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RECOGNITION OF EMOTIONAL DISTURBANCE AND THE PREVENTION OF SUICIDE

BY

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More than 5,000 persons die annually by their own hand in England and Wales, and there is reason to suppose that their number will increase as the age structure of the population changes (Swinscow, 1951). There is no doubt about the size of the problem of suicide or of its claims for attention.

Sainsbury (1955) examined the social factors which favour suicide and suggested fields of study which might lead to the prevention of suicide through a programme of mental hygiene, but can any substantial proportion of the present toll of suicides be prevented now by medical action? The answer must depend upon how many potential suicides show signs which are recognizable as danger signals calling for medical help, how many of these danger signals are recognized as such, and how many would-be suicides, if recognized as emotionally ill, are then responsive to psychiatric treatment.

With these questions in mind the coroners' records of the suicides which occurred throughout Wales in the five years 1951-5 were examined. During the five years 881 suicides occurred among the permanent residents of the 12 Welsh counties (excluding Monmouthshire). Objection can be made to the validity of some kinds of information obtained from these sources. Witnesses may have been unintelligent, uninformed, unobservant, or biased. Despite this difficulty, however, it is probable that evidence regarding the behaviour, the demeanour, and the medical treatment of the suicides was substantially true.

The information so obtained fell into two classes—the earlier medical condition within about the last year of the suicides' life, and the condition some hours or minutes before death.

The Earlier Condition

Of the 881 suicides, 689 (78.2%) were known to have been under a doctor's care during the months before they died, and many of these were treated for conditions which appeared to have probably been related to psychiatric illnesses. Hypochondriasis, headaches, depression, or merely "nerves" were commonly reported. There is therefore reason for believing that many of the suicides were emotionally ill within the last month of their life. Of the 689, 122 (17.7%) had been referred to a psychiatrist, and 92 of these had been in a mental hospital, nearly two-thirds of them within their last year of life. The time which elapsed between their discharge from hospital and their death is shown in Table I.

TABLE I.—Time Which Elapsed Between Discharge from Hospital and Death

Time	No. of Suicides	Average No. per Month (Up to 1 Year)
<1 month	23	23
1 month to 6 months	26	5.2
6 months to 1 year	10	1.7
Over 1 year	33	
Total	92	

The largest group of suicides died more than a year after they left hospital, but these of course included persons discharged from hospital several years before. There was a very rapid decrease in the number of ex-patient suicides with the passage of time after their discharge. The most dangerous time was immediately after discharge. This finding agrees with the observations of Shneidman and Farberow (1957).

Among the 881 suicides only 46 (5.2%) were reported to have made an earlier attempt; it has been remarked elsewhere (Stengel, 1952) that most people who commit suicide are successful at the first attempt. Some of the suicides had shown the clearest signs of profound depression. Though the numbers of these are probably not complete they are still a substantial part of the total number: 81 (9%) had expressed a wish for death, and 55 of them had said that they intended to kill themselves.

Condition Immediately Before Death

The demeanour and behaviour of the suicides when they were last seen alive were routinely recorded in the inquest reports. The witnesses had been nearly always in close contact with the suicides, and a number of corroborative accounts by different and sometimes unconnected observers gave a picture which was probably substantially reliable. The state described was that which was apparent at most a few hours, and often only a few minutes, before death.

It is possible to group in a few categories the reported conditions just before death. These are shown in Table II.

As might be expected the largest group were depressed when they were last seen alive. The group comprising those emotionally disturbed, though not depressed, included a few who were clearly paranoid. Some were worried, mostly by domestic difficulties. Some had quarrelled immediately before their death. These last were of the kind described by Batchelor (1954). Their death was an angry impulsive response to frustration, and their attitude was typified by a

TABLE II.—*Numbers of Suicides, by Sexes, and Their Observed Condition Just Before Death*

Condition	Males	Females	Total	%
Depressed	210	131	341	38.7
Emotionally disturbed*	89	45	134	15.2
Drunk	17	3	20	2.3
Normal	215	91	306	34.7
Unknown	58	22	80	9.0
Total	589	292	881	99.9

* Emotionally disturbed refers to suicides who were described in various terms which indicated abnormality, but who were not apparently depressed. These were irritable, angry, worried, afraid, suspicious.

sensitive and determined 20-year-old nurse who considered that she had been unjustly treated by a nursing sister, immediately tendered her resignation, and retired to kill herself with phenobarbitone. When she was last seen alive she was "not miserable but annoyed."

The 2.3% who were drunk at the time of their death is a small proportion by comparison with the 10% reported by Stengel and Cook (1958), but the latter's suicides occurred in an exclusively urban population.

