

# Occupational Medicine in Europe: Scope and Competencies



WHO European Centre for Environment and Health  
Bilthoven

## EUROPEAN HEALTH21 TARGET 13

### SETTINGS FOR HEALTH

By the year 2015, people in the Region should have greater opportunities to live in healthy physical and social environments at home, at school, at the workplace and in the local community

*[Adopted by the WHO Regional Committee for Europe at its forty-eighth session, Copenhagen, September 1998]*

### ABSTRACT

This document presents the current role of occupational physicians in Europe, modified as a result of new legislation and policies in public and occupational health in the European Union and other countries. The new model of occupational health practice integrates various occupational health professions, and possibly other specialists involved in preventive activities, into multidisciplinary preventive services capable of detecting and controlling occupational, non-occupation and environmental health risks. This publication presents views on the scope of occupational medicine and its relation to allied professions and broader disciplines such as environmental and occupational health. The obligatory tasks (imposed by national regulations) and voluntary tasks (recommended by working communities or international guidance documents) to be carried out by occupational physicians have been included.

### Keywords

OCCUPATIONAL MEDICINE  
OCCUPATIONAL HEALTH  
ENVIRONMENTAL HEALTH  
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## **FOREWORD**

European socioeconomic societies have changed dramatically during the last decade. The transition from one socioeconomic system to another, internationalization of enterprises, fusion of financial and industrial organizations, establishment of the European currency and growing competition on the European and global markets have all accelerated changes in circumstances of working life. These changes also influence society's expectations of occupational health professionals. In many WHO European Member States there is a trend towards reorienting occupational health and safety practices in order to improve employees' working capacity and considerably to reduce the increasing social costs of work-related ill health, injury and disability.

In the 1990s considerable conceptual, political, legislative and practical progress in occupational health was observed in many European countries. The International Labour Organization's Occupational Safety and Health Convention (No. 155/1981) and Occupational Health Services Convention (No. 161/1985), the European Community Framework Directive 1989/391/EEC and the 1996 WHO Global Strategy for Occupational Health for All have guided recent changes in legislation and occupational health practice in many European countries. All of them strengthen the concept of using multidisciplinary occupational health services and the active participation of employees to improve the working environment and workers' health. Broadening health management practice at work to include environmental and lifestyle determinants of health and maintenance of working ability of employees necessitates the dissemination of workplace health promotion and environmental management methods.

The new model of occupational health practice integrates various occupational health professions, and possibly other specialists, into multidisciplinary preventive services capable of detecting and controlling occupational, non-occupational and environmental risks. It aims at improving working capacity, and employees' health and wellbeing and their working or general environments. Adequate access to preventive services is necessary to increase

equity in health and wellbeing within and between countries. It is also a prerequisite for establishing socially fair and sustainable trade competition.

Occupational medicine is one of the fundamental disciplines in a multidisciplinary occupational health team. The training and core competencies of occupational physicians have evolved in Europe to respond adequately to continuous changes in working life and to meet the needs of society.

To assist Member States in harmonizing a training curriculum for occupational physicians and the scope of their practice and competencies the WHO Regional Office for Europe, European Centre for Environment and Health (WHO/ECEH), Bilthoven Division organized a workshop in Bilthoven on 27–28 May 1999, in collaboration with the European Association of Schools of Occupational Medicine (EASOM), the WHO Network of Collaborating Centres in Occupational Health, the European Network of Societies of Occupational Physicians (ENSOP) and the Union of European Medical Specialists – Occupational Medicine Section (UEMS).

The present document has been prepared by WHO/ECEH jointly with European organizations of occupational physicians, with technical contributions from the International Labour Office in Geneva, which are gratefully acknowledged. It reflects:

- developments and trends in occupational medicine as a science and in practice (the relationship between occupational medicine, occupational health, environmental medicine and public health);
- the role and functions of the occupational physician;
- core competency requirements for the occupational physician (medical sciences, occupational and environmental health sciences, public health, quality assurance and management, informatics, data collection and processing, communication skills, etc.);
- educational and training modules (disciplines of science and practice to be taught to occupational physicians within and

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beyond medical sciences, approaches to training, possibility of harmonization of competence requirements among countries);

- work profiles for occupational physicians (established sets of core and supplementary competencies depending on national legislation and specific employers' requirements, examples of existing practice in occupational medicine in different countries);
- the relationship of occupational physicians with employers and employees;
- accreditation and certification schemes in occupational and environmental medicine.

The document presents views on the scope of occupational medicine and its relation to allied professions (occupational hygiene, occupational health nursing, health promotion and work organization, work safety, epidemiology, clinical pathology, labour law, etc.) and to broader disciplines such as environmental health and occupational health. It also includes the obligatory tasks imposed on occupational physicians under national regulations as well as voluntary tasks recommended by working communities or international guidance documents.

The document was developed for use by:

- schools of occupational medicine (universities, institutes, training centres) for the preparation of education and training programmes;
- schools of environmental health professionals and other occupational safety and health professionals such as occupational and environmental hygienists, ergonomists, occupational health nurses, safety specialists, health promotion specialists and work organization specialists (universities, institutes, training centres) to facilitate decisions on overlapping in education to link closely related professions and provide a background for interprofessional cooperation;
- national regulators (governments, labour and health sector managers, politicians) to give them a common understanding of the scope and core functions of occupational medicine and

of the functions of occupational health physicians; this is particularly important because in some countries general practitioners or other specialists who lack training in the work environment–health relationship carry out some functions of occupational health physicians (e.g. periodic health and fitness assessment/examinations);

- employers and insurance companies to draw up job descriptions and define tasks for occupational physicians employed by them;
- occupational health services (where most occupational physicians work).

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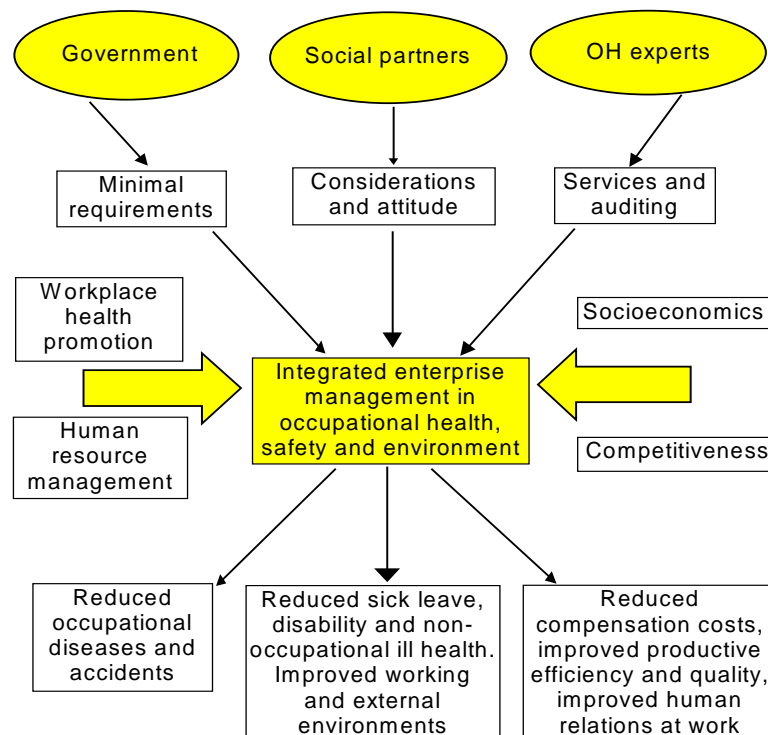
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## 1. SCOPE OF OCCUPATIONAL MEDICINE

### 1.1 Overall perspective

Occupational medicine is the medical specialty dealing with the assessment of workers' health, linking working conditions and processes to workers' health, assisting in managing the health, skills and working capacity of the entire working population and managing individual cases in the context of working ability and production [Fig.1]. It deals with primary, secondary and tertiary prevention of ill health in the workforce, with a potential influence on the health of the population as a whole.

Fig. 1. Factors influencing integrated workplace health management and outcome indicators





Occupational medicine is one of the major contributors to public health in all European countries [1]. Governments, employers and employees and their representative organizations have a substantial impact on the quality and scope of occupational medicine and occupational health [2,3,4].

The occupational physician is one of the core professions in the occupational health multidisciplinary team. It is the occupational physician's role to protect and promote the health and working ability of workers. Thus occupational medicine contributes to good management in healthy enterprises [4-9]. The occupational physician plays a part in reducing the incidence of diseases and injuries, alleviating suffering and promoting and protecting people's health throughout their lives. The occupational physician is an expert adviser, part of the enterprise's senior management team, able to assist in planning and re-engineering the work process with regard to health and safety, legal requirements, good business and human resources practice.

The occupational physician together with his/her other occupational health partners can provide a major contribution to achieving the targets of the WHO global and European strategies for health for all (Table 1).

Table 1. Health for All in the 21<sup>st</sup> Century  
global and regional targets

21 Regional targets	10 Global targets	Strategies for target implementation (highlights)
1. Solidarity between countries in the European Region	1. Increase equity in health	Sharing of vision, resources, know-ledge and expertise in Europe More and better coordinated external support to countries in need, in line with their HFA-based development plans
2. Equity in health within countries		Reduction of social and economic inequities between groups through policies, legislation and action

21 Regional targets	10 Global targets	Strategies for target implementation (highlights)
3. Healthy start in life	2. Improve survival and quality of life	Investment in social and economic wellbeing of parents and families Access to good reproductive and child health services
4. Health of young people		Creation of supportive and safe physical, social and economic environments Cooperation between health, education and social services
5. Healthy aging		Housing, income and other measures to enhance autonomy and social productivity Health promotion and protection throughout life
6. Improving mental health	3. Reverse global trends of five major pandemics	Living and working conditions shaped to gain a sense of coherence and social relations Quality services for people with mental health problems
7. Reducing communicable diseases	4. Eradicate and eliminate certain diseases	Eradication/elimination of poliomyelitis, measles, and neonatal tetanus Internationally agreed surveillance, immunization and control strategies
8. Reducing noncommunicable diseases	3. Reverse global trends of five major pandemics	Prevention and control of common noncommunicable disease risk factors Healthy public policies, including a Europe-wide movement for healthy lifestyles
9. Reducing injury from violence and accidents		Higher priority to safety and social cohesion in living and working environments
10. A healthy and safe physical environment	5. Improve access to water, sanitation, food and shelter	National and subnational action plans on environment and health Legal and economic instruments to reduce waste and pollution
11. Healthier living	6. Promote healthy lifestyles and discourage	Actions to facilitate healthy choices regarding nutrition, physical exercise and sexuality

21 Regional targets	10 Global targets	Strategies for target implementation (highlights)
	health-damaging ones	
12. Reducing harm from alcohol, drugs and tobacco		Broad strategies to prevent addictions and treat victims
13. Settings for health		Multisectoral mechanisms to make homes, schools, workplaces and cities more healthy
14. Multisectoral responsibility for health		Through health impact assessment, all sectors to be accountable for their effects on health
15. An integrated health sector	8. Improve access to comprehensive, essential, high-quality health care	Primary health care for families and communities, with flexible systems of hospital referral
16. Managing for quality of care		Health outcomes to drive health development programmes and patient care
17. Funding health care and allocating resources		Funding systems fostering universal coverage, solidarity and sustainability Sufficient financial resources allocated to priority health needs
18. Developing human resources for health		Education based on HFA principles Public health professionals educated to act as key enablers and advocates for health from community to country level
19. Research and knowledge for health	10. Support research for health 9. Implement global and national health information and surveillance systems	Orientation of research policies to HFA needs Mechanisms to base practice on scientific evidence
20. Mobilizing partners for health		Advocacy, coalition-building and joint action for health Sectors and actors identify and account for mutual benefits of investment in health
21. Policies and	6. Develop,	HFA policies (with targets and

21 Regional targets	10 Global targets	Strategies for target implementation (highlights)
strategies for health for all	implement and monitor national HFA policies	indicators) formulated and implemented from country to community level, involving relevant sectors and organizations

Source: [11-12].

