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# Fitness for work in health care workers: state of the art and possible operational recommendations for its formulation and management in relationship to alcohol and drug addiction

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**Key words**

Fitness for work; alcohol; drugs; health care workers

**Parole chiave**

Giudizio di idoneità; alcol; tossicodipendenza; lavoratori della sanità

**Summary**

*Both chronic and acute alcohol or drug consumption have severe health consequences, alter the subject's cognitive functions and work performance and increase the risk of work-related accidents, for the worker and for third parties (e.g., co-workers and other people subject to negative impact of worker's actions). Limited scientific evidence has suggested that some working conditions present in the health care sector (e.g., high levels of responsibility, competitiveness, burnout, shiftwork, work-related stress) may favour alcohol and drug abuse. The aim of the present report is to describe the problem of alcohol and drug consumption among health care professionals and to evaluate the problem of related fitness for work. The magnitude of this problem remains unclear; recent estimates have reported alcohol abuse and addiction problems in 1-14% and psychotropic, illicit and non-illicit, substance abuse in 6-15% of health care workers. The prevalence of tranquilizer and sedative/hypnotic drug use is high, particularly among physicians. However, it remains unclear whether the incidence of workplace accidents and injuries is higher among drug abusers, and whether the statutory introduction of prevention programmes has led to actual control of this problem in the workplace. Italian legislation identifies the occupational physician as a key figure to prevent psychotropic substance abuse in some work activities, but some difficulties in its application remain. Legislators should issue simple norms that clearly define the responsibilities and skills of each actor involved in safeguarding workplace health and safety, as well as clearly outlining workplace monitoring procedures.*

**Riassunto**

***«Il giudizio di idoneità nei lavoratori della sanità: stato dell'arte e suggerimenti operativi per la sua formulazione e gestione in relazione all'assunzione di alcol e stupefacenti».*** *L'assunzione cronica di alcol e sostanze stu-*

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*pefacenti è correlata ad un maggior rischio di contrarre diverse patologie ma altera anche le funzioni cognitive ed operative della persona determinando condizioni di aumentato rischio di accadimento di infortuni non solo per il lavoratore stesso ma anche per coloro che possono subire le ricadute negative delle sue azioni. Vi è evidenza scientifica, ancora limitata ma suggestiva, che alcune condizioni lavorative quali l'elevata responsabilità e competitività, condizioni lavorative usuranti, lavoro a turni, stress, condizioni particolarmente rappresentate nel settore della sanità, possano favorire l'uso di alcol e di sostanze stupefacenti. Sebbene il problema sia noto da tempo, gli studi finalizzati a definirne la dimensione sono pochi e con limiti metodologici: le stime più recenti indicano la percentuale del personale addetto all'assistenza con problemi di abuso o di dipendenza variabile dall'1 al 14% per quanto riguarda l'alcol, e dal 6 al 15% per quanto riguarda le altre sostanze psicotrope, illecite e non. Tra queste ultime va considerato anche il consumo di ansiolitici e sedativi-ipnotici, risultato elevato in molte casistiche soprattutto nella categoria dei medici. Non è ancora del tutto chiaro però se vi sia una dimostrata maggiore propensione tra coloro che abusano di droghe ad incorrere in incidenti ed infortuni sul lavoro e se l'introduzione per legge di programmi di prevenzione si traduca in un effettivo controllo del problema, almeno in ambito occupazionale. In entrambi i casi l'esiguità dei dati ad oggi disponibili e la difformità con cui gli studi sono condotti rendono non agevole un confronto a posteriori sulla loro effettiva efficacia. La normativa italiana che regola gli interventi da attuare in alcune particolari attività lavorative per contrastare l'abuso di sostanze psicotrope presenta ancora incertezze interpretative ma identifica comunque nel medico del lavoro una figura cardine per l'attuazione degli interventi preventivi. Sarebbe però opportuno che il Legislatore definisse una normativa semplice ed armonica individuando con chiarezza responsabilità e competenze per ognuna delle figure coinvolte, definendo anche in modo chiaro le procedure da applicare per effettuare i controlli all'interno delle realtà lavorative.*

## WHY FOCUS ON THE PROBLEM OF ALCOHOL AND DRUGS CONSUMPTION IN THE WORKPLACE?

The chronic consumption of alcohol and drugs is correlated directly or indirectly with a higher risk of contracting a variety of diseases, including infectious diseases [human immunodeficiency virus (HIV), hepatitis B and C viruses (HBV, HCV), tuberculosis (TBC)], psychiatric diseases, disorders of the nervous system and sensory organs, respiratory and cardiovascular diseases, digestive system diseases, and cancer (29, 32). The latest "Report by the Ministry of Health to the Italian Parliament on actions taken in accordance with Law 3.30.2001 n. 125 "Framework Law Dealing With Alcohol and Alcohol-Related Problems" (Rome, 12.13.2010) indicated that 20,000 fatalities per year (12,700 men, 4.4%; 7,300 women, 2.4%) in Italy are fully or partially ascribed to alcohol consumption; 4.71% and 2.79% of these fatalities, respectively in men and females, are from cancer, 21.33% and 13.7% from digestive system diseases, 31.54% and 21.67% from unintentional accidents, and 17.24% and 14.34% from intentional accidents (24). To address this problem, international organizations [e.g., the European Regional Office of the World Health Organization (WHO), the International Labour Organization (ILO)] and national authorities [Ministry of Health, Health Service Institute (ISS), Anti-drug Policies Department (DPA)] have allocated significant professional and economic resources to the development, promotion, and support of new campaigns for health promotion, awareness, and education.

