A University's contribution to occupational health^{*}

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Abstract

The first Chair of Occupational Health in the United Kingdom was established by Manchester University in 1945 and held by Ronald Lane, a consultant physician and experienced factory doctor. In his department, occupational medicine was taught as a clinical discipline to both undergraduates and postgraduates. Research was based mostly on clinical observation of workpeople in the field or as hospital outpatients. Although work has become less hazardous, with major risks like pneumoconiosis and lead poisoning brought under control by better occupational hygiene and more effective epidemiology, there is still much work related illness and injury. Promoting occupational health in its broadest sense still depends on clinical skills to assess fitness for work and to identify responses to adverse factors in the environment. A university department, through its teaching and research, needs to ensure that occupational health is practised as a clinical discipline. Opportunities for research are extensive and include: (1) identifying the extent and severity of injury and illness due to adverse environmental agents and psychosocial factors; (2) assessing fitness among the disabled and the elderly in an aging population enabling them to be gainfully or otherwise employed, (3) improving techniques for measuring work exposures and human responses to adverse work factors, and (4) evaluating intervention procedures. To fulfil its teaching and research commitments, an occupational health department has to maintain contacts with other disciplines in the university and with the industrial world outside. Isolation can be

fatal. Academic departments of occupational health offer information to employers, trade unions, and health professionals seeking advice on health and safety problems. Such an Information and Advisory service provides topics for research and earns an income. It should not become the main activity otherwise teaching and research will suffer.

(British Journal of Industrial Medicine 1993;50:418-421)

"What Manchester does today, the rest of the country does to-morrow," is an aphorism based on the City's enterprise in the 19th century. It still holds good. Nearly 50 years ago, Manchester was the first university in the United Kingdom to establish a Chair of Occupational Health, held for 20 years by Professor Lane. Today is a unique occasion, the opening, during his lifetime of the Ronald Lane Lecture Room. Usually such an honour is given too late for the recipient to enjoy it. It is a privilege for me to pay tribute to Ronald Lane, under whose tutelage I began my academic career 45 years ago.

Occupational medicine as a clinical discipline

In 1945 the Nuffield Foundation funded a University Department of Occupational Health in Manchester, followed by similar grants to Glasgow and Newcastle upon Tyne. Ronald Lane, who was appointed to Manchester, had the rare experience of being both a consultant physician at the Salford Royal Hospital and a factory doctor who virtually eliminated lead poisoning in a group of factories making batteries. He used his clinical skills to monitor workers for evidence of lead absorption and set his own limit for lead in air, based on clinical findings. He gave something more than clinical skills to solving the problem of lead poisoning. It is best expressed in his own words: "The importance of educating the worker must be stressed... he must be shown his responsibilities in any safety programme. This needs patience and hard work on the part of the doctor... who must inspire employers and workers alike with enthusiasm for safe working

^{*}Based on a lecture given at the opening of the Ronald Lane Lecture Room, Centre for Occupational Health, University of Manchester, on 11 November 1992

conditions. Complete success will be impossible without the cooperation of the workman... the responsibility for procuring it lies with the doctor."¹ Ronald Lane, with his "shop floor" and hospital experience, had a profound influence on teaching and research at Manchester. Occupational medicine was taught as a clinical discipline. Research was based on observing workpeople in the field or as hospital outpatients.² There was no chance of his Department becoming an ivory tower. We were told to keep our feet on the ground and encouraged to do so by holding part time posts in industry.

Changing climate in occupational health

Since the Manchester department was set up in 1945, the occupational health climate has changed dramatically. Work is less hazardous. Major risks, like lead poisoning and pneumoconiosis have been brought under control, largely as a result of better occupational hygiene and epidemiology, with more emphasis on environmental control and the health of the group and less on the care of the individual worker. Despite the better control of most major hazards directly caused by work, there is still much work related illness and injury that affects quality of life. Its prevention will depend on its identification not only from mortality and morbidity data but also clinical observation which seems to be getting less important in occupational health practice.

Although today's health problems differ from those that faced occupational physicians 50 years ago, in that they are more difficult to identify and control, I see every reason to stand by Lane's approach to the practice of occupational medicine. I believe that the foremost function of a university department is, through its teaching and research, to ensure that it is practised as a clinical discipline. Promoting occupational health in its broadest sense depends on medical skills to assess fitness for work, to identify responses to adverse factors in the environment, and to evaluate control measures. An occupational health service, with its ready access to people before they get sick also has a heaven sent opportunity to undertake health promotion with advice about lifestyle and working safely.