In most European countries, occupational physicians make assessments of fitness for work, promote working ability and, in the case of illness or injury, make diagnoses and give advice on how to prevent work-related adverse physical and mental health effects. In some countries, occupational medicine includes treatment and may even encompass primary health care.

Benefits to employers from the occupational physician's advice include all those accruing to a healthy enterprise with a healthy and committed workforce: high quality output, high productivity, low sickness absence, low insurance premiums related to injury and sickness claims, and a public image of a well managed and friendly enterprise with the public's own good at the heart of management practice. Quality management benefits in its entirety from the occupational physician's input and expertise [13].

The social benefits arising from occupational medicine include increased equity in health, more people with partial disability able to work, longer disability-free life expectancy, and more retired people able to lead a healthy life into old age [14].

The benefits of occupational medicine and occupational health extend far beyond the individual enterprise. By channelling knowledge on health management to working communities, these disciplines contribute to sustainable development. In fact, good practice in health, environment and safety management in enterprises is the major condition for achieving sustainable development [15,16].

With an aging workforce in much of Europe, promotion of healthy aging and healthy working for an aging working population has become a new and important task of the occupational physician [17].

Mental health problems have now become the second reason (after musculoskeletal complaints) of sickness absence and low productivity, and the occupational physician advises on sources of work-related stress and mental ill health and on good management and human resources practices to eliminate adverse mental health effects [18-22].

The promotion and maintenance of work ability brings together the occupational physician, the employer, the employee and various workplace and other organizations in a united effort to promote and support the broadest physical, psychological and social functioning capacity of all persons active throughout their working life. Working ability is determined by health, education and training, motivation and social background. General measures to increase work ability are of benefit not only to individual employees, but also to the productivity and financial success of enterprises and to society as a whole. Work ability can be promoted by acting on the person and by acting on the workplace and working environment. It can involve measures to strengthen and support working ability for special groups such as aging workers or disabled employees (sheltered workplaces and supported employment) [14,23].

The occupational physician will contribute to workplace health promotion, on the basis of management principles and methods which recognize that employees are a necessary success factor for the enterprise, not merely a cost factor. The occupational physician will foster a workplace culture which includes the participation of employees and encourages their motivation and responsibility, where the principles of work organization provide an appropriate balance between the demands of the job and control over an employee's own work, level of skills and

social support, and where the enterprise pursues a personnel policy which actively incorporates health promotion issues.

The occupational physician is part of an integrated multidisciplinary occupational health and safety service, or has access to multidisciplinary colleagues in such a way as to enable the giving of appropriate advice in related fields of health and safety to smaller enterprises where he/she may be called upon to work.

Other medical colleagues, for example specialists in surgical and medical fields, may be called on by the occupational physician for further advice and opinions. The occupational physician will be in regular contact with colleagues in such specialist fields as well as with those in primary health care, in order to liaise over patients (within the ethical constraints of medical confidentiality) and to provide insight and information regarding work-related aspects of disease and injury.

Workplace health management, in which the occupational physician is key, has recently gained even greater political recognition. In June 1999, ministers in the 52 countries of the WHO European region adopted the London Declaration of the Third Ministerial Conference on Environment and Health [24]. In the Declaration they stated: "We recognize the importance of instituting workplace measures to meet public health needs and goals, and the right of workers to be involved in the decision-making process on these goals. We will promote good practice in health, environment and safety management in enterprises, in collaboration with stakeholders in our countries such as local authorities, enforcement agencies, business (including small and medium enterprises), trade unions, nongovernmental organizations, social and private insurance institutions, educational and research institutions, auditing bodies and providers of preventive services." [24]

## 1.2 Occupational medicine: industrial medicine in history

Over centuries of economic, industrial and scientific development, occupational medicine has grown in complexity and scope and given rise to specialization outside medicine in related scientific fields, so that today many other professionals are part of a multidisciplinary occupational health team involved in the promotion and protection of workers' health [13,23,25-28].

Occupational medicine first appeared in the ancient cultures of China and Africa, linked to the economic development of mining, manufacturing and farming [29]. Later, in Europe's thriving urban communities (first in Bohemia and northern Italy) general physicians noted the association between work and disease.

Georg Bauer, a physician known as Agricola, graduated in 1514 from Leipzig and after studying in Italian universities, returned to the metal-mining towns of Bohemia, where he published *Bermannus, sive de re metallica* covering mining and metal-processing technology and miners' diseases and their prevention, based on the results of his personal observations of miners and their families. His contemporary, Paracelsus, published in 1533 *Von der Bergsucht und anderen Bergkrankheiten* (Miner's phthisis and other miners' diseases). Bernardino Ramazzini worked as a physician in Padua and Modena and in 1700 published *De morbis artificum diatriba* (An account of the diseases of work), which described over 50 occupational disorders along with an account of working conditions at the time. Ramazzini, known as the father of occupational medicine, wrote of occupational asthma in grain workers and lead and mercury poisoning, and described both a range of treatments and preventive measures. Matteo Orfila, founder of modern toxicology, spent most of his working life in Paris, like Philibert Patisserie (Treatise on the illnesses of workers, after Ramazzini, 1822) and, in the English-speaking world, Charles Turner Thackrah published in 1831 *Effects of the arts, trades and*

sciences. The founding of an occupational health culture developed out of the work of these early occupational physicians during the industrial revolution in Germany and the United Kingdom. In Germany under Bismarck the economic growth of heavy industry coupled with the influence of a legal trade union movement saw ground-breaking legislation on safety, workers' insurance and workers' compensation.

In the United Kingdom, a growing number of artisans' and workers' organizations, backed by liberal opinion, also resulted in legislation to protect workers' health and safety. The first Factory Act was passed in 1819. It applied to textile mills and laid down hours of work and regulations covering education and hygiene and child labour: this was banned for children under nine years of age. The Act was known thereafter as the Magna Carta of childhood and marked the first protection of the children of the poor from toil, starvation and ignorance. However, it was not until the passing of the Factory Act 1833, entitled "An Act to Regulate the Labour of Children in the Mills and Factories of the United Kingdom", that a medical certificate was required to pass a child as being fit and of at least 9 years of age and of ordinary strength and appearance. This Act also saw the appointment of the first factory inspectors: four in number, with power of entry to all factories covered by the Act, they were the first officially appointed occupational medical practitioners in the United Kingdom.

During the period following the 1939–1945 war, occupational medical services grew in parallel with national health services throughout Europe. The differences between the various models of national health provision were reflected in the structures and funding for occupational medical care.

In the countries of central and eastern Europe, occupational health institutes and services were created as early as the 1920s and 1930s (Russia, Ukraine). These were designed to serve the large state enterprises, based on a structure headed by the occupational hygienist and where national institutes led research.

Following perestroika and the start of economic transition in central and eastern Europe, it was found that occupational health services (OHS) designed for state enterprise have been unable to meet the demands of the huge number of new small and medium enterprises (SMEs), yet the law continues to require universal occupational health coverage for all workers. In Hungary, for example, new laws have been passed since 1995 to meet the new situation. Occupational health services are now provided on three levels: a basic level (mandatory for all workers) provided by an occupational physician and nurse or via an occupational health centre including a hygienist, ergonomist and physiotherapist as well as the doctor and nurse; a second level or specialist occupational health consultancy; and a third level comprising tertiary care centred on the Institute of Occupational Health and hospital beds.

In western Europe the profession developed through universities, institutes and government regulatory agencies for health and safety. Employers (including major manufacturing, industrial and service industries) also contributed to progress in both practical organization and research in occupational medicine [30,31].

The common factor between all countries was the commitment by occupational clinical practitioners to deepen their knowledge and understanding of workplace hazards and processes, calling upon colleagues in related fields in order to arrive at a scientific diagnosis of illness in a particular patient or group of patients.

In each country, a specific infrastructure needs to be created for the proper functioning of occupational medicine. Beyond the occupational physician at enterprise level, there is a need for a regional or provincial reference centre in occupational medicine, which can assist in the diagnosis of occupational disease and provide other specialist occupational health assistance to the occupational physician.

Research institutes and universities also need to expand their training of occupational physicians and other occupational health specialists and research into workplace health.

While European universities and faculties separately drew up quality training systems for under- and postgraduate medical training, including postgraduate training in occupational medicine, by the 1990s a common will had emerged to found European institutions in occupational medicine. The European Association of Schools of Occupational Medicine (EASOM) was set up first, soon followed by the Occupational Medicine Section of the Union of European Medical Specialities (UEMS) and the European Network of Societies of Occupational Physicians (ENSOP). All these bodies are currently involved in working on the development of the profession of occupational physician (Annex 1).

### **1.3 Occupational medicine and occupational health**

Occupational medicine is one of the major disciplines of occupational health. While occupational medicine is a specialty of physicians, occupational health covers a broader spectrum of different health protective and promotional activities.

Occupational health, defined in 1950 by the first session of the Joint International Labour Organization (ILO)/WHO Committee on Occupational Health, aims at “the promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities and to summarize: the adaptation of work to man and of each man to his job.”

The twelfth session of the Joint Committee in 1995 focused occupational health on three objectives: “(1) the maintenance and

promotion of workers' health and working capacity; (2) the improvement of the working environment and work to become conducive to safety and health; (3) development of work organization and working culture in a direction which supports health and safety at work and in doing so also promotes a positive social climate and smooth operation which may enhance productivity of an undertaking. The concept of working culture is intended in this context to mean a reflection of the essential value systems adopted by the undertaking concerned. Such a culture is reflected in practice in managerial systems, personnel policy, principles for participation, training policies and quality management of the undertaking." [32]

To reach these objectives the occupational physician needs to be supported by a multidisciplinary occupational health team. The composition of the team varies depending on the types and levels of occupational risk in the workplace and the health needs and demands of the workforce in the enterprise.

Thus the occupational physician cooperates with many professionals inside and outside medicine, within the broad disciplines of health and safety, especially with senior management, legislators and government [1,5,14,33-35].

The occupational health team may include:

- an occupational physician
- an occupational health nurse (OHN)
- an occupational psychologist
- a physiotherapist
- an ergonomist
- an occupational hygienist
- an occupational epidemiologist
- a safety engineer
- a toxicologist
- a microbiologist
- a chemist
- an information technician

- a statistician
- a university-based occupational research scientist
- a work organization specialist
- a health promotion specialist.

Each of these specialists will have undergone professional training and acquired experience in a variety of industrial and service fields to achieve wide-ranging competencies. The physician's managerial, analytical, scientific and clinical skills will assist in guiding the team towards the most fruitful interaction and deployment of its different roles so as to provide enterprise management with a powerful occupational health instrument.

In SMEs, the physician may be the only expert engaged by the company and may need to network with his/her colleagues in different disciplines to make available to senior management the necessary information and advice.

An occupational health programme at local authority, community or regional level may greatly assist the occupational physician working for SMEs. Community-based health, environment and safety programme to support SMEs can create a network of health, environment and safety (HES) consultancies.

Arising out of the expanded concept of occupational health involving health promotion in the workplace, there is now a new specialty in the occupational health team: health promotion addressing mainly lifestyle determinants of health, with a strong emphasis on the need for involving employees actively in workplace health management [9,14,34,36-38]. The importance of the workplace as a setting for health promotion is recognized by both occupational health and health promotion professionals. It is reflected in the Luxembourg Declaration adopted by the European Union (EU) Workplace Health Promotion Network established within the European Community programme of action on health promotion, information, education and training [38].

“Workplace health promotion is the combined effort of employers, employees and society to improve the health and wellbeing of people at work. This can be achieved through a combination of:

- improving the work organization and the working environment;
- promoting active participation of employees in health activities;
- encouraging personal development”.

