TWO YEARS OF BED PROCUREMENT FOR PATIENTS WITH SPINAL CORD LESIONS¹

A Report on Progress and Experiences at the Bed Procurement Service at the Industrial Injuries Insurance Institute for Research in Traumatology at Frankfurt/Main

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TRYING to summarise Sir Ludwig Guttmann's fundamental life-work in one sentence one could say as follows: the comprehensive rehabilitation of sufferers from spinal cord impairment from the very beginning up to the end of the whole treatment will lead to the best results in spinal units. This statement has been confirmed as correct by the experiences of numerous authors all over the world (*e.g.* in German Arens, Bürkle de la Camp, Bundesärztekammer, Guttmann, Leimbach, Lemberg, Meinecke 1970, Paeslack 1968, 1971, 1977, Probst). In consequence, there is no question that every sufferer from a spinal cord lesion should be transferred to a spinal unit as early as possible, regardless of the origin of the paralysis or to which insurance the patient may belong. There is no doubt that this cannot be realised in most countries. In the specialised centres there is only an insufficient number of beds available

The situation in the Federal Republic of Germany has been described in English in detail previously (Meinecke, 1964, 1967, 1969; Stoephasius). Within the last 20 years the situation has very much improved and the Industrial Injuries Insurance Institutes have been of leading importance in this respect. In 1978 they published a second edition of a memorandum: 'About the reorganisation of spinal centres in the Federal Republic of Germany with guidelines for reconstructions' (Hauptverband der Gewerblichen Berufsgenossenschaften). Here they demanded centres of 60, 80 or 100 beds each, which should be distributed all over the country in order to provide special care as near as possible to the patient's native place.

¹ Dedicated to Sir Ludwig Guttmann's 80th birthday.

A look at the map (Fig. 1) shows clearly that these conditions are not fulfilled, neither with regard to the size of the centres nor geographically. Only five centres are in accordance with the above mentioned memorandum.

A physician responsible for the primary care of such a patient and willing to transfer him to a spinal unit had to ring up all the different centres. That was time-consuming, unsuccessful in many cases, and often he was not familiar with the addresses of the mostly overcrowded centres. The result caused many disadvantages for the patients, the physicians and the mostly overcrowded hospitals.

FIG. 1

Spinal units for admission of recent cases in the Federal Republic of Germany.

TABLE I
Addresses of the units in the Federal Republic of Germany

Town	Institution	Medical Director/ Head of the Unit	Tel. no.
Bad Wildungen - Reinhardshausen	Werner-Wicker-Klinik 3590 Bad Wildungen- Reinhardshausen	Dr Gerner	0 56 21/8 31
Bayreuth	Krankenhaus Hohe Warte 8580 Bayreuth	Priv.-Doz. Dr Grüninger	09 21/28 01
Berlin (ZE)	Krankenhaus Zehlendorf Reha- und Sonderstation für Querschnittgelähmte 1000 Berlin-Zehlendorf	Dr Drossel Dr Kisten	0 30/8 10 21
Berlin (UK)	Orthop. Univ.-Klinik Oskar-Helene-Heim Clayallee 229 1000 Berlin	Prof. Dr Friedebold	0 30/81 30 11
Bochum	Chir. Univ.-Klinik BG-Krankenanstalten „Bergmannsheil-Bochum“ Hunscheidtstraße 1 4630 Bochum	Prof. Dr Rehn Dr Bötzel	02 34/30 21
Duisburg	BG-Unfallklinik Großenbaumer Allee 4100 Duisburg-Buchholz	Prof. Dr Hierholzer Dr Turban	02 03/7 68 81
Frankfurt/Main	BG-Unfallklinik Friedberger Landstr. 430 6000 Frankfurt/Main	Prof. Dr Contzen Dr Stock	06 11/1 50 11
Hamburg	BG-Unfallkrankenhaus Bergedorfer Straße 10 2050 Hamburg 80	Dr Zimmer Dr Böttcher	0 40/73 91 11
Heidelberg	Abteilung für die Behandlung und Rehabilitation Querschnittgelähmter der Orthop. Univ.-Klinik Schlierbacher Landstr. 200a 6900 Heidelberg	Prof. Dr Paeslack	0 62 21/80 61
Hess. Lichtenau	Orthop. Klinik und Rehabilitationszentrum der Diakonie 3436 Hess. Lichtenau	Prof. Dr Langhagel Fr. Dr Witzenrath	0 56 02/20 21
Homburg/Saar	Orthop. Univ.-Klinik 66 50 Homburg/Saar	Prof. Dr Mittelmeier	0 68 41/16 22 03
Karlsbad- Langenstein- bach	Südwestdeutsches Rehabilitations- krankenhaus 7516 Karlsbad 1	Dr Aalam	0 72 02/6 18 13 0d.
Koblenz	BG-Sonderstation für Schwerunfall- verletzte Ev. Stift St. Martin Johannes-Müller-Straße 5400 Koblenz	Prof. Dr Dürr Dr Lang	0 72 02/6 18 14 02 61/1 00 11
Ludwigshafen	BG-Unfallklinik Pfennigsweg 13 6700 Ludwigshafen-Oggersheim	Dr Arens Fr. Dr Haddenbrock	06 21/6 81 01
Murnau	BG-Unfallklinik 8110 Murnau/Obb.	Prof. Dr Probst Dr Ruidisch	0 88 41/1 91
Tübingen	BG-Unfallklinik Rosenauer Weg 7400 Tübingen	Prof. Dr Weller Dr Bilow	0 70 71/60 61