The Health and Safety Executive and the Faculty of Occupational Medicine, through law enforcement and setting professional standards, aim to make work healthier and safer. Nevertheless, much depends on occupational health professionals being properly trained, which has to be done by universities.

Shortcomings of regulations

One aim of the Single European Act of 1986 is to unify health and safety standards. In a single market economy, it is essential to prevent industry and commerce being disadvantaged by diverging

standards. The EC has issued detailed directives on working conditions, use of equipment, and personal protection. A general Framework Directive³ has a clause on Protective and Preventive Services that requires the employer to designate one or more workers to provide protective and preventive services, as well as their other duties. If necessary, the employer has to enlist outside experts. In most larger workplaces prevention and health care will depend not only on directives for environmental control and personal protection but on having trained health professionals to ensure that they are enforced and to advise generally on health and safety. Although there is a general duty to appoint competent people, Member States of the EC will have to give a stronger lead on the wider objectives of occupational health services and for such services to be staffed by properly trained health professionals to meet the needs of a workforce according to its size and the type of hazards to which it is exposed.

The training and qualifications of physicians and nurses need to be specified as they are in other medical disciplines. No doubt as an economy, there is a trend for organisations to employ outside agencies to fulfil health and safety requirements. Contracting out may be acceptable for cleansing operations but not for health care. Occupational physicians need to know the workplace, its management, and workers, and inform management forthrightly of its responsibilities for health and safety. Competent in house occupational health services, appropriately staffed and equipped, are essential if the detailed directives prescribed by the EC are to be enforced.

Teaching

One of the University's foremost tasks is to provide postgraduate training that keeps staff and students up to date with a discipline which is not immutable. I venture to suggest four crucial factors in the teaching of occupational health practice: the use of clinical as well as technical skills; the use of epidemiology; the need to be available for consultation about any health problem; and that occupational health professionals serve a community, not narrow managerial interests. Teaching should not be confined to technical skills. Physicians should understand the breath of their responsibilities for health care. They, more than anyone else, are able to influence management to adopt an enlightened policy on health and safety.

A major problem is to provide training for the many part time doctors unable to attend formal full time or day release courses. This University recognised this need and pioneered a distance learning project that has given as many as 400 physicians, aiming to be Associates of the Faculty of Occupational Medicine, an opportunity to be more

effective.⁴

Most people at work are not covered by occupational health services. Where there are such services a sick worker often seeks advice first from the family doctor or in an emergency from a hospital. Thus general practitioners and hospital doctors can play a vital part in identifying work related illness and people like vehicle drivers and food handlers whose illness or disability may adversely affect the health and safety of others. Under the influence of Ronald Lane, Manchester included occupational medicine in the undergraduate curriculum. Likewise, Donald Hunter and Patrick Lawther in London, both hospital physicians, taught occupational medicine as an integral part of clinical medicine. This is one good reason for a Department of Occupational Health to be in an undergraduate medical school rather than in a school of public health.

Research

A University department of Occupational Health has to play a major part in investigating work related disease and injury. It used to be a relatively easy task. Plumbism, silicosis, and even byssinosis where there was heavy dust exposure, could be readily diagnosed. Today, it may be more difficult to identify occupational illness and work related factors in commonly occurring disorders like coronary heart disease, chronic obstructive pulmonary disease, back pain, and stress. Improved epidemiological techniques have made this possible, exemplified by studies of byssinosis.

During the first 30 years of this century, strippers and grinders in the Lancashire cotton industry had a two-fold excess of respiratory and cardiovascular deaths. A detailed analysis of mortality data by the Manchester Department confirmed a serious health hazard but its nature was uncertain.⁵ One theory, based on the Registrar General's data, was that inhaling cotton dust caused hypertension.⁶ True to the philosophy of this Department, such "arm-chair" epidemiology was a stepping stone to a field survey. As byssinosis has to be diagnosed on the clinical history, survey methods were designed to give validity to such a study. It revealed a high prevalence of byssinosis (61%) in a population of male card room workers, 11% of whom had a pronounced reduction in ventilatory capacity compared with 4.5% of a control population from the same area where air pollution was high.⁷ By 1949-53 the mortality excess in strippers and grinders had disappeared, influenced no doubt by a new compensation scheme for byssinosis and by full employment at that time which made it possible for disabled men to find alternative work; their deaths would be allocated to their final occupation. More recent epidemiological studies by the

