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Work-related medical surveillance in small workplaces

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TOLONEN, M., HASSI, J., VAARANEN, A., KOLIVUORI, T., HEIKKILÄ, P., HIETANEN, M., KAKKO, K. and YRJÄNHEIKKI, E. Work-related medical surveillance in small workplaces. *Scand. j. work environ. & health* 5 (1979): suppl. 2, 41—44. This paper discusses job-related health examinations only; general screening for health is the responsibility of the community and therefore beyond the scope of occupational health services. Accordingly, in this context health examinations were considered sensible for two reasons only: first, to insure that an employee's mental and physical attributes match the requirements of his or her job and, second, to detect possible adverse health effects caused by work. The first category refers to preemployment examinations and the second to periodic examinations. A routine preemployment physical examination program for workers considered for any job seems needless from a labor protection point of view. One-third of the work force under study was considered to be in need of either preemployment or periodic health examinations or both. Young workers (under the age of 18) to be examined prior to assignment to a new job constituted only 2 % of the population. Most preemployment and periodic examinations were required for workers exposed to noise. They numbered 480 (20 %). Eighty-five of them should be given an audiometry examination annually and the rest, 395 persons, every third year. Exposure to chemical substances created a need for health examinations for less than 10 % of the workers, allergens, solvents, mineral dusts, and metals being the most common such substances. In eight establishments 25 persons were exposed to lead. Their blood tests indicated, however, that routine health monitoring was unnecessary. In addition, truck driver examinations and color vision tests for electricians could fit within occupational health care, along with the preemployment examinations of food handlers required by the National Health Law. In contrast to engineering controls, the training of proprietors of small businesses and their employees, labor inspection, and other preventive measures, health examinations seem to play a secondary role in the labor protection of small workplaces.

Key words: health examinations, occupational health, small enterprises.

The present survey of 163 workplaces (6) also included a medical evaluation of

whether labor protection required medical examinations for employees. The term "requires" refers to regulations (1, 2, 4) or other accepted medical standards (5). The ultimate purpose, then, was to assess the quantity of the job-related health examinations and thus evaluate the work load required for the medical examinations of workers employed by small firms. General health screening was excluded from this

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study because it is the responsibility of the municipality, as stipulated by the Public Health Act, and because screening therefore is not included in statutory occupational health services.

Health examinations were considered sensible from a labor protection point of view for either or both of the following reasons (5): (a) to insure that a person is fit for the work in question — with special reference to jobs known to involve risk to health and safety — and (b) to detect whether or not the work has had any adverse effect upon the worker's health.

Moreover, the availability of a feasible and commonly accepted examination procedure was taken into consideration. Accordingly, in spite of a notable hazard at a work site (e.g., draft), a medical examination was not always warranted. In this context it is also important to remember that this report deals with health examinations meant only for symptomless, apparently healthy workers.

STATUTORY MEDICAL EXAMINATIONS

The survey revealed only two categories of workers needing routine medical examinations required by law, namely, young workers (2) and workers exposed to specific occupational health hazards (1, 2, 4). The respective laws are the Law on the Protection of Young Workers (669/67) and the Labor Safety Law (299/58), both of which have been provided with instructions concerning their application (1, 2, 4). The companies and businesses surveyed employed neither persons exposed to ionizing radiation nor women performing night work nor other groups requiring medical examinations.

In addition to the statutory examinations we also considered other medical examinations which would seem justified from the point of view of labor protection, for instance, for workers in jobs requiring perfect functioning of the senses, particularly vision.

The necessity for examinations for young workers was evaluated by the occupational health nurses during their visits to the places of work. The evaluation of

the examinations required by the Labor Safety Law was based on hygienic measurements and other exposure data, as well as on the judgement of the occupational health nurses and, particularly, the physicians of the research teams.

During their visits the occupational health nurses also evaluated and recorded the need for medical examinations, required by the National Health Law (469/65), for persons handling foodstuffs even though these examinations are not within the scope of occupational health services provided by the municipal health centers. (These examinations are conducted at health centers free of charge according to a specific statute.)

RESULTS

Young workers

In our survey we found 40 young workers under the age of 18 (2 % of the work force in question) employed by 23 firms. Ten percent of these young people worked in offices or in other similar light and non-hazardous jobs for which no medical examination is required. The rest should have been examined but were not.

Workers exposed to specific occupational health hazards

Physical and chemical exposures encountered in the survey have been reported in the occupational hygiene study (4). As expected, noise was the most common exposure causing need for health examinations. A total of 480 persons were exposed to a noise level requiring an audiometry examination; of these 85 workers should be examined annually and the rest, 395 persons, every third year. Thus audiometry should be done for 20 % of the total work force under study and for 30 % of the personnel of the hazardous companies.

Examinations required for persons exposed to noxious and offensive substances were rather infrequent. The chemical exposures have been listed by Heikkilä et al. (4). One should note, however, that the

indicated prevalences of exposures to various substances give a slightly overstated figure because some persons were simultaneously exposed to two or more categories of toxic substances.