Methods

Recognising this unsatisfactory situation the Central Association of the Industrial Injuries Insurance Association opened on 2 August, 1976 at the Industrial Injuries Insurance Institute for Research in Traumatology at Frankfurt/Main, in close cooperation with Industrial Injuries Insurance Institutes' Accident Hospital at Frankfurt/Main, a Bed Procurement Bureau for Patients with Spinal Cord Lesions (Clearing-Agency). The service is available round the clock for all patients regardless the cause of paralysis and the insurance responsible for him. The clearing-agency is in close cooperation with 16 spinal units (Table I), dealing with spinal cord lesions in the acute stage. It gets information about beds available at these units and any alteration immediately. The above-mentioned list has been published several times. The hospitals recently have been informed directly by a report about the first year of activity of the clearing-agency (Meinecke, 1978). Hospitals admitting a recent case are requested to contact first the centres in the neighbourhood. If they cannot admit the patient the hospital should then contact the clearing-agency. If there are vacancies the appellant will get this information and is asked to discuss all further questions about transport and admission with the spinal unit concerned. If there are no vacancies the appellant is asked to call the units in the neighbourhood again, referring to the negative information given by the clearing-agency. At the moment the procurement is restricted to those patients who are seeking admission to spinal units for the first time since the paralysis has occurred; also who are staying in hospital from the beginning without any interruption, that is recent cases. There is no legal claim for procurement.

Results

Within 23 months there were 161 demands and Table II shows to which insurance the patients belonged. In 86 cases (53 per cent), a bed was found immediately. The inquiries came in mostly within the first 24 hours after the onset of the lesion and procurement was possible usually within the next 24 hours. Inquiries made by the clearing-agency on non-procured patients in the first hospital showed clearly that most of them could be transferred to a specialised service on the same day, or within the following week.

TABLE II
Insurance of the announced cases from 2 August 1976 to 30 June 1978

	Announced	Procured	Not procured
Industrial injuries insurances	30	16	14
Legal sickness insurances	87	45	42
Armed forces	4	1	3
Disabled ex-soldier administration	—	—	—
Welfare administration	2	1	1
Private insurances	1	1	—
Other insurances	1	1	—
Unknown	36	21	15
Total	161	86	75

It was not advisable to establish waiting lists as this would result in waiting time between the onset of the lesion and the possible procurement for the patient. By that, the complication rate for all patients would increase, whereas the aim of this clearing-agency is to avoid complications as much as possible.