Manchester Department, much improved on those we did in the 1950s, have found no evidence of an excess of respiratory deaths in card room workers⁸ and revealed a sharp decline in the prevalence of byssinosis due to more effective dust control associated with a pronounced decline in airborne bacteria.⁹ A longitudinal study in the United States of a large population of cotton workers in mills complying with the Occupational Safety and Health Act exposure limits revealed a minimal prevalence of byssinosis. There was, however, evidence of a chronic effect, measured by an increased annual decline in lung function in workers exposed to dust levels close to the statutory limit.¹⁰ Such a relatively minor effect could not have been identified by the methods we used in our early studies.

Cotton dust can still cause disabling illness. Clinical studies have identified responses to dust exposure other than the characteristic Monday chest tightness of byssinosis. They comprise acute and chronic decrements in pulmonary function, an allergic type asthma, and chronic bronchitis, all of which can occur without symptoms of byssinosis.¹¹ Such a variety of responses indicates more than one causative agent among the contaminants of the cotton fibre which itself, it is generally agreed, does not adversely effect the respiratory tract.

Early work searching for a causative agent concentrated on cotton bracts and other plant derived substances. More recently microbial contamination has been the subject of extensive field and laboratory studies. Results show a dose-response relation between the amount of airborne bacterial endotoxin and the development of acute effects such as chest tightness and acute decrement in forced expiratory volume in one second.¹² Thus it is evident that bacterial endotoxin is an important aetiological factor, but it is possible that other agents on their own or with endotoxin, induce symptoms from exposure to cotton dust, particularly chronic effects.¹¹

Notable improvements generally in survey techniques for investigating work related disease have been in (1) studying representative samples of populations at risk; (2) control of confounding factors such as age and smoking; (3) more reliable questionnaires and tests of disordered organ function, and (4) relating human responses to more accurate assessment of environmental exposures, thus making it easier to identify occupational risks and their magnitude, to find causes, and to set exposure limits.

Taking a broad view of occupational health, that it is not limited to specific occupational diseases and injuries, the opportunities for research are extensive and have been taken by universities if they are to be active and up to date centres of learning. Early detection of health impairment and its

control can be helped through four main categories of research.

(1) Identification of work related injury and disease, its extent and severity, due to chemical, physical, mechanical, biological, and psychosocial agents.

(2) Assessing fitness among the disabled and the elderly in an aging population and helping them to be gainfully or otherwise employed.

(3) Methodology: improving techniques for measuring work exposures and human responses to such exposures.

(4) Evaluating intervention procedures.

Communication

To fulfil its teaching and research commitments, an academic department of occupational health has to maintain contacts within the university and with the industrial world outside. It has to be a two way process with academic staff both giving and receiving information and advice. Isolation can be fatal. If the department is situated in an undergraduate teaching hospital it has opportunities to collaborate with colleagues in investigating work related disorders such as asthma, dermatoses, and stress; or undertaking studies of a more general nature, such as the employment of the disabled and our aging population.

It is commonplace for Institutes of Occupational Health to provide an information and advisory service to cover a wide range of problems raised by employers, unions, and professional people concerned with health and safety. It has the positive benefit of providing new topics for research and teaching.¹³ It can also earn an income. With tight restrictions on government grants for basic needs and increasing dependence on market forces, providing information and advice can become the main activity, which means that academic work will suffer. The Helsinki Institute of Occupational Health, a model multidisciplinary unit, has to earn 20% of its budget through service activities and receives the remainder from the State. Its total income is large enough to ensure active research and teaching programmes. British Universities, by comparison, get little support from the

Government and have to depend on research grants, earnings from teaching, research, and service and gifts from industry and commerce.

True to its reputation for innovation Manchester appointed Nicola Cherry, the first woman in this country to hold a Chair of Occupational Health. We wish her well in keeping the occupational health flag flying high and not at half mast as it has been in other academic centres.

The immediate outlook may be daunting, nevertheless I feel confident that the academic bailiffs will be kept at bay in Manchester by following the principles laid down by Ronald Lane, effectively applied by means of a growing range of modern techniques for evaluating environmental exposures and human responses.

I thank Professor Cherry for inviting me to give this lecture and Professor Ragnar Rylander and members of my family for help in its preparation.

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Accepted 11 January 1993