The occupational hygiene measurements alone would yield the following need for medical examinations: 55 persons exposed to solvents, 51 to mineral dusts, 25 to toxic metals, 17 to organic dust, and 5 to inert dust. In Finland a medical examination is required whenever the actual (time-weighted average) concentration of an air contaminant exceeds the action level, i.e., half the threshold limit value (TLV). Less than 10 % of the personnel of the hazardous places of work was exposed to such concentrations. When the total work force under study is considered, less than 5 % was exposed to chemical hazards to an extent which requires an examination. These figures imply the need for periodic health examinations.

The need for preemployment examinations was slightly greater. For instance, in addition to the exposures dealt with, employees who will be exposed to allergenic substances must have a preemployment medical examination, whereas their periodic examinations are disputable, particularly if the potential manifestation would be a skin lesion.

Exposure to airborne lead exceeded half the TLV at 25 work sites in 8 workshops. The blood lead (PbB) level of the 25 exposed persons had been determined regularly since 1975, and, except for one sample, the values were below 40 $\mu\text{g}/\text{dl}$. One subject had once had a PbB value of 42 $\mu\text{g}/\text{dl}$, but in a control examination six months later the concentration was 11 $\mu\text{g}/\text{dl}$. The PbB value of 16 exposed subjects had never exceeded 20 $\mu\text{g}/\text{dl}$. The biological TLV recommended by the Institute of Occupational Health, Helsinki, is 60 $\mu\text{g}/\text{dl}$ and periodic health examinations in a place of work are considered necessary only if the PbB values of any of the exposed persons exceeds 40 $\mu\text{g}/\text{dl}$.

We concluded that, as test examinations, the determinations of the PbB concentrations were indicated, but they showed that no routine periodic health examinations were needed. The occupational health personnel must, of course, remain alert to

possible changes in the individual exposures, and they should consider test samples again if need be.

Nonstatutory medical examinations

Applicants for some jobs should be evaluated with emphasis on the particular job requirements, e.g., acuity of certain senses. The survey included some groups of workers for which, although not required by law, a health examination could be justified also from a labor protection point of view. Nearly all businesses employed at least one cargo truck driver who operated on the public roads. The driver is, according to the driver's license statute (447/71), obliged to pass a medical examination when he first applies for a license. Subsequently, the license needs no renewal until he reaches the age of 70, but a medical examination is required at the age of 45 years and at five-year intervals thereafter. Although not required by law, it would be good occupational health policy to have these periodic examinations of all drivers within occupational health care.

Another example of voluntary health examinations fitting into occupational health services is the requirement for the preemployment color vision test for electricians.

Food handlers

Food was handled at 12 places of work (7 %). Two of these were canteens, and the rest were grocery stores. A preemployment medical examination, required by the National Health Law (469/65), should have been given to 109 persons; 16 of these persons had not been given such an examination.

DISCUSSION

Medical examinations for young workers seems to constitute a very small part of occupational health services. All of them can be carried out by an occupational health nurse. A doctor's consultation is required only if a contraindication to the job is observed or suspected.

Preemployment and periodic health examinations were required for one-fifth of all the employees under study. The overwhelming part of these examinations were required for persons exposed to noise. These examinations will not necessarily overload occupational health services at all since the audiograms can be taken also by technicians at the municipal health centers.

Chemical hazards requiring the health monitoring of subjects exposed were rather infrequent, and all occurred at work establishments which were already classified as hazardous before the visits. Less than 10 % of the employees would have needed preplacement or periodic health examinations or both.

Biological monitoring of lead exposure indicated that the need for regular health examinations was nonexistent even though air samples contained lead exceeding half the TLV. This result was attributed to the fluctuations of the lead concentrations, temporariness of the exposure, and ultimately to the use of effective personal protectors. Clarification of the lead exposure clearly demonstrated the advantage of test examinations prior to the final determination of routine practice.

The survey also indicated the necessity for hygienic measurements and professional judgement in the assessment of health examination requirements. Current need will substantially decrease after implementation of the recommendations made by the occupational hygienists. That is to say, a professional evaluation of the work conditions and consequent proper engineering control decrease the routine work load of occupational health services.

Voluntary health examinations were considered useful within the framework of occupational health services for certain groups of workers, such groups as truck drivers and electricians.

We do not share the widely held opinion, even among occupational health professionals, that every person being considered for any job, including clerical and other nonexposed employees, should be given a preemployment physical examination; in contrast, we found such a program needless from a labor protection point of view. This conclusion is based on the con-

viction that only about one-third of the total work force of 2,400 persons involved could, in our view, benefit from the kind of health examinations discussed. Follow-up examinations are likely to be less needed than preemployment ones. Annual examinations were the most commonly required for workers exposed to noise, and these may be performed by a trained technician.

Routine medical examinations relevant to labor protection in small firms are rather infrequent if a professional hygiene and medical assessment is carried out at the work sites. Furthermore, the end result of such an evaluation, based on past experience, will be even more desirable from a labor protection point of view, because a professional judgement of hazardous work sites strives in the first place for adequate and feasible safety measures instead of health examinations.

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