on the supposition that women and children are larger consumers of milk than men and consequently form a more highly immunized group in the community.

This hypothesis, however, itself creates a difficulty, since naturally acquired immunity postulates contact with the infecting agent, and clinical disease may be expected to occur most frequently among those undergoing the immunization process—that is, as regards undulant fever, those having close contact with cattle and those most accustomed to drink milk, presumably children. It has been demonstrated that latent *abortus* infections are much most frequent in the occupation group mentioned than in the population as a whole (Wilson, 1932), and there is some reason to suppose that clinical disease occurs among them more frequently than the recorded incidence would suggest. In this respect, therefore, the hypothesis outlined may not be greatly at variance with the facts. But among children both latent infection and clinical disease are apparently very uncommon, a remarkable circumstance having regard to the known incidence of *abortus* infection of milk. It is possible that the disease manifests itself in a somewhat different manner in children, and in them a mild febrile disturbance is perhaps more likely to escape adequate investigation, its real nature remaining undiscovered. On the other hand the validity of the assumption that children are in fact large consumers of milk may be worth reconsideration. Inquiries such as those of Savage (1926), Gellatly (1933), and Burns (1933) in Somerset, Cambridgeshire, and Durham respectively suggest that the use of milk as a beverage in this country is decidedly rare. One wonders, indeed, whether the

drinking of milk, so far from being common among children, is not rather a habit acquired by adults, and one is led to speculate on the results which may follow the contemplated widespread distribution of raw milk in schools.

It has been suggested that the virulence of *Br. abortus* for man is being gradually increased by animal passage, and that ultimately case-to-case infection may follow and a fresh public health problem arise. Contagious abortion of cattle, however, appears to be a disease of some antiquity. Hull (1930) states that it was recorded by Moscall as long ago as 1567, and quotes from *The Complete Farmer* of 1807 instructions for dealing with infected animals. Any abrupt exaltation of virulence at this stage appears unlikely, but it does seem possible that the virulence of the *Brucellae* may be maintained through the exchange of strains between different animal species.

I desire to express my thanks to Drs. J. C. Yeoman, R. L. Dagger, and J. C. Mackay for permission to publish the clinical notes of their cases, and to Professor T. J. Mackie for advice and criticism in preparing this memorandum for publication.

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PROGNOSIS OF HAEMATEMESIS

A STATISTICAL REVIEW

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When considering the prognosis of any disease it is necessary to carry out a statistical investigation of a large number of cases of the condition. In the case of haematemesis this has been done frequently with conflicting results.

Hurst⁶ (1928) gives a mortality of 2.5 per cent. among cases of haematemesis following peptic ulcers at Guy's Hospital, and suggests that the stomach should be washed out with ice-cold water. At the Bellevue Hospital, New York, Hinton⁵ (1931) found a mortality of 20 per cent. among fifty-two cases of gross haemorrhage. Gordon-Taylor³ (1934) states that at the Middlesex Hospital the total mortality of haematemesis following peptic ulcers treated medically was 24 per cent., and that the mortality in those cases in which a second large haemorrhage occurred was 78 per cent. Aitken¹ (1934) divided the cases of haematemesis at the London Hospital into two groups—moderate and severe. The total mortality of both groups was 11 per cent. Most of the moderate cases recovered, whereas twenty-seven out of sixty-three severe cases died (43 per cent.). Meulengracht⁷ (1933) has recently treated 119 cases with a liberal diet immediately after the haematemesis: there were only two deaths in this series. This appears to be an entirely new method of treatment, the value of which it is difficult to assess. Chiesman² (1932), at St. Thomas's Hospital, reviewed 191 cases of haematemesis and gross melaena following peptic ulcers (occurring during the period 1925 to 1931 inclusive). The total mortality was 27 per cent., but in cases in which the haemorrhage was continued or repeated within twenty-four hours after commencement of treatment a mortality of 74

per cent. was shown. He did not distinguish between the severity of the different cases.

Cases Analysed

We have made a complete analysis of those cases which were admitted to St. Thomas's Hospital during the years 1924 to 1933 inclusive on account of, or with a history of, significant haematemesis or gross melaena occurring within fourteen days before admission, and also of those cases which developed significant haematemesis or gross melaena in hospital.

By significant haematemesis or gross melaena we mean that which is the obvious result of acute bleeding into the intestinal tract, thereby excluding a large number of cases which vomited small quantities of blood or had slight melaena. We have not divided the cases into aetiological groups, because of the difficulty of deciding the cause immediately following admission, and because even on discharge the cause is not proved in a number of cases. This difficulty is emphasized by Shaw⁸ (1933), who referred to Gutman's⁴ figures, in which in 21 per cent. of the cases no cause could be found.

We have divided the cases into two groups, according to their condition on admission to hospital, or (in the few cases which bled in hospital) immediately after the occurrence. Post-operative cases were excluded.

Group 1. Severe.—The cases whose clinical condition led one to suppose that the haemorrhage was severe, or those in which the examination of the blood showed the haemoglobin to be below 20 per cent.

Group 2. Moderate.—The cases whose clinical condition was not grave, or in which the haemoglobin was above 20 per cent.