An impressive fact is the number of suicides who were said to have appeared normal immediately before their death. Only 46 of these, however, were reported to have appeared always normal and to have been completely inexplicable suicides. Most of this normal group, 260, had apparently improved just before their death. Of them it was recorded, "He was always moody, but he was normal when he went out" (to hang himself); "He ate a hearty breakfast—a change for him!" Twelve of those called normal were perhaps elated and were described as: "In high spirits"; "I never saw him so well." This corresponds with clinical experience that the stage of early apparent improvement in a depression is potentially a most dangerous time. A decision to die means a solution of problems, for an intending suicide is already detached from the difficulties which had beset him. Dr. Samuel Johnson, speaking of "the melancholy end of a gentleman who had destroyed himself," said, "I have often thought, that after a man has taken the resolution to kill himself, it is not courage in him to do anything, however desperate, because he has nothing to fear. . . . When Eustace Budgel was walking down to the Thames, determined to drown himself, he might, if he pleased, without any apprehension of danger, have turned aside and first set fire to St. James's Palace" (Boswell, 1851).

Among the 306 suicides who had appeared normal just before their death, did there occur a sudden suicidal impulse after they were last seen alive, or did there already lie beneath a calm exterior an intention to die? Many of the suicides had appeared well only a minute or two before their death. If, in these, there had been no suicidal intent when they last spoke to their relatives or friends, then the final change in their mental state must have been dramatic and almost instantaneous. The probability is that the intention to die was already there.

Several of the suicides in this study were certainly preparing to die when they were last seen alive and apparently well. Some had already written farewell letters when their relatives last saw them and found them to be normal. Typical of those who appeared unconcerned while they planned suicide was a woman of 64 who appeared severely depressed on the day before her death, when she said, "Have a good Christmas; I won't be with you." The next morning, at

7 o'clock she told her husband, "I'm pretty good this morning." At 8 a.m. she walked from her home toward the river with no other likely motive than the one which later was apparent. On her way she was joined by, and talked with, a neighbour, to whom she appeared completely normal. As they exchanged trivial conversation she glanced at the river from time to time, and when her companion left her she walked into it.

The frequency with which the suicides had appeared depressed, emotionally disturbed, or normal just before death increased or decreased with advancing years. This is shown in Table III.

TABLE III.—*Condition of the Suicides Just Before Death, by Age-groups*

Condition	< 30 Years		30–59 Years		60+ Years		Total
	No.	%	No.	%	No.	%	
Depressed	13	20.6	160	34.3	168	47.9	341
Emotionally disturbed	18	28.6	81	17.4	35	10.0	134
Drunk	1	1.6	16	3.4	3	0.9	20
Normal	26	41.3	165	35.6	115	32.7	306
Unknown	5	7.9	45	9.6	30	8.5	80
Total	63	100.0	467	100.3	351	100.0	881

Depression was proportionately more common among suicides aged 60 and over than among those under 30, and occupied an intermediate position in the intermediate age-group. Both emotionally disturbed and normal states were proportionately more common among suicides under 30 years old than among those 60 and over, and occupied an intermediate position in the intermediate age-group. At 60 and over there was a higher proportion of depressed suicides than of any other category. Under the age of 30 there was a higher proportion of apparently normal or emotionally disturbed suicides. The frequency with which depression was reported in those aged 60 and over agrees with the statements of other writers regarding the association between old age and depression (Batchelor and Napier, 1953; O'Neal *et al.*, 1956; Roth and Morrissey, 1952).

Evidence Given by Suicide Notes Regarding the Mental State

Of the 881 suicides, 136 left suicide notes: 83 were written by males, and 53 by females (14.1% of the male suicides and 18.2% of the female suicides). Suicide notes were written relatively more often by the younger suicides than by the older. Their numbers were: ages up to 29 years, 12 notes (19% of the age-group); ages 30 to 59, 82 notes (17% of the age-group); ages 60 and over, 42 notes (12% of the age-group).

Many of the notes showed that their writers on the point of death still desired the good opinion of their survivors, and felt impelled to explain and justify their act. More than half (79) of the notes gave a "reason for suicide"—usually an inability any longer to tolerate a painful situation. Only one of the notes showed simply an indifference to life. Among the older suicides physical illness or believed physical illness was much more commonly the "reason" than among the younger. Of 28 who complained of illness only four were under the age of 60. Only nine notes mentioned business or financial difficulties.

The instructions sometimes left by suicides regarding the management of their affairs revealed an attachment

to the things of this world which contrasts oddly with a wish to die. There were 30 notes which contained such instructions. In a different category were the 14 notes which were prominently displayed to warn others against gas or electricity, or to reduce their distress by telling them to call for help before entering the house.