Workplace health promotion is seen in the Luxembourg Declaration as a modern corporate strategy which aims to prevent ill health at work (including work-related diseases, accidents, injuries, occupational diseases and stress) and enhancing health-promoting potential and wellbeing in the workforce.

The occupational physician is part of the health promotion team: effective occupational health promotion means that the major health problems of a community need to be targeted together with the specific impact of work, work hazards and work processes on those problems, and motivating the workforce to participate in designing the programme, secure in the knowledge that the programme is ethical and confidential. The physician’s knowledge and experience is again of immense help in responding to these issues.

Occupational physicians are aware that they are working within the broad parameters of managing health determinants, not just workplace hazards. The quality of the occupational physician’s work for an enterprise will therefore depend to a great extent on the enterprise’s culture and work organization: will the enterprise allow and indeed encourage the occupational physician to inform their vision and development plans for the future and contribute to the enterprise’s sustainability? Such circumstances give the occupational physician the proper

conditions in which to develop the tasks of occupational medicine fully.

#### **1.4 Inequity in exposure to hazards**

Employment is usually associated with improved living standards and better health, in comparison with unemployment and its accompanying deprivation. But the nature of the work environment and of work processes may contribute to occupational accidents and diseases. Inequities may arise from uneven exposure to occupational hazards [39].

Inequities may also arise from uneven access to and quality of OHS [39].

Both production and the waste products or effluent of industrial processes have the potential to affect workers and the wider population adversely. There is inequity in exposure to pollution. Inequities in psychological health can result from the uneven risk of unemployment and from differentials in access to a good standard of living (part of which is reflected in remuneration) and good psychosocial conditions at work.

Where workers' life expectancy ends before their retirement age, this is likely at times to reflect over-exposure to such hazards. Similarly, where there is an excess of early retirement on the ground of ill health, inequity of exposure may be the cause. Workers in manual and dirty jobs with the greatest exposure to hazards are usually drawn from those socioeconomic groups with the poorest health to begin with.

#### **1.5 Inequity in occupational medical services**

Inequities in the provision of occupational medical services are felt by workers throughout Europe and in all branches of public service, manufacturing, the tertiary services sector and agriculture.

With changing patterns of employment and enterprise, the problem of providing occupational medicine for the fast growing numbers of SMEs and for the increasing numbers of home workers is particularly challenging [1,11,40,41].

Looking broadly at the current position in Europe, some inequities derive from certain types of work and its relatively low priority status in terms of health and safety implementation, due to comparatively low risk activities. Nonetheless, these sectors can still produce significant occupational disease and injury or fail to maximize working capacity by inadequate prevention of non-occupational disease.

Other inequities derive from new types of contract of employment, with ever greater numbers of workers self-employed or engaged as temporary workers and therefore not benefiting from OHS.

Some inequities are due to patchy provision of services with insufficient numbers of practitioners, or to inadequately trained and supervised staff.

National legislation covering regulatory provision of occupational health and occupational medical services varies from country to country. Thus in Finland over 90% of the workforce is covered, but in other countries perhaps as little as 20% of the workforce may benefit from access to occupational medical services. It is estimated that about 200 million out of 400 million workers in Europe today (1999) are without access to occupational medical, health and safety services [41].

Inequity of access to services is compounded by the problem of inequity in the types and quality of service available.

The report *Equity in occupational health* [39] explored differentials in health in many of the European countries. In France, for example, mortality in men aged 45–49 years, using occupation as an indicator of socioeconomic status, showed a

gradient of more than a three-fold difference in mortality between high-level employees at the top of the social scale to unskilled labourers at the bottom. In Finland, there is a similar differential in disability-free life expectancy. In Spain, such differences are found when women of different household income levels are compared. In Hungary, the probability of dying for men aged 35–65 years in different districts of the city of Budapest was higher in districts with lower educational levels [39].

Ten steps have been identified to reduce inequity in occupational health:

- (i) identify specific occupational groups at risk;
- (ii) assess the extent of the health differential;
- (iii) review current health care provision for those at risk compared with others;
- (iv) identify who is responsible in a given country for effecting change;
- (v) identify gaps in knowledge for (i), (ii) and (iii) and fill them;
- (vi) consider ways to develop an intervention strategy for targeted groups;
- (vii) identify difficulties in achieving (vi);
- (viii) assess the logical and financial implications of (vi);
- (ix) apply controls/remedies at the workplace level to reduce hazard/risk;
- (x) once a strategy has been agreed, develop a monitoring and evaluation system to audit the outcome of the risk control strategy and the consequent change in health differentials [39].

## 1.6 Occupational medicine and the extent of work-related ill health

The impact of occupational disease and accidents at work in European countries has been demonstrated in studies documenting the cost to industry, the burden on national health and social services and the effect on society and families [42-45]. In all countries of Europe, millions of working days are lost annually due to sickness absence. Work-related ill health is responsible for a large part of this.

The *Second European survey on working conditions* among employees of 15 EU member states noted that 30% of workers reported backache, 28% reported stress, 20% reported fatigue, 17% reported muscular pain and 13% reported headache. Altogether 23% of workers surveyed claimed to have been absent from work for work-related health reasons in the previous 12 months [46].

Physical workload still affects 10–30% of the workforce in highly industrialized countries, and on average in 1991 in EU countries 16% of all workers, 25% of manual workers and 33% of farmers were exposed to poor ergonomic conditions at work. Complaints about noise levels at work have remained constant and noise-induced hearing loss remains high (12% of all occupational diseases in Bulgaria, 49% in Hungary, 25% in Poland, 20% in Finland and 23% in Germany) [35].

Occupational stress is increasingly reported. A Netherlands report *Trends in work and health* [47] shows that more and more workers complain about the high pace of work (up to 42% of EU workers), and stress at work is also caused by uncertainty, lack of regular salary payments, threat of job losses and frequent unpaid breaks in countries experiencing economic transition. The threat of unemployment and fear of losing working ability is a frequent source of stress in older working people [46-48].

Accidents at work, even fatalities, are still common despite health and safety regulations. Statistics gathered by EU member states on fatal accidents at work and accidents causing over three days absence from work are reproduced in Table 2 below.

Table 2. Accidents at work in EU countries, 1993  
(preliminary results)<sup>a</sup>

Country	Fatal accidents	Accidents >3 days absence
Austria	9.00	4621
Belgium	4.90	4516
Denmark	2.60	2238
Germany	4.50	5031
Greece	5.10	–
Finland	4.00	4172
France	6.70	5194
Ireland	3.80	1168
Italy	7.10	4782
Luxembourg	–	7465
Netherlands	–	4849
Portugal	6.00	6672
Spain	13.90	7005
Sweden	2.40	1054
United Kingdom	1.60	1697

<sup>a</sup>Standardized incidence rates per 100 000 workers for six common branches covering 80% of all accidents.

Source: [49]

The annual average rate for all kinds of occupational accidents in the entire WHO European region ranges from about 200 to 7500 accidents per 100 000 employees. About 10% are severe, leading to over 60 days absence from work, and 1–5% lead to a permanent disability [35].

## **1.7 Occupational medicine and the extent of non work-related ill health**

At the same time, a substantial share of disability and sickness absence (both temporary and permanent) related to ill health is not solely caused by factors present in the working environment.

Diseases of a worker or family member not associated with the workplace may be preventable or improved by a health intervention at work (e.g. smoking cessation as part of a workplace intervention with improvement in chest disease at home in workers' families and reduction in sickness absence, or healthy eating promotion at work to reduce obesity and coronary artery disease with an impact on the aging workforce's work ability).

Murray and Lopez [44] have calculated the total deaths or lost disability-adjusted life years (DALYs) that could be prevented in the absence of lifestyle or environmental exposures, showing that to obtain substantial occupational health gains the main efforts should be directed towards preventing chronic noncommunicable diseases and that this should be done mainly in enterprises where the majority of adults work.

These causes (including tobacco, alcohol and physical inactivity) contributing to or exacerbating disease, or a lack of good health, are to a certain extent under the control of the employee. So the scope of occupational health is today seen not solely as prevention of occupational injury and disease, but more widely as overall protection and promotion of workers' health [9,32,33,41,50,51].

The participation of the employee in promoting a healthy workforce is seen as increasingly important in today's business environment.

The importance of clinical skills in detecting and tackling individual workers' health problems and in looking at individual susceptibility is clear. Only the occupational physician has the

breadth of training and clinical experience to make use of the related specialties' body of knowledge and bring their discourse to bear upon case management and the health of the individual or group involved. Without the clinician, the team cannot correctly focus its intervention and evaluate outcomes of workplace health management.

Neither nurses, hygienists, ergonomists, toxicologists nor safety engineers possess the basic medical scientific knowledge arising out of molecular and cell biology, anatomy, physiology and pathology, and disease mechanisms and processes that is the unique domain of the occupational physician, along with his/her clinical experience in eliciting patients' history and description of their symptoms and the signs of physical and mental ill health. On the other hand, the occupational physician needs input from all these professions to make an epidemiological evaluation of the type and level of exposure to occupational hazards and health, then to make an effective workplace intervention.

The long training of the occupational physician begins with learning the difficult and complex skills and art of eliciting the personal histories of patients and examining them in a sensitive and directed way. The good doctor learns to take an interest in patients as men and women who lead a particular kind of life in a certain kind of way, as people with families, social obligations, traditions, anxieties, hopes and fears. Good doctors learn to take into account social and economic factors, conditions at work and leisure, standards of housing and education, clothing, diet and personal habits. Every employer with a good occupational physician is equipped to understand and plan with a particular working community and to take into account in this planning the psychological, occupational and socioeconomic environment in which they are operating. There is always a need for research to identify and solve occupational health problems at the enterprise level.

Today these social aspects of community life are closely linked in the physician's work with the positive promotion of health as

well as the prevention of disease. Health largely depends on nutrition, housing, workplace hygiene, personal hygiene, socioeconomic status, social security, as well as organized public health and medical care.

At the same time, the regular rounds by the occupational physician of his/her 'ward', the workplace, ensures he/she is familiar with hazards and processes, and can seek additional appropriate information from either his/her multidisciplinary team or colleagues and other health and safety specialists.

### **1.8 European law and occupational health and safety**

Occupational physicians in Europe have been developing the profession in a rapidly changing economic and working environment. The occupational medical specialist has the capacity through his/her scientific and clinical training and professional experience to lead the multidisciplinary occupational health team. But he/she should also be fully conversant with enterprise management sciences, to enable adequate understanding and input to the senior enterprise management team, whether of his/her national or regional government or health service or a multinational, large, medium or small enterprise.

Health and safety law, employment law and legislation on workers' compensation, insurance and employers' liability insurance are all part of the occupational physician's necessary area of knowledge.

The changing working environment has produced a changed concept of health and safety at work. When in 1974 the EU set up its own advisory committee on safety, hygiene and health protection at work, consisting of six representatives from each member state (two from government, two from employers' and two from employees' organizations), the conditions were created for working towards an EU plan for occupational health. There followed the setting up in Luxembourg of the European Health and Safety Directorate DGV/F, and in 1978 a first action

programme was approved by the Council of Europe, covering 14 major areas including:

- incorporation of safety aspects into design, production and operation of machinery, equipment and plant;
- determination of safe exposure limits for workers;
- monitoring of health and safety;
- study of accidents and diseases;
- coordination and promotion of research;
- development of health and safety consciousness through education and training.

A second action programme began in 1984, recognizing health and safety as part and parcel of the EU's aim to improve quality of life and standards of living across Europe. The participatory approach runs throughout.

Since the Single European Act, 1987, health and safety directives can be approved by a qualified majority in the Council of Ministers and are then required to be incorporated into national law of all members of the EU, even those who may have abstained or voted against them.

In June 1989 the Council of Ministers approved the Framework Directive [52], which obliges employers

- to evaluate health and safety risks, introduce preventive measures and develop a prevention policy;
- to designate competent personnel for health and safety or to use outside agencies;
- to make arrangements for first aid, fire precautions and emergency procedures;
- to maintain health records and report accidents and diseases;
- to provide information to workers regarding risks to health;

- to consult workers and their representatives on health and safety measures;
- to provide health and safety training for workers and their representatives;
- to ensure that workers receive health surveillance appropriate to the health and safety risks they incur at work.

