NATAL HAND CLUB : SUMMARIES OF PAPERS

Abstracts of papers read at the meeting of the Natal Hand Club held at the Medical School, Durban, on 11 November 1965:

CAUSATION OF HAND INJURIES IN INDUSTRY

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Figures on the incidence of industrial injury in this country show that accidents have increased at a rate greater than that of the increase in the industrial population; about 20% of our workers sustain injury each year, and of these the largest component is the hand injury, comprising 36% of all injuries. Comparative figures quoted from Britain and the USA are 25% and 23% respectively.

Dealing with the causes of hand injury, the commonest cause is the handling of material; the next highest cause—more than 50% less—is the operation of power-driven machinery. However, all injuries have general causes, and the 2 greatest are lack of background, health and viability in the worker, and of management skills at all levels of supervision. As industrial doctors we must answer the question 'Does it pay?' with a further question 'Pay whom?', and attempt to re-establish the habits of social conscience and compassion.

The medical historian Siegerist postulated that each civilization makes its own diseases, and together with bronchial carcinoma and atherosclerosis, injury has become the major affliction of our time.

THE ORGANIZATION OF A FACTORY MEDICAL SERVICE WITH SPECIAL REFERENCE TO HAND INJURIES

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There are a number of factors that influence the requirements of a factory medical service, e.g. the type of factory or industry concerned, which is then liable to produce its own most common type of injury; the question of personnel employed (whether they are predominantly skilled or unskilled workers, and a consideration of the varying racial groups involved); whether the medical officer is part- or full-time; and the amount of money available for the service, which depends on the size of the industry and a sympathetic attitude on the part of the management.

To consider an average factory employing up to 2,000 workmen of mixed skills, one would expect 50% of all injuries to involve the hands. The following would be the requirements of the medical service, given in general terms:

1. *The premises* required are a waiting room, a casualty operating theatre for minor operations and dressings, with facilities for sterilizing instruments and dressings, and an office for clerical work and the storage of records.

2. *The staff* should consist of:

(i) A Medical Officer who should attend the factory daily to check on any problems that may arise. He must be available to attend any major injury within a short period of time. Every injured workman, no matter how minor the injury, should report immediately to the sick bay. The shorter the time interval between injury and treatment, the lower the incidence of infected wounds in hands. A survey conducted by the College of General Practitioners in Birmingham in 1962, where the accident centre controls 2,000,000 workers, revealed that the control of sepsis reduced the loss of working hours by 30%.

Not every injury is reported to the Workmen's Compensation Act Commissioner, for only those injuries that cause more than 2 days off duty or are liable to cause claims for permanent disability are reported. The result is that the WCA Commissioner holds a watching brief over the efficiency of this factory's medical service. Excessive claims on the accident fund may render the company liable to increased premiums, and conversely reduced premiums and rebates are obtained by reduced notification. The Medical Officer, however, must accept responsibility for the notification of injuries, and must use his own judgement in these cases. Major injuries are transferred to hospital for treatment.

(ii) A full-time trained sister is required to run the sick bay.

(iii) One or more White or non-White orderlies are required to work under the supervision of the sister and medical officer.

(iv) The factory safety officer is closely associated with accidents reported from the sick bay.

3. *The management* is always involved in the running of a medical service to obtain the best value for money as regards the efficiency of the service and the resulting minimum loss of time off work due to injuries to workmen.

INVESTIGATION AND PREVENTION OF HAND INJURIES

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This follows a well-defined routine in most large industrial plants today. The moment an accident occurs, the machine is stopped, the factory engineer and safety officer are immediately notified and the medical staff alerted. The factory engineer and the safety officer proceed to the scene of the accident and an immediate on-the-spot investigation is instituted. If possible a statement is taken from the victim and also from any witnesses. It is important that this is done early as very relevant facts often become clouded after an interval has elapsed and a later statement is often distorted and therefore

useless. The object is not to determine *how* but *why* accidents happen.

To sift the exact cause is often a masterpiece of detection. A cause is always volunteered but the real cause is often only available in 50% of cases and in others it is discovered only after intensive skilled sifting of irrelevant facts. This is the particular job of the safety officer. A recent survey of the National Safety Council showed that only 17% of cases failed to reveal personal causes. The accident is usually the sequence of minor events and unimportant happenings which taken together culminate in the actual occurrence.