Courbon (1934) remarked on the indifference to death which may be produced by the individual concept of it, and Zilboorg (1936) thought that the belief in after-life is one of the most powerful determinants of suicide. But though 79 notes explained what their writers were escaping from, only 30 gave any indication of what they believed they were going to. Two of these bade farewell in such terms that it appeared the separation was to be final; the other 28 showed a belief in a personal future in such phrases as "Till we meet again," or "I'll be watching over you." Though Zilboorg (1936) believed a desire to reunite with a dead loved one was a potent motive for suicide, only three notes revealed such a motive.

In 16 notes it was apparent that the prime motive for the writers' suicide was malice. For each of these 16 suicides there was evidence of a recent quarrel, of psychopathic behaviour, or of alcoholism. One such suicide was a typical example of the impulsive psychopathic gesture described by Batchelor (1954) which might follow a quarrel or an injury and which is intended to punish the survivors. A man aged 32, discharged from the Army as a psychopathic personality, had been drinking excessively for some days with his brother. He was found drowned in a dock, having been drunk when he was last seen alive. He was not known to have threatened suicide, and his death would have been meaningless and probably dismissed as accidental if it were not for a derisive note found in his pocket which said, "Well, Bill, [his brother] laugh this off. I got on your nerves, what a laugh. You got on mine too. Hope you enjoy the funeral, ha ha. Don't forget to wear a flower, ha ha." No quarrel was admitted by the brother, but the remark "I got on your nerves" suggests that the accusation had recently been made.

The contents of the suicide notes tended to vary with the age of the writers. References to the hereafter were made proportionately much more often in notes written by suicides over 60 years old. They occurred in 14 (33.3%) of the notes written by that age-group and in 16 (17%) of the notes written by those under 60. Instructions regarding the management of affairs occurred in the same proportions as those mentioned above: 33.3% for those 60 and over and 17% for those under 60. Directions intended to protect survivors from danger or distress were also proportionately much commoner in the notes written by the older than in those written by the younger group: 6 (15.3%) for the older, and 8 (8.5%) for the younger.

The relative frequencies were reversed, however, for notes containing wounding and malicious messages. Such messages occurred in 3 (7.1%) of the notes written by those aged 60 and over, and in 13 (13.8%) of those written by those under 60. Only 11 of the suicides were under the age of 20 years, and three of these (two schoolboys of 14 and a girl of 17) left notes. The contents of these notes were reproachful and self-pitying, and said, "I'm sick of slaving for Dad, a mean ungrateful man," and "Now you'll be able to get all you wanted to."

Summary and Conclusions

With a view to finding whether the number of suicides might be reduced immediately by early medical recognition and treatment rather than by longer-term social measures, the coroners' records were examined for the 881 suicides which occurred in Wales in the five years 1951-5. Information was collected regarding the presence of signs of emotional disturbance, the frequency of danger signals which called for immediate preventive action, the number of suicides who had received medical attention, and the number who died despite their having received psychiatric treatment.

As regards the earlier signs of emotional disturbance, 78% had been treated by their doctor for symptoms which appeared often to have been related to psychiatric disorders. This is a much higher proportion than the 40% who had received medical attention in the group of suicides reported by Parnell and Skottowe (1957). Nine per cent. had openly wished for death or had said that they intended to kill themselves.

During their last hours 39% appeared depressed, and most of the 35% who appeared normal had been depressed previously. Smaller proportions were drunk or emotionally disturbed though not depressed. Depression immediately before death was reported most commonly in suicides aged 60 and over. A normal demeanour just before death was reported most commonly in suicides below the age of 30. The normal and emotionally disturbed states became less common with advancing age, while depression became more common.

The contents of the suicide notes tended to vary with the age of the suicides and reflected the demeanour of the different age-groups. Complaints of physical illness, references to the hereafter, and a concern for relatives were most usual in the notes written by the older suicides, the age-group in which depression was commonest; while messages showing wounding and malicious motives were found more often in notes written by the younger group, the age-group in which normal demeanour and emotional disturbances other than depression predominated.

In most of the suicides, therefore, there had existed signs of emotional abnormality which differed to some extent according to age and which varied in degree from complaints of "nerves" to suicidal threats.

Many of those who had been emotionally disturbed for a time which would have made intervention possible did not receive psychiatric treatment, for, though 78% had been attended by their doctor, only 18% of these had been referred to a psychiatrist. It is not suggested that these were all recognizable as potential suicides, but it is likely that a substantial number showed a need for psychiatric attention, and certainly wishes for death and threats of suicide did not always receive the attention they deserved.