By employing a strict definition and subdivision of haematemesis and melaena we have excluded a large number of cases which vomited up small quantities of blood or had slight melaena. Further, a number of cases have been placed in the moderate group which, with

Number and Type of Case	Total Mortality		Repeated Haematemesis			Treatment								
	Number of Deaths	Per cent.	Number of Cases	Mortality		Medical			Transfusion			Surgery		
				No.	Per cent.	Number of Cases	Mortality		Number of Cases	Mortality		Number of Cases	Mortality	
							No.	Per cent.		No.	Per cent.		No.	Per cent.
Severe ... 153	69	45.1	78	49	61.5	125	55	44.0	26	13	50.0	2	1	50.0
Moderate ... 238	15	6.3	28	7	25.0	223	10	4.9	11	1	9.1	4	4	100.0
Total ... 391	84	21.5	106	56	52.8	348	65	18.7	37	14	37.8	6	5	83.3

a less strict subdivision, might have been included with the severe cases. It is obvious, therefore, that the total mortality, as well as that of both groups, has been raised by this strict definition. Five cases were discarded owing to death from incidental disease, leaving 391 cases, of which 153 were severe and 238 were moderate. The total mortality was 21.5 per cent. (eighty-four cases), composed of severe cases, 45.1 per cent. (sixty-nine deaths), and moderate cases, 6.3 per cent. (fifteen deaths). In cases of repeated haematemesis—that is, cases which suffered more than one large haematemesis before or after commencement of treatment—the total mortality was 52.8 per cent. (fifty-six deaths among 106 cases), the severe cases showing a mortality of 61.5 per cent. and the moderate cases 25 per cent. The results are shown clearly in the accompanying table.

Result of Treatment

The effect of treatment is difficult to assess. All cases received medical treatment (rest in bed, morphine, rectal salines, and nothing by mouth): 348 cases received no additional treatment, and showed a total mortality of 18.7 per cent., severe cases (125) giving a 44 per cent. mortality and moderate ones (223) 4.9 per cent. Transfusion was performed in thirty-seven instances, with a total mortality of 37.8 per cent.; of these twenty-six were severe and showed a mortality of 50 per cent., and eleven were moderate and showed a mortality of 9.1 per cent.

Surgery was employed in an attempt to control the bleeding in only six cases, five of which died. In the successful case a posterior gastro-enterostomy was performed. There was marked pyloric obstruction in this case, in addition to haematemesis. Of the five fatal cases two were treated by transfusion and infolding of the ulcer; one by transfusion, infolding of the ulcer, and ligation of the coronary artery; one by transfusion and partial gastrectomy; and one by laparotomy and transfusion only—no ulcer was found.

The cases receiving surgical treatment are so few that useful deductions cannot be drawn.

Conclusion

1. In this large series of consecutive cases a strict definition of haematemesis and gross melaena is employed, and it appears that the total mortality from significant haematemesis and gross melaena is 21.5 per cent. This corresponds to Chiesman's and other recent figures, but differs from the earlier statistics.

2. The cases suffering from repeated haematemesis showed a mortality of 52.8 per cent., which is approximately the same as the severe cases.

3. The subdivision of cases into severe and moderate appears to be of value. In severe cases the mortality is approximately 50 per cent., whether treated medically with or without transfusion. In moderate cases treated medically the total mortality is 4.9 per cent. Most of

the cases receiving transfusion had "repeated haematemesis," thus accounting for the increase in mortality (9.1 per cent.).

We are indebted to the staff of St. Thomas's Hospital for permission to examine the records of the cases admitted under their care, and particularly to Dr. H. L. Tidy for his interest and encouragement.

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Clinical Memoranda

TUBERCULOUS MENINGITIS WITH RECOVERY

I think the accompanying report of a case of tuberculous meningitis with recovery may be of interest.

On June 19th, 1930, I was called to see a girl of 14, a boarder in a public school. She complained of a sore throat; her temperature was 102.6° F., and her general condition was good. On account of the appearance of the throat I took swabs on two successive days, but they were negative for diphtheria. The throat quickly cleared up, and by the 24th the patient said she felt quite well. Her temperature remained about 99.4°. Examination failed to reveal any other septic focus or any tuberculous focus.

On the morning of the 25th, and after a peaceful night, the patient awakened about 4.30 with severe headache. I saw her at 10.30 a.m., when there was no improvement in the headache, and there was a marked ptosis, especially left, which increased during the day. The pupils were equal, reacting, and slightly dilated, and all reflexes were normal. By the evening the left knee-jerk was very sluggish, the plantar reflex was flexor, and Kernig's sign was negative; there was no head retraction, but there was pain at the back of the head and neck when bending the head forward. During the day she lay motionless, and only spoke when spoken to, or to ask for drinks. Her temperature rose to 102°, her pulse was good, and her respirations were quiet and normal.

By the evening of the following day the patient was semi-comatose. The knee-jerks had disappeared; the plantar reflexes were probably flexor, but doubtful; and Kernig's sign was positive both sides. There was stiffness and pain in the back of the neck, severe ptosis, and the headache was extreme; there was also some earache. In view of this last symptom, and especially as the condition followed immediately upon a septic throat, I called in a consultant ear and throat surgeon for an opinion as to whether the meningitis was aural in origin, but he reported that the ears were normal.

At 10 p.m. a lumbar puncture revealed cerebro-spinal fluid under great pressure and clear, and immediately after its withdrawal the patient became more comfortable and alert