A number of individual directives within the meaning of Article 16(1) of Directive 89/391/EEC were issued to regulate health and safety further. The transposition of EU legislation into occupational health practice has been assessed by the European Trade Union Technical Bureau for Health and Safety [53].

European organizations active in the field of safety and health at work include:

- the European Foundation for the Improvement of Living and Working Conditions, founded in 1975 in Dublin and now covering 15 member states (<http://www.eurofound.ie>); it is financed by a subsidy from the general budget of the EU, and aims to study factors to improve working and living conditions in member states in the medium to long term;
- the European Agency for Safety and Health at Work, founded in 1996 in Bilbao with the objective of encouraging improvements in the working environment for the protection of safety and health of workers (<http://www.eu-osh.es>); it aims to provide EU bodies, member states and those involved in the field, with technical, scientific and economic information of use in the field of safety and health at work.

In the former socialist economies, the transition in the 1990s from large state-owned enterprises and government agencies to market-oriented SMEs has also resulted in new occupational health and safety legislation, passed for example in 1995 in Hungary and 1996 in Poland. Occupational physicians from countries in economic transition have now embarked on reviewing and reorganizing their occupational medicine practice.

In Europe (particularly in Denmark, Finland, Norway and Sweden) a vigorous health and safety culture has been fed by occupational physicians and other health and safety professionals active in national institutes for working life, research and academic agencies.

## **1.9 Environmental medicine and environmental health**

Environmental health generally refers to the health consequences of exposure to factors present in the environment outside the enterprise's premises, while occupational health refers to factors acting within the working environment. Each enterprise, but particularly those emitting pollutants to the ambient environment, has the potential to affect the health of people living in its neighbourhood. This is why it should have, or should be encouraged by national policies to have, its own activities aimed at assessing and minimizing its impact on health due to environmental pollution and/or excessive use of natural resources. Environmental health impact assessment is usually a statement of the beneficial or adverse health effects or risks due to environmental exposure or likely to follow an environmental change. Integrated environmental and occupational health impact assessment should take into account a variety of combinations of physical, biological, psychological, social, economic, lifestyle, cultural and aesthetic environmental factors. Health impact assessment of any factor should refer to the results of epidemiological studies or surveys of various environmental hazards [54,55].

Environmental medicine is the domain of the physician, and concerns the impact of environmental factors arising outside the workplace on the health of the patient or group of patients for whom he/she provides care.

In many leading enterprises a relation between management of work and ambient environment and health has been recognized. As a result, a health and safety audit is now combined with

certain aspects of environmental audit into a health, environment and safety (HES) audit [33].

At present in Europe, there is a divergence of views and practices regarding the occupational physician's responsibilities in this field. In a number of countries they are hardly involved except in relation to environmental hazards generated by the workplace itself. In others, and this appears to be increasingly a trend for the future, the occupational physician is part of a multidisciplinary team of experts assessing broad environmental health impact.

The epidemiological significance of environmental hazards and the impact on individuals at risk always requires interpretation, and the specialist occupational physician is able to advise.

A holistic and participatory concept of good practice in health, environment and safety management (GPHEM) in industrial and other enterprises was noted with appreciation by the WHO Third Ministerial Conference on Environment and Health (London, June 1999) [24]. The main objectives of GPHEM are to provide a safe and healthy working environment while preserving the general environment and health of people living outside the premises; to ensure an optimal balance between economic and business interests on the one hand and the working ability and health of the entire staff, including their families, on the other; and to provide healthy and environmentally friendly products and services [33].

Good practice in health, environment (working and external) and safety management in industrial and other enterprises is a process involving working communities (employers, management at all levels, employees) and experts in the different disciplines (occupational health, environment, safety, social and economic sciences). This managerial process should be capable of adhering to and implementing national legislation and policies as well as absorbing inputs from international strategies aimed at:

- health and safety protection and promotion for employees;
- product stewardship and health protection of consumers and the general population;
- environment preservation through cleaner production, eco-efficiency, prevention and/or control of environmental pollution, and repairs and improvements if necessary;
- monitoring performance of and adjusting policy and tools to ensure continuous improvement of management.

Good Practice in HESME involves a commitment by senior management to accept total responsibility for, and effective managerial processes and procedures on, HES matters, the active participation of employees and adequate resourcing.

The health and environment aspects of management (occupational health, health promotion, environmental health and health and social capital) have an influence on the enterprise's competitiveness and its sustainable development.

Added value arising out of such good practice includes:

- more efficient use of existing resources for achieving health and environmental aims;
- improved communication about and management of risks;
- building partnerships at workplace, local and national levels for attaining health and environmental objectives;
- integration of HES issues into all activities at all levels of the enterprise;
- facilitating support and collaboration so that workers can enjoy the benefits that arise from healthier and safer workplaces following cleaner production principles [56] and thus leading to sustainable development.

In most countries the activities of agencies involved in environmental protection, environmental health and occupational health are separate, unevenly developed or at best only partly integrated. Environmental management in an enterprise will

inevitably involve the occupational physician, whether in the planning stage or in auditing and monitoring the system.

### **1.10 Occupational health services**

The ILO Occupational Health Services Convention (No. 161, 1985) and its Recommendation (No. 171) was a milestone in the establishment of OHS which contribute to the implementation of occupational safety and health policy and the performance of their functions at enterprise level. The ILO convention, the EU framework directive 89/391/EEC and national legislation in most European countries require employers to use either internal or external OHS. The scope of activities delivered by these services is continuously evolving to meet the needs of the social partners at work [1,4,12,13,21,23, 25,27,34].

Occupational health and medical services are structured differently around Europe reflecting the great variety in health, social security and insurance delivery systems. OHS are an essential element of national health care and public health systems. In many countries OHS units operate in the private health market, i.e. outside the public health and primary health care systems. The privatization of OHS created a need to introduce quality systems into their management as a major measure to assure their good performance [13].

In the EU, the major impact of the Framework Directive (89/391/EEC of 12 June 1989) [52], has been to extend OHS dramatically in a very short space of time. Many EU countries now see these services as a legal requirement for all workers. The whole scope of occupational medicine within the occupational health remit is changing fast, not least because of the single EU market (since 1992) and the changing pattern of employment (60% of employment in the EU is now accounted for by the services sector).

Further, current practice in the EU was assessed by the Danish Working Environment Service in the study *Multidisciplinary*

*services in occupational health and safety in the European Union* [57]. These services employ mainly nurses, physicians, safety engineers, occupational hygienists, ergonomists, physiotherapists, occupational therapists, middle-grade safety experts, laboratory technicians and occupational psychologists. Administrative support staff are mainly clerical and computer staff and managers.

As a result of EU occupational health and social legislation, and on the basis of experience accumulated in countries in economic transition, a new model of preventive services is being developed. This new model profits from the expertise of various occupational health professions, and at times of other specialists, to a much great extent than before. It may lead to the creation of multidisciplinary preventive services capable of assisting in management of occupational, environmental and non-occupational risks, which may affect the working capacity, health and wellbeing of employees as well as the working or general environment. In the case of chemical safety, good care of the work environment also contributes positively to outside environmental protection. Sometimes experts are not formally constituted into teams but are available for consultation. It is the occupational physician who advises enterprises when such consultations are needed.

Adequate access to preventive services is essential to increase equity in health and wellbeing within and between nations. It is also a prerequisite for establishing socially fair and sustainable trade competition [39, 41].

In Germany, for example, the prevention of occupational disease and injury is based on a highly developed system of:

- workplace medical examinations by qualified physicians before and during employment according to high diagnostic standards, within a system of 44 precisely defined and standardized sets of screening examinations related to individual workplace hazards;

- monitoring of workplace threshold values for a variety of occupational hazards;
- surveillance of workplaces by nearly 3000 technical inspectors employed by industrial and agricultural professional associations as well as the federal and municipal insurance agencies, and
- regular preventive examinations for retired workers who had received with certain workplace exposures during their working life [39].

In France, most workers are in private enterprises where occupational medicine is obligatory. Employers have to organize occupational medical services under the control of workers' representatives. There are broadly two kinds of occupational medical services: company services, and group occupational medical services (inter-enterprise services). Annual medical examinations are obligatory for all wage-earners when beginning employment, after sick leave, or following industrial injuries and occupational diseases. Craftsmen and employers, when not wage-earners in their companies, are not covered by the law on occupational health [39]. In the United Kingdom there is no obligation on the employer to provide occupational medical services but there is a legal requirement in the employers' duty of care for their employees. In addition, all companies must consider care of the environment, fire regulations and taxation liabilities. It is more difficult for smaller enterprises to provide acceptable standards of equity in OHS provision and the need to address these issues is recognized as a priority by the government's Health and Safety Executive (HSE). The guiding message is a simple one: "organizations need to manage health and safety with the same degree of expertise and to the same standards as other core business activities, if they are effectively to control risks and prevent harm to people" [58].

Migrant workers are a special priority throughout Europe, constituting as they do a large and shifting workforce

temporarily resident outside their own areas of origin [39]. Migrants are especially vulnerable to occupational hazards, particularly in the informal sector where workers are not necessarily protected and are often subject to highly unsafe conditions in makeshift factories [59].

In some countries, the occupational medical service is increasingly growing out of the national health service system of hospital-based occupational health and safety services, while in others such services are enterprise- or group-based or may be part of the state or private insurers' systems and disability support services.

## **2. ROLE AND FUNCTIONS OF THE OCCUPATIONAL PHYSICIAN**

### **2.1 Ethics and the occupational physician**

The complex and sometimes competing responsibilities of occupational health professionals towards the workers, the employers, the public, the competent authorities and other bodies (public health, labour organizations, social security and the judiciary) have placed ethics at the core of occupational medical practice.

Furthermore, the occupational health team may now include non-medical experts who at times require access to confidential medical information in order to carry out their tasks of improving health environment and safety management in the workplace. This results in an extension of the principles of medical confidentiality and ethical behaviour beyond the medical team itself into the multidisciplinary occupational HES network. The physician must ultimately set the standard and protect the worker from breaches of confidentiality that might have an impact on his/her continuing employment [60].

In 1992 the International Commission on Occupational Health (ICOH) published its International Code of Ethics for Occupational Health Professionals [61], summarizing the principles contained in the code in the following three paragraphs:

Occupational Health Practice must be performed according to the highest professional standards and ethical principles. Occupational health professionals must serve the health and social wellbeing of the workers, individually and collectively. They also contribute to environmental and community health.

The obligations of occupational health professionals include protecting the life and the health of the worker, respecting human dignity and promoting the highest ethical principles in occupational health policies and programmes. Integrity in professional conduct, impartiality and the protection of confidentiality of health data and of the privacy of workers are part of these obligations.

Occupational health professionals are experts who must enjoy full professional independence in the execution of their functions. They must acquire and maintain the competence necessary for their duties and require conditions which allow them to carry out their tasks according to good practice and professional ethics.

## **2.2 Role of the occupational physician**

The prime responsibility for the health and safety of workers rests with employers. The occupational physician's role is to advise them on how to:

- identify and assess the risks from health hazards in the workplace;
- protect and promote workers' health;
- carry out surveillance of factors in the working environment and working practices which may affect workers' health;
- improve working conditions and the working environment;

- maintain the health of the enterprise as a whole by providing OHS to workers and (through expert advice) achieve the highest possible standards of health and safety in the interests of a particular working community;
- strengthen workplace health promotion – a continuous process for enhancing the quality of working life, health and wellbeing of all working people through improving the physical, social and organizational work environment;
- develop work organization and working culture which supports health and safety at work and promotes a positive social climate and smooth operations, thus enhancing the productivity of the undertaking;
- use human resources management to increase the working capacity and ability of employees to cope better with the demands of working life.