The factory engineer deals with the mechanical factors and his main task is to report and make recommendations that may assist in preventing the repetition of an unpleasant incident.

The safety committee, factory engineer and safety officer and sometimes the physician, then consider the accident and make recommendations and a full and accurate report is made without which preventive measures could not be formulated. In any machine accident which results in an employee being off duty for 3 days or longer, the inspector of machinery must hold an inquiry as well. Statistical records of all accidents are kept together with medical certificates and, in the case of permanent disabilities, so are compensation grants.

Accident prevention is a community and state responsibility of the highest order. Hazards cannot be controlled satisfactorily unless a sincere desire to accomplish such a purpose pervades the entire personnel of any industrial complex.

Sixty percent of all hand injuries are not due to machinery, and 40% of the most severe hand injuries are due to machines. The majority are due to personal factors, stepping on or striking against objects, falls, cuts or handling materials not involving machinery. These household type of accidents have been the object of much research and planning since physical, mental and social conditions are often important causative factors.

The safety officer is the man at the head of the accident-prevention programme and it is his duty to institute the measures and see that they are kept in practice by constant stimulation of his workers.

1. *General Measures*

These come under the auspices of NOSA which does an excellent job with constant attack on safety problems, advice, and awards for accident-free periods. Their work is well-known and invaluable. They distribute pamphlets and posters and organize conferences on industrial safety.

2. *Individual Measures*

These are an index of the awareness of management to the cost in life, limb and money due to accidents. I have for simplification classified these measures into the '4 Es'.

(a) *Education.* After physical means of selection such as visual acuity, physical fitness and aptitude tests, the education of the worker in safety practices should start immediately after his induction into industry, by means of lectures fostering an awareness of danger and teaching safe working methods. Constant accident prevention programmes with demonstrations at intervals are necessary. Foremen should be educated in emergency care of the injured.

(b) *Example.* A demonstration by foremen, etc., of their respect for safety measures and their handling of machines is invaluable and sets the tune of the whole department.

(c) *Enforcement.* Obedience to the safety code—the older workmen have a saying that 'machines have no friends'. Every machine operation has a laid-down safety code and it is hard to believe how repeatedly the neglect of these well-known precautions in repetitive operations lead to quite disastrous accidents. Discipline is important: the number of accidents when workers try out the other man's machine while he is away, and the tragic results of irresponsible behaviour is self-evident.

(d) *Engineering.* A good safe plant, well lit and well spaced, is necessary. Hazards should be reduced to a minimum by reliable guards, and automatic cut-out devices when a faulty operation is performed. Maintenance programmes, etc., are needed to keep machines in top working order.

Automation is our next best ally and the exclusion of the human element in numbers of dangerous operations holds out the greater hope of a rapid increase in improved safety measures.

REHABILITATION OF PATIENTS WITH HAND INJURIES IN INDUSTRY

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There is a marked hiatus in the regime of occupational therapy and rehabilitation in industry. Physiotherapeutic exercises as such are frequently inadequate and insufficiently robust in conditioning the worker for the full spate of industrial activity. Placing a worker in a sheltered occupation in his usual place of employment is difficult to arrange and alternative jobs for skilled workers are hard to find. Rehabilitation centres are excellent in their own right, but being situated far from the industrial areas the patient tends to spend too long a time away from his factory environment.

Work in a rehabilitation workshop attached to a factory is the ideal form of rehabilitation for the worker with hand injuries, but most factories are not large enough to warrant such a project. This problem could be overcome by a group of neighbouring factories combining to form their own workshop. A centre of this nature could be run by a panel consisting of surgeons, engineers, doctors, personnel officers and occupational therapists. The occupational therapist should have free access to each factory and be given facilities to instruct the manager, the foreman and the injured workman himself in his own occupation, thereby developing the normal progression of recovery right through, from bed to bench. Furthermore, the occupational therapist, by having a first-hand acquaintance with the injured man's normal occupational activities, would be able to familiarize the surgeon and doctors with the problems encountered in factory rehabilitation.