It must be conceded that psychiatric treatment cannot prevent all suicides. The explosive and sudden suicide probably cannot be prevented, and it is doubtful whether medical intervention can save a really determined would-be suicide. The fact that 92 committed suicide despite their having been treated in a mental hospital might call into question the value of such treatment, but this number must be contrasted with the very large number of attempted suicides and potentially suicidal patients who were treated in mental

hospitals throughout Wales in the five years and who did not subsequently commit suicide. One important fact which the death of these 92 ex-mental-hospital patients does demonstrate is the need for vigilance by family doctors and psychiatric out-patient clinics in the months immediately after patients' discharge from hospital, for nearly two-thirds of the 92 died within a year of their discharge.

The examination of the 881 suicides suggests that the number of suicides could be reduced now by medical means; for (1) signs of emotional abnormality were commonly present for some time before death, (2) comparatively few had received psychiatric treatment, (3) signs of profound depression sometimes did not receive the urgent attention which would have been given to a medical or surgical emergency, and (4) comparatively few of the large population "at risk" in mental hospitals later commit suicide.

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UROPEPSINOGEN LEVEL IN POST-GASTRECTOMY CASES

BY

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The existence of a pepsin-like proteolytic enzyme in the urine has been known for nearly a century (Brücke, 1861). In 1890 Bendersky named the substance uropepsin, but the final proof of its identity came from experiments by Mirsky *et al.* (1948). That urinary pensinogen excretion quantitatively reflects the gastric pepsin output was shown satisfactorily by Janowitz and Hollander (1950) and Spiro *et al.* (1950), who also showed it as an index of adrenocorticotid activity. Attempts to utilize its assay for diagnostic purposes in cases of gastric and duodenal ulcer were made by Podore *et al.* (1948), Mirsky *et al.* (1948), Janowitz *et al.* (1950), and Hirschowitz (1953).

According to Sircus (1954), "the measurement of the excretion of uropepsinogen has the advantage over test

meals of providing a quantitative estimation of peptic-cell function with the minimum of disturbance of the patient and without the aid of artificial stimuli." It was for this reason that a series of 90 patients on whom gastrectomy had been performed, on account of peptic ulceration, between January, 1954, and October, 1956, were followed up. The uropepsinogen level was assayed in 75 cases on the average 18 months post-operatively, employing Fawcett's (1951) adaptation of the methods of Bucher (1947) and Mirsky *et al.* (1948) using the substrate recommended by Orringer *et al.* (1950).

The results are expressed as the number of units of uropepsinogen per hour (U.P./hr.), where a unit of uropepsin is the same as that of Mirsky *et al.* (1948), who defined it as "that quantity which, during a 10-minute incubation of the standard assay, releases 1 mg. of 'tyrosine-like' substance," and correction for dilution after the 30-minute incubation period being 1 unit/100 ml. of urine $\equiv$ 0.0015 mg. of tyrosine.

Method.—Each patient was instructed how to collect a full 24-hour specimen of urine—namely, voiding the bladder at 8 a.m. and discarding the sample; then collecting all urine until 8 a.m. next day, when the bladder is again voided—this time the sample being kept. These 24-hour specimens are, however, not always accurate in spite of detailed instructions to patients; the uropepsinogen level was estimated in 75 of the 90 patients studied.

Results

The uropepsinogen level varied from 0 to 5.8 U.P./hr., and we were able to divide the 75 cases into the following groups clinically.

Good Surgical Result but General Health Poor (8 cases).—In this group the uropepsinogen level was found to be less than 0.7 U.P./hr. in all cases. Two patients had contracted phthisis and one pernicious anaemia, four complained of an ill-diagnosed ill-health showing a mild microcytic anaemia, and only one showed radiological evidence of stomal ulceration. No patient complained of dyspepsia.

Good Result (48 cases).—Apart from two who were unreliable witnesses, the rest stated that they had never felt better, and the uropepsinogen levels in this group were between 0.8 and 3.0 U.P./hr.

Good with Occasional Symptoms (9 cases).—All these patients admitted to occasional dyspepsia in spite of careful diet, but in none was there any radiological evidence of stomal ulceration. Uropepsinogen level in this group was between 3.1 and 4.1 U.P./hr.

Slight Symptoms (7 cases).—All admitted having flatulence with occasional severe dyspepsia, and in four there was radiological evidence of stomal ulceration. The uropepsinogen level was 4.2–5.1 U.P./hr.

Dyspepsia (3 cases).—These three noticed their symptoms had returned very quickly after surgery; their uropepsinogen level was in excess of 5.2 U.P./hr., but in none was it more than 5.8 U.P./hr.

Summary

From a series of 90 post-gastrectomy cases, uropepsinogen estimation was carried out in 75 cases on an average of 18 months after operation. There was a close correspondence between the clinical results of gastrectomy and the uropepsinogen level. Therefore it is suggested that if a more accurate method of collecting 24-hour specimens of urine were available the uropepsin-