Although there is a distinction between general health promotion and promotion of specifically work-related health, the occupational physician's role is to use both to improve the general wellbeing of the workforce and productivity of the enterprise. Primary prevention of workplace ill health through risk assessment and hazard control is the basic goal, accompanied by health promotion and prevention of noncommunicable diseases with their broader community and social impact.

The occupational physician can justify the workplace health promotion and prevention programme, as it is based on sound evidence.

The occupational physician can be cast in different role models, according to the type and structure of the organization and its current needs, but in all cases he/she attends first to the needs of the individual. Such role models include:

- an adviser at individual staff or group and organizational level;

- an agent of change, by identifying what is needed by the individual worker and what may be wrong with the present work organization or process, and suggesting how this may be changed with regard to health, work ability, environment and safety;
- an expert providing a critical evaluation of current practices and a contribution to enterprise knowledge and culture;
- a counsellor;
- a trainer designing and implementing training programmes;
- a source of knowledge, disseminating information;
- a workforce skill development resource.

### **2.3 Competencies of the occupational physician**

If physicians are to make a maximum contribution to employees' working ability and health and safety at work, there must be a proper arrangement in place to ensure they are competent. Competency involves more than training. Experience in applying skills and knowledge is another important element and this needs to be gained under adequate supervision.

Evidence-based occupational medicine, health and safety is the occupational physician's watchword. He/she must possess the competencies required to search for and assess this evidence diligently. This entails the ability to:

- formulate a question or a problem;
- search the literature and other sources for facts;
- appraise the validity and usefulness of the evidence;
- implement useful findings and provide a factual basis for his/her assessments and actions.

While occupational physicians have always had a role in workplace health promotion, until now addressing the burden of work-related disease and injury has had to be their priority. The

development of health promotion as a distinct discipline has become a significant additional resource for the improvement of the health of people at work.

Health promotion, both as an objective and as a process, has long been recognized as part of good occupational health practice. This is obvious from the definition of occupational health made by a joint committee on occupational health of the World Health Organization and International Labour Office in 1950: occupational health aims at “promotion and maintenance of the highest degree of physical, mental and social wellbeing of workers in all occupations”. The evidence base for the benefits of good occupational health practice has recently been compiled from reports by over 65 enterprises in 19 European countries [7].

The occupational physician must be able to communicate the evidence clearly and factually to clients, interact with other experts and always adhere to an ethical basis for his/her programme.

The occupational physician must also be aware of and keep abreast of developments in business management. If the physician is to be able to provide valid and competent advice to senior management, knowledge of the laws of supply and demand, profit, market forces and financial budgeting and constraints must be at least thorough enough to appreciate management’s priorities and the organizational parameters in which government structures and institutions or business enterprises are operating.

Thus the occupational physician would not be expected by senior managers to advise on their business or production plan, but should be sufficiently conversant with company or institutional policy and planning targets, financial constraints and profitability options to offer practicable advice on HES issues, in order to contribute towards the overall level of health and sustainability of the concern.

The role of the occupational physician in an organization's management and interaction with human resources strategies is key to good practice in HESME. Most specialist training in occupational medicine includes some training in business management. However, many physicians practising in the field do not possess such expertise. There is scope for providing such training for non-specialists within the context of continuing medical education.

The competencies which may be required of the occupational physician by the enterprise and its health and safety committee can be derived from WHO and ILO conventions, recommendations and resolutions, EU directives, the ICOH and recommendations of the Glasgow Conference on Core Competencies [1,25,26,61,62].

### ***Core competencies for specialist occupational physicians***

The fully specialized occupational physician is competent to carry out the following functions.

- identification and assessment of the risks from health hazards in the workplace:
  - undertaking workplace assessments and advising on control methods;
  - diagnosing work-related ill health;
  - organizing appropriate investigations for diagnosis of occupational disease;
  - recognizing the need for specialist assessment of the working environment through use of other multidisciplinary team members (toxicologists, hygienists, ergonomists, organizational psychologists, etc.) and organizing the team;
- surveillance of workers' health based on legal requirements, the magnitude of occupational risks to workers' health or by voluntary agreement [63]:

- pre-placement health screening and medical examinations;
- periodic examinations;
- exit examinations on leaving the enterprise;
- other medical examinations;
- biological exposure monitoring;
- biological effect monitoring;
- surveillance of the factors in the working environment and working practices which may affect workers' health:
  - monitoring of workplace hazards including physical, chemical, biological, ergonomic, psychosocial and other hazards;
  - organizing and undertaking workplace inspections;
  - organizing health surveillance for workers exposed to occupational hazards;
  - selecting biological monitoring on the basis of criteria of validity for the protection of the health of the worker concerned, with due regard for the sensitivity, specificity and predictive value of the tests concerned;
- advising on occupational health, safety and hygiene, ergonomics and on individual and collective protective equipment:
  - assessing control systems designed to eliminate or reduce exposure;
  - selecting appropriate personal protective equipment with the assistance of other experts as required;
  - advise on the ergonomic design of the workplace and working tools;
- organizing first aid and emergency treatment:
  - advising on the provision of first aid facilities and emergency procedures;

- advising on the planning and organization of work including the design of workplaces, the choice, maintenance and condition of machinery and other equipment, and on substances used in work:
  - advising on the introduction of new working systems and techniques;
  - including the human factor in the process design of the enterprise, workplace and working tools;
- participating in and guiding the process of formulating HES policy based on sound ethical principles:
  - advising management and workers' representatives on the ethical basis for a policy;
  - advising on the need for full consultations with workers' representatives;
  - advising how to choose and define HES targets which should be achieved by the enterprise in a specified time;
  - coordinating discussions leading to agreement by both management and the workforce representatives;
  - ensuring workers are fully informed of the policy and of their rights;
  - advising on tools to be used for monitoring and evaluating enterprise policy outcome;
- promoting the adaptation of work to the worker; assessing disability and fitness for work. Promoting work ability:
  - risk assessment of workplace hazards (as above) with advice on prevention of harm;
  - assessment of disability and fitness for work, preplacement and following work-related illness/ injury;
  - assessment of impairment, disability and handicap in relation to work;
  - clinical management in rehabilitation of disabled workers;

- application of ergonomics to rehabilitation;
- application of organizational psychology to rehabilitation in situations of work-related mental ill health;
- counselling employees regarding sickness absence;
- management of workers with drug or alcohol problems;
- advising on rehabilitation and redeployment;
- advising on maintaining aging and disabled workers in work;
- promoting work ability: health, skills and training in relation to the demands of work;
- advising on fitness for work and adaptation of work to the worker in the special circumstances of vulnerable groups and specific legislation, for example the EU Directive on Protection of Pregnant and Lactating Mothers 92/85/EC;
- collaborating in providing information, training and education in the field of occupational health, safety and ergonomics to management and the workforce:
  - communicating with people from various backgrounds and with different levels of technical understanding;
  - organizing and writing reports as precisely and quantitatively as possible;
  - making clear oral presentations;
  - organizing data bases (including computerized data bases and (possibly) websites) for the dissemination and publication of research in occupational health and safety matters;
  - counselling;
  - participating in committees, in particular the health and safety committee;
  - participating in analysis of occupational accidents and diseases;

- communicating with other professionals to organize and deliver training appropriately;
- contributing to scientific knowledge regarding hazards to health and safety at work, by research and investigation into health and work ability problems at work, following the ethical principles attached to research work and to medical research and including an evaluation by an independent committee on ethics, as appropriate:
  - conducting a formal scientific investigation;
  - carrying out a literature search and preparing a report;
  - interpreting scientific data in journals and from own research;
  - planning simple surveys;
  - recognizing and initiating the investigation of work ability, health determinants and disease in the workforce;
  - analysing routinely collected data, including sickness absence and accident data;
  - reporting regularly to management and workforce orally and in writing.;
- advising on, supporting and monitoring the implementation of occupational health and safety legislation:
  - application of occupational health law and ethics to individual cases;
  - advising managers on the implementation of health and safety and environmental law;
  - advising on health and safety policy;
  - advising workers and workers' representatives of their legal obligations;
  - evaluation of compliance with new legislation;
- recognizing and advising on hazardous exposure in the general environment arising from industrial activities:

- differential diagnoses of work-related and environmental-related disease;
- identifying, assessing and advising on the prevention of environmental hazards arising, or which may result, from operations or processes in the enterprise;
- recognizing and advising on hazardous exposures in the general environment arising from other sources or activities;
- liaising with other specialists responsible for environmental and community health;
- participation in workplace health promotion programmes:
  - health promotion needs analysis of the working population;
  - analysis of the ethical aspects of health screening;
  - cost-benefit analysis of work-related health promotion activities;
  - advocating and managing an agreed workplace health promotion programme;
  - seeking participation of workers and employers in the design and implementation of work-related health promotion and working ability maintenance programmes;
  - evaluating and auditing workplace health promotion programmes, especially with regard to their relevance to occupational health hazards in the workplace and the control of non-occupational determinants of health and working ability;
- management of the OHS:
  - assessing the occupational health needs of the enterprise;
  - defining the goals and objectives of the OHS;
  - defining the roles of staff in providing an OHS and formulating job descriptions;

- management of the occupational health department or service using quality management principles;
- evaluating the quality of service provision including audit of the professional medical aspects of occupational health care;
- negotiating and managing a budget;
- team-building;
- record-keeping;
- designing a training programme for occupational health staff;
- working as part of a multidisciplinary service:
  - leading the team;
  - hiring experts;
  - advising on implementation of other professionals' risk assessments;
  - coordinating health surveillance and biological monitoring with environmental surveillance and other risk assessments;
  - promoting multidisciplinary scientific work on exposure data gathering;
  - planning the efficient use of multidisciplinary resources;
  - contributing to the selection of criteria to be used to evaluate own service practice.

## **2.4 Areas of knowledge**

Professional competence will be acquired through education, training and experience.

The areas of knowledge required will be built on basic and postgraduate clinical medical and scientific knowledge acquired

prior to embarking on training and practice in occupational medicine.

Continuing medical education and self-directed learning in occupational medicine will cover advances in medicine (prevention, diagnosis and treatment of ill health) as well as advances in toxicology, hygiene, physical hazard management, ergonomics, environmental hazards control, epidemiology and changes in relevant legislation.

### ***General medical training***

The occupational physician will have undergone training, like all medical doctors, in the basic medical sciences and clinical medicine. These elements are universal to general medical training and are increasingly complemented by training in basic public and community health, including epidemiology. Many occupational physicians will have gone on to specialize for four years or more in a postgraduate medical or surgical specialist field or in family practice.

### ***Specialist occupational medical training***

Occupational medical training takes place after the medical student has passed his/her qualifying examinations, practised as a hospital junior doctor under supervision and possibly obtained his/her postgraduate specialization in one of the fields outlined above.

Occupational medicine training involves an expanding knowledge base beyond clinical medicine. Physical hazards, toxicology, genetics, microbiology, ergonomics, epidemiology and organizational psychology along with broader aspects of mental health care are some of the many fields of expertise required.

It is convenient to examine the requirements under the headings utilized in the previous section, to identify the clinical knowledge and skills the occupational physician should have.