Further Consequences

Every 6 months all units concerned give a report about their figures of admissions of recent cases within that time. The report's content can be seen in detail in Table III. Some of these results after 23 months of activity are summarised in Tables IV and V. There is a constant ratio of tetraplegics : paraplegics of 40 : 60. The results are based on 500 beds within the units concerned. There was an overall number of admissions of 1296 cases, with an average number of 732 cases/year. There is no doubt that there is still a great number of unknown cases.

TABLE III
Sheet 1: Recent cases

Sender:.....		Time: from..... to	
1.	Special beds for paralysed patients	.....	.....
2.	Admissions of recent cases between..... and .....	.....	.....
2.1.	of them female	.....	.....
2.2.	of them male	.....	.....
2.3.	of them children (up to 14 years of age)	.....	.....
2.3.1.	of them female	.....	.....
2.3.2.	of them male	.....	.....
2.4.	of them tetraplegics	.....	.....
2.5.	of them paraplegics	.....	.....
2.6.	of them without procurement by the clearing-agency	.....	.....
2.7.	of them with procurement by the clearing-agency	.....	.....
3.	Causes of paralysis of the under 2 mentioned patients	.....	.....
3.1.	Accident at work	.....	.....
3.2.	Road accidents (way to and back from work included)	.....	.....
3.3.	Sport accidents (diving excluded)	.....	.....
3.4.	Diving	.....	.....
3.5.	Suicide attempts	.....	.....
3.6.	Outside killing attempts	.....	.....
3.7.	Diseases	.....	.....
3.8.	Congenital deformities	.....	.....
3.9.	Other accidents	.....	.....
4.	Insurances of the under 2 mentioned patients	.....	.....
4.1.	Industrial injuries insurances	.....	.....
4.2.	Legal sickness insurances	.....	.....
4.3.	Armed forces	.....	.....
4.4.	Disabled ex-soldier administration	.....	.....
4.5.	Welfare administration	.....	.....
4.6.	Private insurances	.....	.....
4.7.	Other insurances	.....	.....
4.8.	Unknown	.....	.....

TABLE IV
Insurances of 1296 recent cases

	Industrial injuries insurances	Legal sickness insurances	Armed forces	Disabled ex-soldier administration	Welfare administration	Private insurances	Other insurances	Private payer
Total	421	698	39	2	11	39	26	32
%	32.5	53.9	3.2	0.2	1.5	3.2	2.0	2.5

TABLE V
Causes of paralysis of 1296 recent cases

	Accident at work (without way to and back)	Road accident (way to and back from work included)	Sport accident (diving excluded)	Diving	Other causes and diseases
Total	292	592	45	48	319
%	22.5	45.7	3.5	3.7	24.6

Suicide attempts (N = 1.033) = 4.5%
Diseases (N = 1.033) = 12.5%

unaccounted for. Six per cent of all admissions were arranged by the clearing-agency's procurement.

The heads of the units concerned meet every 6 months regularly in order to discuss problems and experiences. Thus there was set up a special study group in the Federal Republic of Germany and it is also planned to invite German-speaking specialised colleagues from other countries to join those meetings.

In order to obtain rigid figures about the readmissions and the outpatients there have been developed additional sheets meanwhile (Tables VI and VII) and the results will be summarised every 6 months. As this has been done up to now only for a short time it does not seem to be useful yet to publish these figures.

Discussion

The establishment of this clearing-agency has been proved very satisfactory and it becomes recognised more and more. The support the agency can give is

TABLE VI
Sheet 2: Readmissions

Sender:.....		Time: from.....	to.....
I.	Readmissions between..... and.....		
1.1.	of them female		
1.2.	of them male		
1.3.	of them children (up to 14 years of age)		
1.3.1.	of them female		
1.3.2.	of them male		
1.4.	of them tetraplegics		
1.5.	of them paraplegics		
2.	Causes of readmissions		
2.1.	Complications		
2.1.1.	Skin		
2.1.2.	Respiratory system		
2.1.3.	Cardiovascular system		
2.1.4.	Urinary tract		
2.1.5.	Skeleton and locomotor system (pressure sores excluded)		
2.1.6.	Neurological system (e.g. spasticity, pain)		
2.2.	Repeated training		
2.3.	Social reasons		
2.4.	Non-paralysis related causes		
3.	Insurances		
3.1.	Industrial injuries insurances		
3.2.	Legal sickness insurances		
3.3.	Social insurances		
3.4.	Armed forces		
3.5.	Disabled ex-soldier administration		
3.6.	Welfare administration		
3.7.	Private insurances		
3.8.	Other insurances		
3.9.	Unknown		

