly industrialized urban area with a large immigrant population, and further studies in different areas might throw more light on the problem.

Summary

A comparative study of venereal infections found in adolescents reporting to a venereal disease clinic has been described. The period under review spanned two decades, from 1938 to 1960.

Only patients suffering from early syphilis and acute gonorrhoea have been included. Patients with less well-defined genital infections and rarer infections have been excluded.

The study indicates trends and not the incidence of disease.

Of 1,227 males treated in 1938 for venereal infections, 39 (3.1%) were adolescents. In 1960, of 1,123 males treated, adolescents numbered 56 (4.9%).

Of 229 females treated in 1938 for venereal infections, 18 (6.9%) were adolescents. In 1960, of 329 females treated, adolescents numbered 78 (23.7%).

Adolescents are forming an increased and perhaps increasing proportion of individuals treated for venereal infections. The increase is most marked in females, and in 1960 adolescents comprised almost a quarter (23.7%) of the females treated in the clinic.

General factors influencing this increase are described but cannot by themselves be held entirely responsible. Increasing promiscuity may play a major part. The increase is not due to an increase in the numbers at risk.

Further similar studies are suggested to determine the extent of the problem.

My thanks are due to Dr. C. Metcalfe Brown, Manchester, and Dr. J. L. Burn, Salford, who supplied the estimates of population.

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The White Fathers' Mission in the Northern Province of Nyasaland plans to spend about £27,000 on a new 28-bed hospital and house for the medical staff at Mzuzu. Work on the hospital is expected to start shortly. It is intended to use the hospital as a training school for African nurses.