## 2.5 General clinical knowledge and skills

Through experience, the occupational physician has the knowledge and ability to carry out the following functions:

- accidents, emergency medicine and surgery:
  - provide acute medical care for common injuries and illnesses;
  - stabilize casualties and refer them to specialist centres for emergency care;
  - diagnose and manage physical hazards and injuries associated with heat, cold, radiation, lasers, sound and vibration;
- cardiovascular disease:
  - recognize, assess and manage cardiac effects of asphyxiants and other cardiotoxic substances;
  - assess workers with cardiovascular disease and their fitness for work and rehabilitation or redeployment;
  - assess abnormal electrocardiograms and refer to specialist services as appropriate;
  - assess workers for peripheral vascular and cerebrovascular disease and manage them appropriately;
- dermatology:
  - undertake clinical differential diagnosis of skin diseases and occupational causes by history, examination and diagnostic evaluation;
  - manage occupational and environmental skin injuries and dermatoses;
  - identify and advise on control of occupational and environmental risk factors for skin disease;
- ear, nose and throat:
  - identify, diagnose and manage in the occupational setting patients with common occupational and

environmental ear, nose and throat conditions including allergies, granulomatous disease and chronic inflammatory disorders;

- diagnose noise-induced hearing loss;
- carry out and interpret an audiogram and implement appropriate treatment and preventive measures in the workplace for the assessment and control of noise;
- haematology/oncology:
  - assess, diagnose and prevent the known adverse effects of workplace exposures on the haematological system;
  - assess, diagnose and prevent known adverse effects on health of substances known or suspected to be carcinogens;
  - investigate causation in cases of suspected occupationally caused cancer;
- infectious diseases and travel medicine:
  - identify, manage and prevent infectious diseases of employees and of travellers;
  - manage appropriate immunization programmes for workforces and travellers;
  - prevent and manage ill health effects arising from poor hygiene and sanitation and exposure to food, water, air, blood or waste contaminated by pathogens;
  - prevent and manage infestations and zoonoses;
  - prevent and manage sexually transmitted diseases;
- mental health:
  - take a complete psychiatric and psychosocial history and carry out a mental state examination;
  - diagnose psychiatric disease and refer patients (where appropriate) for specialist treatment;

- identify work-related psychological and psychosocial stressors and advise on appropriate organizational remedial and preventive measures as well as treat and rehabilitate the worker;
- identify and manage the impact of psychological conditions on fitness for work;
- assess the impact of psychotropic medication on fitness for the specific job;
- manage workers suffering from mental ill health in the context of legislation on disability;
- design, implement and evaluate ethical workplace policies on alcohol and substance abuse;
- advise, design, implement and evaluate alcohol and substance abuse testing programmes in the workplace;
- provide appropriate support and counselling for workers affected by such policies and programmes;
- musculoskeletal conditions:
  - recognize diseases and disorders of the musculoskeletal system;
  - identify, diagnose and manage acute and chronic musculoskeletal disorders and associated disabilities;
  - advise on ergonomics and their applications in musculoskeletal conditions;
  - assess fitness for work in the presence of adverse musculoskeletal conditions;
  - design and manage rehabilitation programmes in the context of musculoskeletal conditions;
  - identify and manage chronic musculoskeletal pain syndromes;
- neurology:

- perform neurological and mental state examinations and assess occupational and environmental neurological disease or injury and fitness for work;
- advise and request diagnostic procedures for assessing neurological conditions caused by occupational or environmental factors and refer (where necessary) for specialist assessment;
- advise on rehabilitation of patients with neurological conditions;
- ophthalmology:
  - identify, assess and manage occupational eye injuries and disease and refer (where appropriate);
  - develop and manage vision screening and protection programmes and establish fitness for duties;
  - assess workplace risks to vision and plan and implement eye protection programmes;
- reproductive medicine:
  - occupational and environmental exposures to reproduction and effects on male and female fertility, pregnancy, the foetus and the breastfed infant;
  - advise on control of risks to reproductive capacity in the workplace;
  - advise on management of the pregnant worker in the context both of the Pregnant Workers' Directive and in the specific context of known hazards to pregnancy outcome;
  - access sources of up-to-date reproductive toxicology information;
- respiratory medicine:
  - advise on work-related and environmental respiratory hazards, their risk assessment and control;

- advise on statutory requirements to protect workers and the community from the effects of workplace hazards to the respiratory system;
- diagnose, manage and refer (where necessary) for specialist assessment and treatment cases of respiratory disease;
- carry out diagnostic tests including spirometry and interpret the results of respiratory diagnostic investigations;
- design, manage and evaluate respiratory protection and screening programmes in the context of occupational and environmental respiratory disease;
- toxicology:
  - advise on occupational and environmental toxicology, absorption, metabolism and excretion of principal toxic substances encountered in the workplace and the environment and their effects on health;
  - advise on policies to eliminate or control toxic substances hazardous to health;
  - plan and implement emergency measures to deal with chemical hazards;
  - assess clinical and worksite data along with literature reviews to evaluate risks to workers' or community health.

## **2.6 Knowledge areas and skills in occupational medicine**

The occupational physician should have sufficient knowledge and clinical skills to enable him/her:

- to provide high quality medical diagnoses and advice on treatment of occupational and environmental injuries and disease;

- to advise on patient care with an understanding of workplace hazards and exposures;
- to provide best practice advice on care aimed at the patient's functional recovery, which is the clinical aim;
- to take a comprehensive history emphasizing occupation and exposure;
- to carry out complete or focused physical examinations, as required;
- to select appropriate diagnostic studies;
- to identify the relationship between the complaint and the exposures;
- to identify non-occupational/environmental factors contributing to the occupational disease or injury;
- to refer or follow up patients with occupational injuries or disease;
- to elicit patients' concerns about exposures and establish a therapeutic relationship incorporating risk communication;
- to report all findings to affected individuals.

The 1997 Glasgow Conference on Core Competencies [62] identified the following areas of specific occupational medical knowledge an occupational physician should have:

- occupational hazards to health:
  - hazards to health in the workplace and the illnesses which they cause;
  - evaluating and controlling risks from hazards;
  - principles of toxicology, occupational hygiene and ergonomics;
  - principles of assessing factors in the organization of work which may give rise to risks for the physical and mental health of workers;

- clinical features and investigation of occupational disease;
- sources of information on occupational health hazards;
- principles of health surveillance;
- monitoring strategies for toxic substances and other hazards;
- biological monitoring;
- occupational health standards;
- principles of occupational safety;
- emergency treatment of injury at work;
- formulating health and safety policy with due attention to occupational health law and ethics:
  - acts, regulations, codes of practice and guidance governing occupational health, including the reporting of occupational injury and disease;
  - legislative framework for occupational health in the country and in the EU;
  - the interaction between the law and ethics in occupational health practice;
  - medical confidentiality;
  - ethical issues in formulating policies on HIV-infected workers;
  - ethical issues in formulating policies on drug and alcohol misuse and testing in the workplace;
  - equal opportunities issues in the workplace;
  - industrial compensation systems;
  - organization of social and insurance services;
  - employment law;
  - social compensation systems;

- environmental health law;
- litigation procedures;
- assessment of disability and fitness for work:
  - principles of assessing fitness for work (preventive and periodic medical examinations);
  - statutory requirements for fitness for specific jobs;
  - methods of rehabilitation and redeployment at work;
  - compatibility between the worker and the workplace;
  - ergonomics and rehabilitation to work;
  - evaluation of psychosocial hazards and rehabilitation for work;
  - factors affecting absence attributed to sickness;
  - assessment of fitness for work for older workers;
  - assessment of fitness for work for special categories of workers (e.g. women of reproductive capacity, young people, workers covered by the Disability Discrimination legislation);
  - application of the stress/strain concept to disabled employees;
  - principles of retirement on the grounds of ill health;
  - disablement benefits;
- knowledge of specific legal regulations and directives governing fitness for work and adapting the work to the worker, for example:
  - disability discrimination legislation;
  - guidance and codes of practice;
  - Pregnant Workers' Directive;
  - Young Person's Directive;
  - other relevant national legislation;

- promotion of work ability:
  - knowledge of measures that the employer, the employee, the workplace and other organizations may take to promote and support the functional capacity of all employees;
  - knowledge regarding assessment of ability in activities of daily living, physical and psychosocial ability, cognitive ability and motivation;
  - awareness of requirements to adapt work to the capabilities of workers in the light of their physical and mental health, for example aging workers.;
- provision of information, education and training and communications skills:
  - organization of OHS and role of statutory authorities;
  - ethical guidelines for communication with doctors, managers and others;
  - role and organization of other occupational health professionals in the multidisciplinary team;
  - organization of other health services;
  - principles, techniques and resources in communication;
  - organization of OHS in other European countries;
- contributing to scientific knowledge by research and investigation into health problems at work:
  - sources of scientific information;
  - principles of epidemiology and medical statistics;
  - ethical considerations in research;
  - principles of social and qualitative research;
- implementation of legislation:
  - knowledge of national and European legislation on health and safety at work, and guidance and codes of practice;

- knowledge of employment law;
- knowledge of employers' responsibilities and how to advise on implementation of health and safety legislation;
- knowledge of available resources for further advice and guidance;
- environmental medicine:
  - physical, chemical and biological hazards to health arising from industrial activities;
  - methods for assessing and controlling environmental hazards;
  - sources of information on environmental epidemiology;
  - control of major industrial accidental hazards;
  - environmental sources of hazards to health other than industry;
  - role of other professional groups with an interest in environmental health;
  - principles of integrated pollution control;
- workplace health promotion and health education:
  - major health risks, both occupational and non-occupational, relevant to working people and their families;
  - principles of health promotion and health education;
  - methodology to assess the health promotion needs of the working population;
  - how to involve senior management and the workforce in the workplace health promotion programme;
  - how to assist senior managers and workers' representatives in designing their health promotion programme, including selecting priorities;

- how to coordinate the health promotion programme in the enterprise with public health priorities in the community and the country;
- how to use periodic and pre-placement medical examinations for needs assessment in health promotion and for assessing the effectiveness of the health promotion programme;
- how to use medical consultation with patients to discuss their health promotion needs with them;
- how to assist the working community in the evaluation of their own workplace health promotion programme and to assess how this programme meets national and community health needs;
- management of the occupational health service:
  - principles and practice of management and administration;
  - needs assessment techniques of the enterprise;
  - ability to negotiate and finalize a contract with the enterprise;
  - management of the multidisciplinary team of occupational health professionals;
  - management structures in different organizations;
  - financial management and managing a budget;
  - preparation of a business plan for the occupational health department;
  - knowledge of management information systems using computer technology;
  - management of data collection and analysis;
  - establishment of protocols to manage patient records and preserve confidentiality;

- implementation of the philosophy and concepts of continuous quality improvement and statistical process control;
- industrial relations;
- analysis of organizational behaviour;
- organizational performance and enhancement techniques;
- marketing of OHS;
- use of appropriate management techniques in conflict resolution, negotiation, consensus-building, problem-solving, team-building and management of change;
- personnel management principles in selection, retention, promotion, motivation, appraisal and discipline of employees and management of workforce diversity;
- design of training course;
- evaluation and audit of occupational health department under continuous quality improvement;
- the multidisciplinary OHS:
  - optimum use of other health and safety professionals to assess health hazards and implement control programmes;
  - codes of good practice concerning the different tasks of the multidisciplinary team;
  - knowledge of the resources of the professions that participate in the multidisciplinary team, principally:
    - medical/health care professionals (occupational physicians, occupational health nurses, physiotherapists);
    - safety and technical prevention professionals (factory inspectors, occupational hygienists, chemists, toxicologists, engineers, pharmacists);

- ergonomics professionals (ergonomists, physiotherapists, occupational therapists, architects, designers);
- organization and psychology professionals (organizational psychologists, occupational psychologists, applied/technical sociologists);
- epidemiologists;
- multifactoral problem analysis using the multidisciplinary team;
- organization and planning of multidisciplinary teamwork;
- multidisciplinary intervention strategies;
- managing communication in the multidisciplinary team;
- audit and quality management of the multidisciplinary team.

### **3. SPECIALIST TRAINING**

#### **3.1 The current situation**

In almost all WHO European Member States there are two levels of qualification of physicians entrusted with essentially preventive functions and responsible for advising employers and the workers and their representatives on establishing and maintaining a safe and healthy working environment and on protecting and promoting employees' health and working ability. These are:

- physicians specializing in occupational medicine, and
- physicians working for an enterprise without any specialty diploma in occupational medicine.

This situation has arisen out of the legislation-led upsurge in demand for occupational physicians.