TABLE VII
Sheet 3: Outpatients

Sender:.....		Time: from.....	to.....
1.	Outpatients between..... and.....		
1.1.	of them female		
1.2.	of them male		
1.3.	of them children (up to 14 years of age)		
1.3.1.	of them female		
1.3.2.	of them male		
1.4.	of them tetraplegics		
1.5.	of them paraplegics		
2.	Causes of transfer		
2.1.	Check-up		
2.2.	Expert opinion		
2.3.	Consultation		
2.4.	Periodical medical treatment		
2.5.	Physiotherapy and sport		
2.6.	Occupational therapy		
3.	Insurances		
3.1.	Industrial injuries insurances		
3.2.	Legal sickness insurances		
3.3.	Armed forces		
3.4.	Disabled ex-soldier administration		
3.5.	Welfare administration		
3.6.	Private insurances		
3.7.	Other insurances		
3.8.	Unknown		

gratefully appreciated by patients, physicians and spinal units. The possibilities will improve when a sufficient number of beds in special units can be provided.

Today there are 662 beds available in the institutions concerned. There are additional facilities in hospitals either to take care of single recent cases or to admit patients for further training when the acute and early stages have passed. That brings the number to a total of 762 beds. Forty-four per cent of all the institutions belong to the Industrial Injuries Insurance Institutes directly, or are getting financial support by them. Up to 1981 there is an estimated increase of another 180 beds which would lead to a total of 942 beds, 842 of them in institutions capable of admitting recent cases.

The figures summarised regularly from all the institutions concerned are established and seem to confirm the estimates done in the past, *e.g.* it can be expected that 1000 new lesions a year will occur in the Federal Republic of Germany, about 15 per cent being of non-traumatic origin. The same result may be expected by collecting the figures of readmissions and outpatients. The great number of unknown patients must be stressed here again but this will decrease within the next few years as the registration of cases is improved.

These figures represent a reliable basis with regard to planning programmes for the future. By that, administrators as well as politicians, are becoming aware more and more of the statistics given by the clearing-agency. There is a steady and

close cooperation. It is, no doubt, already evident that there does not exist any overcapacity and that there will have to be new units in those parts of Germany where there is still a great lack of spinal centres. That can be seen from Figure 1. With an increase of special facilities the aftercare of discharged patients (readmissions for complications, training, check-ups, temporarily interrupted care at home etc). will improve. The smaller units cannot be given up yet.

The special study group discusses medical, social, vocational and medico-legal problems at short intervals. On a comparable basis special questions of research, *e.g.*, conservative or operative treatment of spinal or spinal cord injuries, new methods of urological treatment, can be handled together within a framework of criteria over a longer period of time. Questions coming from outside to this group can be discussed and answered on a broad basis of experience. The regular meetings will benefit the knowledge between all the participants, the understanding with each other and the cooperation. New colleagues entering this group will find advice and help quickly.

Conclusions

The clearing agency has proved as an efficient method of removing the difficulties from less experienced physicians and from hospitals which are not prepared to undertake the special care for patients with spinal cord lesions. With regard to the existing lack of beds in spinal units, long distances between the patient's home and the place of treatment are still unavoidable. The smaller specialised institutions are still urgently needed. The special study group formed by the clearing-agency offers both an extensive exchange of experiences and firm figures as an effective aid for planning programmes for the future. This will facilitate today's still insufficient facilities for those patients who do not belong to the Industrial Injuries Insurance Institutions. In addition, this working group represents an experienced committee and is available to answer questions arising from the broad plan of the comprehensive treatment of patients suffering from spinal cord lesions according to Sir Ludwig Guttmann.