Doctors untrained in occupational medicine have thus in many countries been permitted to undertake the role of occupational physician, to enable enterprises to fulfil their statutory obligation to provide occupational medical services for their employees. The legislation on occupational health and safety does not specify the professional competence of physicians to be appointed by employers to meet these legal obligations.

Such non-specialist occupational doctors usually respond only to the short-sighted immediate demands of personnel officers to manage sickness absence. They see almost exclusively workers who are/have been absent from work and are about to undergo employment disciplinary procedures. As a result, the occupational health obligations of the employer may not be fulfilled by such untrained doctors, trying to fill an occupational medical role for which they are untrained.

At other times, in some countries, such doctors untrained in occupational medicine are used to deliver a primary health care service with no preventive occupational health component. This leads to a lack of occupational health provision.

Since bad practice in occupational health by occupationally untrained doctors is quite common, politicians and administrators sometimes do not realize the benefits that can be provided by comprehensive occupational health and medical services. On the other hand, there are enterprises which go far beyond their legal obligations and which claim that good occupational health is good business practice, increases productivity and enhances social relations in their enterprises [7].

### **3.2 Training requirements for specialist occupational physicians**

There are different requirements in the European countries at present.

In the 15 EU countries, training requirements conform to the EU's Medical Specialist Order, which recognizes the right for its accredited specialists to practise across the EU [64, 65].

The Directives covering the mutual recognition of basic and specialist medical qualifications were consolidated as Directive 93/16/EEC of 5 April 1993 [65]. The Charter on Training of Medical Specialists was adopted in October 1993 by the Management Council of the UEMS at its Berlin meeting.

Other non-EU countries are engaged in building their own systems of training and accreditation.

### **3.3 Integrating occupational medicine training in Europe**

The 1997 Glasgow Conference Workshop on Integrating Specialist Occupational Medical Training in Europe [62] discussed the possibilities of common training in different European countries, common training with other occupational health professionals, and training programmes that could include time spent in different European countries. The scope of education and training of occupational physicians should reflect their role in protecting workers' health and preventing risks [64]. The goal of integration could include a European course or diploma in occupational medicine, as well as the one already provided for mutual recognition of training for those within the EU.

The Glasgow Concordat [62] on core competencies is reflected in this document.

### **3.4 Continuing medical education and self-directed learning**

The development of continuous medical education (CME) or self-directed learning reflects the attitude of the profession towards basic general medical training and specialist training. There is a strong recommendation that it is indispensable, even

obligatory. The lack of CME reflects an unethical attitude towards the responsibilities of the profession and will bring inequality in care. It should bring together both academics and practitioners, be quality audited and enable further progress towards harmonizing training and competence across Europe.

At least 50 hours per year CME in areas appropriate to the individual occupational physician's work would probably be a good target. A cycle of five years of CME could be linked to the medical specialist system of education, training and certification (the latter via, for example, ministries of health).

### **3.5 Accreditation and certification of specialist occupational physicians**

Specialists in occupational medicine uniformly undergo extensive academic and practical on-the-job training under the auspices of university academic departments, national occupational health institutes and hospital-based clinical units, and faculties or departments of occupational medicine. The specialist training lasts at least four years beyond registration as a medical practitioner. Specialist accreditation takes the form of examination and usually acceptance of a dissertation, at the end of which the successful candidate is awarded a specialist certificate or doctorate in occupational medicine or membership of a faculty of occupational medicine. This is the case in several EU countries such as France, Italy and the United Kingdom as well as in the former socialist economies. Some countries, such as Germany and Sweden, are currently developing their quality systems. There are a number of different basic and high-level courses (both specific and multidisciplinary) in many countries, without there being necessarily any statutory or regulatory requirement for holding of certification in order to practise.

### **3.6 Training and accreditation of doctors not specialized in occupational medicine**

The major distinction lies between all the specialist occupational physicians on the one hand, and the large number of doctors carrying out occupational medical functions without an occupational medicine specialization on the other. These doctors may be highly qualified specialists in other disciplines but they lack the knowledge required to link health with working and environmental conditions and with productivity.

Many of the physicians providing medical advice in enterprises in Europe are non-occupationally specialized doctors. There appears to be inadequate political will to implement any change in this situation. These non-specialist doctors may be working in a number of settings including:

- part-time OHS;
- full-time OHS;
- specific mono-specialist services, e.g. those appointed under specific legislation (asbestos, lead regulations, etc.);
- services provided by hospital specialist doctors not qualified in occupational medicine;
- social security health services;
- private insurance health services.

Training programmes for these non-specialist doctors giving rise to non-specialist certificates and diplomas range in duration from three days to two years. Non-specialist occupational physicians at present may be required by law to undergo a brief period of training and induction into occupational health practice (Austria, Finland, Germany, Greece, Italy, Netherlands, Portugal). These courses lead to accreditation.

The major obstacle to running a more comprehensive and quality audited training programme across the WHO European

Region for non-specialist doctors is the question of funding and whether the state or the employer should bear the financial burden.

The 1997 Glasgow Conference Workshop on Requirements for Non-Specialist Training [62] recommended that in general such training should adhere to the outline of the occupational medicine training programme above, which includes knowledge of:

- occupational health hazards
- assessment of disability and fitness for work
- communication
- research methods
- management of OHS
- occupational health law and ethics
- environmental medicine
- work-related health promotion and promotion of work ability
- working in the multidisciplinary occupational health team.

Specific jobs and tasks performed by non-specialists will determine the level of knowledge required and a multi-tiered training system is required to meet the variety of non-specialist physicians' needs for training and competence.

### **3.7 Continuing medical education for non-specialist doctors**

Non-specialists should be required to demonstrate continuing occupational medical education covering the relevant areas in which they are practising occupational medicine. There should be a relationship between the percentage of time spent practising occupational medicine and the percentage of CME in occupational medical issues. It is a duty of public health and social policy-makers to create CME opportunities for these doctors, otherwise their contribution would be reactive and not proactive.

## **4. RELATIONSHIPS BETWEEN OCCUPATIONAL PHYSICIANS AND OTHERS**

### **4.1 Multidisciplinary services and the occupational physician**

In 1985, the International Labour Organization's general conference passed Convention 161 concerning Occupational Health Services [25,26], which detailed the principles of such services, their functions and conditions of operation, especially their full professional independence, their qualifications and their rights of access to information from employers regarding ill health among workers. This Convention is a valuable and concise blueprint for OHS.

Within OHS, the occupational medicine specialist physician provides specific competencies, knowledge and abilities. He/she carries out specific medical activities enabling the effective primary, secondary and tertiary prevention of disease and injury; applies specialist knowledge and experience to case management; and more broadly examines and advises on the relationship between health and work of the individual and of the collective or group, including the workforce of an enterprise or industry and even the community in which the activity is located. Assessment of the working environment and the work process and of its impact on the health of workers is inseparable from the occupational physician's other task of clinical case management. Thus the occupational physician becomes a partner in the management of the enterprise. He/she is able to advise the management how to carry out its responsibility to produce a healthy product for society as a whole, and protect the workers' health [66].

At present in Europe, multidisciplinary OHS operate under widely varying conditions [4,13,23,28,50,51,67-71]. Much of the motivation for employers to use multidisciplinary services at present is to prove compliance with legislation. Insurance-related financial benefits are a second major reason for employers' use of

the multidisciplinary team approach to health, safety and hazard control. Employers and employees seldom understand the real benefits of good occupational health practice. Few governments issue policy guidelines to encourage enterprises to have their own workplace health policies [50,58,72-76].

However, the need to strengthen national policies and information systems on HES management in enterprises was noted by the representatives of the environment and health governmental sectors participating in the London Conference [24] and the benefits of good practice in workplace health were presented in the background conference document [33]. Occupational physicians and other team members need to educate employers and employees further on the benefits of improved working conditions and work organization in generating a healthy balance sheet.

The enormous burden of mental ill health and work-related stress that has now become the second major cause of sickness absence throughout Europe in all branches of activity means that the occupational physician must be skilled in advising employers on how to create a working culture and work organization favouring good mental health and wellbeing in the workplace. Among the consultants that the multidisciplinary services make available must be mental health professionals, able both to have an impact on organizational aspects of mental health as well as to manage individual cases [17-22].

Thus to the classic disciplines in occupational health has been added the occupational mental health worker.

The current use in European countries of different professionals in teams was assessed by a questionnaire in the Danish study *Multidisciplinary services in occupational health and safety in the European Union* [57]. The most frequent members of these teams were nurses, physicians, safety engineers, occupational hygienists, ergonomists, physiotherapists, occupational therapists, middle-grade safety experts, laboratory technicians, and

occupational psychologists, as well as clerical and computer staff and managers.

The level of enforcement of the use of multidisciplinary services, whether compulsory or voluntary, varies throughout Europe. The Danish study reported that their use is compulsory in Austria, Belgium, Denmark (specific industrial sectors only), Finland, France, Italy, Netherlands, Portugal and Spain. In other countries (e.g. Germany, Sweden, United Kingdom), their use is voluntary.

In the majority of countries, these different disciplines are not organized formally into teams but are available for consultation in a variety of settings, and it is the responsibility of the occupational physician to advise employers when such consultations are necessary or worthwhile in terms of benchmarking and best practice. Accreditation of health and safety professional members of multidisciplinary teams is also tackled in different ways in different countries.

The EU Framework Directive's Article 7 on Protective and Preventive Services [52] lays down the broad principles of competence of these professionals. The Ad Hoc Working Group on Multidisciplinary Protective and Preventive Services is considering recommendations arising out of the commissioned work on qualifications of professionals, quality assessment, and control and evaluation of the function and effects of the multidisciplinary team on implementing health and safety in the context of the Framework Directive of 12 June 1989 (89/391/EEC).

Clearly, the relationship between the occupational physician and other members of a multidisciplinary team will depend on a number of legislative and other organizational factors, for example:

- the obligatory use of the team;

- whether the occupational health practitioner is full- or part-time;
- a nurse-led occupational health service;
- an occupational hygienist-led occupational health service;
- a service provided by an institute offering comprehensive HES advice;
- a service provided by individual occupational physician.

There is no requirement for the physician to be automatically chosen to manage the OHS team. However, if the occupational physician is properly trained in appropriate management and communication skills, he/she is in a strong position to do so through broad-based knowledge, a scientific background and systematic analytical approach, together with clinical acumen.

#### **4.2 Relationship of occupational physicians with employers and employees**

The aim of occupational health practice is “to protect workers’ health and to promote the establishment and maintenance of a safe and healthy working environment as well as to promote the adaptation of work to the capabilities of workers, taking into account their state of health” [61].

Occupational physicians must always act, as a matter of priority, primarily in the interests of the workers’ health and safety. Occupational physicians must base their judgements on scientific knowledge and technical competence and call on specialized expert advice where necessary. Occupational physicians must refrain from any judgement, advice or activity which may endanger their own integrity and impartiality.

Thus, occupational physicians must:

- provide competent advice to employers on fulfilling their responsibility in the field of occupational health and safety;

- give honest advice to workers on protecting and promoting their health in relation to work and working ability;
- maintain direct contact with health and safety committees, where they exist;
- whenever possible, regularly and routinely visit the workplaces and consult workers, technicians and management on the work that is performed.

There is also a new role for occupational health physicians, particularly those applying for senior managerial positions in the enterprise or in the multidisciplinary services. This is to assist the employer and employees of an enterprise to develop their own workplace health policy [33] and to set the HES targets of the enterprise. The role of the workplace as a health-supportive environment is going to be more and more recognized in national public health policies [10, 77-79].

The occupational physician is a natural partner of those in enterprises responsible for human resources management. Personal growth and development of the employee' skills are usually associated with better health, working capacity and longer life expectancy.

Occupational physicians must maintain full professional independence and observe the rules of confidentiality in the exercise of their functions. They must under no circumstances allow their judgement to be influenced by any conflict of interest, in particular when advising the employer, the workers or their representatives in the undertaking on the occupational hazards and situations which present evidence of danger to health or safety.

Occupational health professionals have a role to play in the promotion of workers' health, especially in assisting workers to obtain and maintain employment notwithstanding any health deficiencies or handicaps.

Special care is therefore needed with regard to the ethical aspects of the occupational physician's relationship with employers and the workforce. Occupational physicians must enjoy an independence in the exercise of their functions which will enable them to make judgements and give advice on the protection of workers' health and for their safety within a workplace in accordance with their knowledge and conscience.

Conditions of operation of occupational medical practice must thus include free access to the workplace where the physician is employed, with the possibility of assessing the working environment, taking samples and measurements where required, making job analyses, participating in enquiries after an accident, and consulting competent management and workers' representatives as well as the workers themselves.

Occupational physicians require a clear understanding of their independence from the management that employs them.

Management must also guarantee the provision of a budget and material conditions enabling occupational physicians to carry out their functions according to good practice, under an enterprise HES policy and to the highest professional and ethical standards. This includes adequate staffing, training and re-training, support and access to relevant information and access to an appropriate level of senior management.

The workforce can expect from their occupational physician that their medical status and records are held in conditions of medical confidentiality. The occupational physician must disclose to workers and their representatives full information regarding occupational hazards and best practice prevention. Workers can also expect that any health surveillance, medical examinations and so forth will be fully reported back to them. Workers must be informed by the occupational physician of their fitness assessment and cooperate in providing information to the physician regarding the demands of their job and of the worksite. This enables assessment to be made of their fitness for

the specific job along with direct observation of the worker's tasks where necessary.

Workers must also be informed of the opportunity to challenge any conclusions of the physician regarding their fitness for their work that they feel may be contrary to their interest. Appeal procedures must be established and made known to them by the occupational physician.

The workforce must be clearly informed of the objectives and details, procedures, etc. regarding health surveillance that may be proposed. The validity of such surveillance must be assessed and carried out with the informed consent of the workers by an occupational physician or other professional [63]. Health surveillance is one of the sources of information on health promotion needs both at the individual and group level as well as for evaluating an outcome of workplace health programmes. The outcome of health surveillance of the workforce is a major input for designing and evaluating company health policy.

The results of examinations carried out within the framework of health surveillance must only be conveyed to management in terms of fitness for the work envisaged or limitations necessary from a medical point of view on the assignment of tasks or on exposure to occupational hazards. General information on work fitness or in relation to health or the potential or probable health effects of work hazards may be provided with the informed consent of the worker concerned.

Occupational physicians must not reveal industrial or commercial secrets of which they may become aware in the exercise of their activities. However, they cannot conceal information which is necessary to protect the health and safety of workers or of the community. When necessary, they must consult the competent authority in charge of supervising the implementation of relevant legislation.

In the case of refusal or unwillingness to take adequate steps to remove an undue risk or to remedy a situation which provides evidence of danger to health or safety, the occupational physician must make his/her concerns clear, as rapidly as possible and in writing, to the appropriate senior management executive, stressing the need to take into account scientific knowledge and to apply relevant health protection standards, including exposure limits, and recalling the obligation of the employer to protect the health of workers in his/her employment. Whenever necessary, the workers and their representatives in the enterprise should be informed by the occupational physician and the competent authority should be contacted.

Managers and the workforce can expect the occupational physician to keep good confidential records for the purpose of identifying occupational health problems in the enterprise. Such records include data relating to the surveillance of the working environment, personal data such as the worker's employment history and health-related data such as the history of occupational exposure, results of personal monitoring of exposure to occupational hazards and fitness certificates. Workers must be given access to their own records.

Individual medical data and the results of medical investigations must be recorded in confidential medical files which must be kept secured under the responsibility of the occupational physician or occupational health nurse. Access to medical files, their transmission, their release and the use of information contained in them is governed by national laws or regulations and national codes of ethics for medical practitioners.

When there is no possibility of individual identification, information on group health data of workers should be disclosed to management and workers' representatives in the undertaking or to health and safety committees, where they exist, in order to help them in their duties to protect and promote the health and safety of exposed groups of workers.

Occupational physicians must increase the awareness of employers, workers and their representatives of the need for full professional independence and avoid any interference with medical confidentiality in order to respect human dignity and enhance the acceptability and effectiveness of occupational health practice.

Occupational physicians should involve themselves in multicentre and multidisciplinary studies to demonstrate the social, health, environmental and safety benefits of occupational health programmes. Such activities involve consultation and reporting to the health and safety committee of the enterprise.

### **4.3 Relations with other members of the medical profession**

Occupational physicians can be as proud of their achievements as other medical professionals can. They have, for example, contributed to:

- the prevention of a number of occupational diseases
- the use of epidemiology
- the identification of carcinogens
- the identification of reproductive failure, and
- the reduction of stress and mental ill health.

They have also contributed to the attainment of the following benefits by employees and employers:

- health benefits:
  - longer life expectancy;
  - increased disability-free life expectancy;
  - increased working ability;
  - longer working potential;
  - more employees free from occupational and work-related diseases and injuries;

- an increased percentage of staff and pensioners free from serious disability due to chronic noncommunicable diseases;
- an increased proportion of society with healthy lifestyle;
- increased equity in health between different professions, economic sectors and countries;
- environmental benefits (when the physician is actively involved in the environmental health policy of his/her enterprise):
  - increased efficiency in using natural resources;
  - more enterprises with improved pollution prevention mechanisms and reduced levels of waste;
  - more enterprises managing environmental issues in compliance with legal requirements;
  - more enterprises managing environmental issues using the principles and methods of such strategies as cleaner production, eco-efficiency, green productivity, and pollution prevention;
  - increased proportion of healthy and environment friendly products;
- social and wellbeing benefits:
  - improved social image of enterprise;
  - improved self-esteem of employees;
  - increased quality of working and living;
  - improved compliance with existing legislation;
  - increase employment opportunities for people with work disability due to chronic diseases or injuries;
  - increased participation of employees in the organization of their own work;

- increased awareness of society around social, environmental, occupational and lifestyle health and wellbeing determinants;
- increased professional skills of employees;
- increased managerial skills of employees;
- increased ability of employees to cope with the demands of working life;
- increased knowledge of employees about legal requirements and their rationale concerning health and safety at work and environment management in enterprises;
- increased employability;
- increased potential for social justice;
- increased awareness of characteristics and social value of good enterprise management;
- increased transparency in HESME evaluation and decision-making processes;
- a broader role for enterprises in social capital development;
- increased efficiency in using scientific research results in building up social capital;
- increased awareness in society of the determinants of sustainable production and consumption;
- increased efficiency in building up social capital through better understanding, confidence and mutual support among political, social and economic leaders;
- economic benefits:
  - increased productivity;
  - increased economic efficiency within sustainable development;
  - higher probability of economic revenue of investments;

- improved self-regulation and adjustment of the insurance system to seek the benefits of preventive activities;
- increased probability of reducing the social insurance premium;
- increased probability of reducing the cost of the health care system;
- more efficient use of existing knowledge and skills;
- improved economic stability.

The occupational physician has the responsibility of liaising with other members of the medical profession in the individual management of cases.

The occupational physician will also share knowledge of the importance of the workplace as a setting in which to protect and promote health. Other medical colleagues and specialist practitioners should be actively involved in solving certain problems. A special link should be made between occupational health physicians and public health and environmental health specialists since, to a considerable extent, they share the same objectives. Thus the occupational physician will also work closely with public health leaders and practitioners to establish health promotion priorities and joint spheres of action.

There are many ways in which the occupational physician may seek to organize and promote close ties of expertise and support for the health and working ability of workers.

Continuing medical education may also be a vehicle to broaden interest in occupational aspects of disease.

At all times, medical confidentiality in case management must be preserved, as must corresponding confidentiality towards the employer.

The occupational physician should seek to support primary care practitioners in the enterprise's area of operations through close liaison on case management and good information on local epidemiology. Such close ties will facilitate management of sickness absence and of the general health and wellbeing of the working population.

In this way the occupational physician will spread knowledge and understanding of the impact on workers' health and on the aging population of the management and work processes of the twenty-first century, particularly in post-industrial Europe.

## **5. RECOMMENDATIONS**

1. All working people in Europe should have equal access to comprehensive occupational medical services.
2. In view of the importance in European economies of small and medium enterprises, a strategy must be developed to meet the needs of the large numbers of workers employed in this sector.
3. The unique contribution of the occupational physician in recognizing work-related ill health must be acknowledged in general health care systems. The occupational physician's aid in diagnosing and managing these conditions should be more widely sought by other medical specialties. His/her skills in advising on prevention programmes, rehabilitation for work and implementation of appropriate measures to help employers meet their other legal responsibilities should be made more widely known to industry, in particular through effective multidisciplinary occupational health teamwork.
4. The social and economic costs of work-related ill health make it mandatory that there should be new efforts to expand occupational medicine in Europe. All doctors

practising in primary care and family practice settings should be encouraged to improve their competencies in the non-specialist occupational medicine arena.

5. Health promotion is an integral and important part of the occupational physician's functions. Workers and their representatives should be effective partners in deciding upon health promotion programmes in the workplace.
6. The European networks of occupational physicians must continue to work together to strengthen the profession and to train the substantial numbers of practitioners needed.



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*Annex 1*

## BODIES WORKING ON DEVELOPING THE PROFESSION OF OCCUPATIONAL PHYSICIAN

### European Association of Schools of Occupational Medicine

The initiative to form the European Association of Schools of Occupational Medicine (EASOM) dates from 1993. The First General Assembly meeting was held in Brussels in 1998, attended by 15 European countries. EASOM is an international non profit organization based in Brussels. Its objectives are to enhance the quality of occupational health services, develop a common language and platform to share experience, and improve cooperation between occupational physicians; to speak for occupational physicians and organizations in the field and influence the legislative process; and to enhance the scientific base of occupational medicine. EASOM wishes to play a role in the legislative process and is working with the concept of organizational health and a healthy workforce in safe working conditions.

### Occupational Medicine Section of the European Union of Medical Specialists

The European Union of Medical Specialists (UEMS) was founded in Brussels on 20 July 1958 with the objectives of: defending the title of specialists and their professional status in society; studying, promoting and defending the quality of a comparably high level of specialist care given to patients within EU countries; establishing tighter professional bonds between EU national professional organizations; and organizing exchanges of information on professional subjects concerning specialists. The decision to form an Occupational Medicine section was taken in 1996 in order to initiate steps towards protecting the profession, harmonizing specialist training, initiating quality control in the specialty and looking at continuing medical education. The section is not a formal EU committee but feeds into the Standing Committee on Medical Specialities. It is working on core competencies for occupational physicians, continuing medical education and the practice of occupational medicine in the countries of Europe.

## European Network of Societies of Occupational Physicians

The main objective of the European Network of Societies of Occupational Physicians is training and education in occupational medicine, encompassing under- and postgraduate and continuing medical education. It also emphasizes improving the quality of teaching and training and the exchange of information on the different programmes in European countries. There is an effort to compare existing curricula and core competencies and to harmonize, in line with the EU Framework Directive.

## International Commission on Occupational Health

The International Commission on Occupational Health (ICOH) and other nongovernmental organizations of occupational health professionals have important roles to play in the area of disseminating knowledge, sharing experience and improving the qualifications of occupational health and safety professionals. Quality aspects of occupational health service practice belong to the remit and research areas of interest of the ICOH Scientific Committee on Health Services Research and Evaluation in Occupational Health. ICOH's remit is to study and improve the quality of OHS and research, and the focus of action is on quality and competency. It also fills a networking function extending across the world, rather than the European focus of the above organizations, although it is also involved with the 51 nations of the WHO European Region.

## NATIONAL BODIES

Names of national associations of occupational medicine, institutions of occupational medicine, national journals of occupational medicine, and institutions responsible for training in occupational medicine, as provided to us by our national counterparts, are presented on the WHO website <http://www/who.nl>.