We are indebted to the Central Association of the Industrial Injuries Insurance Association of the Industrial Injuries Insurance Institutes and its institutions concerned, which took the initiative to set up the clearing-agency and for the great support given to it and to the specialised study group from the beginning. We are grateful to the Industrial Injuries Insurance Institute's Accident Hospital at Frankfurt/Main as well as to all physicians of the spinal institutes concerned for their great assistance and close cooperation. We are thus enabled to dedicate this paper today, as a group, to Sir Ludwig Guttmann on the occasion of his 80th birthday. We are glad to be able to express our deep gratitude, not only for the great life-work he has done, but also for the interest and the great help he has given during the years to the tetra- and paraplegics in the Federal Republic of Germany and to all those who are engaged in this field in this country in order to improve the prospects of these patients.

SUMMARY

The total number of beds provided in all specialised centres for the treatment of patients with acute spinal cord lesions in the Federal Republic of Germany is still insufficient. Therefore the attempt to transfer those patients to a centre from

another hospital immediately after the lesion has occurred is very difficult. In order to assist physicians of the hospitals (where the patient has been first admitted) in the time-consuming task to find a vacancy in a specialised unit, the Central Association of the Industrial Injuries Insurance Association of the Industrial Injuries Insurance Institutes set up a 'Bed Procurement Bureau for Patients with Spinal Injuries' on 2 August, 1976. The heads of the units concerned set up a special study group in close connection with this clearing-agency in order to elaborate reliable data about the present situation of care for recently paralysed people, and to discuss further problems as well as planning programmes. They meet every 6 months. The organisation of the clearing-agency, the experiences gained within the first 23 months of activity since the opening, the spinal units situation at the present time, and their further development are reported.

RÉSUMÉ

Dans la République Fédérale de l'Allemagne, l'hospitalisation de tous les paraplégiques lésés récemment dans un centre spécialisé cause beaucoup de difficultés, car le nombre des places de traitement disponibles n'y suffit pas.

Pour assister les médecins dans les hôpitaux qui admettent les premiers ces lésés, en leur recherche d'une possibilité d'admission dans un centre spécialisé, la Fédération des Associations professionnelles établit en août 2, 1976 un 'Centre communiquant les lits à la disposition des paraplégiques'. Les directeurs des centres y participants se réunirent dans un groupe de coopération, qui discute tous les six mois régulièrement des problèmes et des questions en traitement et établissement de paraplégiques. On rapporte de l'organisation du 'Centre communiquant les lits à la disposition des paraplégiques', des expériences que l'on gagnait pendant les 23 mois depuis sa fondation, de la situation actuelle et du développement futur des centres spécialisés au traitement de lésions médullaires.

ZUSAMMENFASSUNG

In der Bundesrepublik Deutschland bereitet die sofortige Aufnahme aller frischen Querschnittgelähmten in ein Spezialzentrum große Schwierigkeiten, da die Zahl der zur Verfügung stehenden Behandlungsplätze dort nicht ausreicht. Um Ärzten in den erstaufliehenden Krankenhäusern bei der zeitraubenden Suche nach einer Aufnahmemöglichkeit in einem Zentrum zu helfen, hat der Hauptverband der gewerblichen Berufsgenossenschaften am 2. August 1976 eine 'Anlaufstelle für die Vermittlung von Betten für Querschnittgelähmte' eingerichtet. Die Leiter der daran beteiligten Zentren haben sich zu einem Arbeitskreis zusammengeschlossen, der realistische Grundlagen über die aktuelle Versorgung Querschnittgelähmter erarbeitet und anstehende Probleme in Abständen von 6 Monaten regelmäßig erörtert. Es wird über die Organisation der Anlaufstelle, die Erfahrungen innerhalb der ersten 23 Monate seit ihrem Bestehen, über den gegenwärtigen Stand und die künftige Entwicklung der Zentren berichtet.

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