However, the high morbidity and mortality rates do not constitute the first and only one reason for the recent and formal involvement of Italian occupational health physicians in these field even if this would have been actually the most appropriate one. In fact although smoking is a well-known disease and related mortality determinant and is even more damaging to health than alcohol or drugs, occupational physicians have not been involved to the same extent and in only a few cases have they addressed this problem in the workplaces. The reason why the problem of alcohol or drug consumption was drawn to the attention of occupational physicians in Italy is because the chronic or occa-

sional consumption of these substances alters an individual's cognitive and operative functions, and may produce conditions that increase the risk of accidents. These accidents may impair a worker's safety and health, and negatively impact on third parties (e.g., colleagues, direct or indirect service users). It is the duty of employers to protect workers' and third parties' safety and health by minimizing job-related risks and the potential negative effects of workers' actions. The employers rely on occupational physicians to assess such risks, to ensure the distribution of relevant information and worker education, and to perform health surveillance for the evaluation of job fitness.

Limited but suggestive scientific evidence has indicated that a variety of working conditions, especially those in the health care sector, may favour the use of alcohol and drugs because they are associated with high levels of responsibility, competitiveness, psychological demands, burnout, and psychosocial organizational factors (e.g., rotating and/or overnight shiftwork, extra work). Occupational physicians have always addressed these issues by establishing a trusting relationship with individual workers and seeking to achieve the protection of both workers and third parties, while also implementing health promotion actions. These efforts may exceed the physician's institutional obligations but are in accordance with his professional function and competence.

Although specific legislative obligations concerning alcohol and drug assumption control in the workplaces have been formalized in Italy (1, 6, 15), they have not fully clarified the best approach to this problem; some issues of this legislation have not been thoroughly defined and remain subject to differing interpretations. Uncertainty is especially evident in the health care sector; although health care workers are forbidden to consume alcohol during work, health surveillance is not mandatory. Employees' blood alcohol concentrations can be monitored at an employer's request, but such data cannot be used in assessing the job fitness of any health or social worker.

In the same way, although the monitoring of drug consumption through health surveillance in the workplace has been legislated in greater detail for different work activities, such monitoring is not mandatory for health care workers.

Article 41 of Law Decree 81/08, amended by Law Decree 106/09 (7), introduced the mandatory control of alcohol addiction and psychotropic or other drug consumption, but has not defined the conditions and modalities of such control.

In conclusion, considering the national legislative regulations and application guidelines issued by regional authorities (though the latter have differed slightly from one another); in Italy at present health surveillance with respect to alcohol and drug use is neither mandatory nor admitted for health care workers, and hence no fitness for work is requested from the occupational physician for these workers under these conditions. However we know that such problems exist and that occupational physicians have always dealt with them although they are not allowed to use appropriate tools for their management, such as drug testing for example.

## Magnitude and characteristics of alcohol and drug consumption at the workplace

Despite an increasing number of regulations, occasional and/or habitual drug consumption continues to have a major social impact. The only international estimate of the social and economic impacts of such behaviour was made in the United States, where the annual expense (including direct and indirect costs) was approximately $100 billion (17).

The United Nations Office on Drugs and Crime (UNODOC) has reported a fairly steady level of drug consumption internationally between 2006 and 2011 (29). In Italy, an estimated 6.2% and 4.7% of the population aged 15-64 years uses drugs on yearly and monthly bases, respectively (8): 1.3% of subjects have used heroin at least once in their life, 4.8% have used cocaine, 22.4% have used cannabis, 1.9% have used hallucinogens, and 2.8% have used stimulants. Survey responses have indicated that 0.35% of subjects used heroin, 0.9% used cocaine, 5.3% used cannabis, and 0.22% used hallucinogens and stimulants within the previous year (8). Polyconsumption, or the simultaneous use of different drugs and/or alcohol, should also be considered; for example, more than 50% of polycon-

sumers use cannabis in addition to cocaine or heroin, and more than 90% of those who use cocaine or cannabis also consume alcohol (8).

The prevalence data collected by the Anti-drug Policies Department include workplace drug test results. In a sample of 86,987 workers from different sectors (not health care professionals) who took first-level tests in 2010 the prevalence of positive results was 0.63% (*n*=551). Second-level testing confirmed drug use in 26.3% (*n*=145) of workers with positive first-level test results, and 15.9% (*n*=23) of these subjects were diagnosed as drug addicted. Cannabis was detected most frequently in both first- and second-level tests (~66% of positive cases), followed by cocaine (20-25%).

However, it remains unclear whether the incidence of workplace injuries and accidents is higher among drug abusers and whether the statutory introduction of prevention programmes has led to actual control of this problem in occupational settings. These issues cannot be readily addressed based on the currently available literature. Reported results are often influenced by the different laws regulating drug use in the countries under study, and the conclusions reached by different authors are often inconsistent. The number of accidents attributed to alcohol or drug abuse (8-47% of all accidents/year) has not been clearly demonstrated to be a direct consequence of substance consumption (11, 31). A direct causal link between substance abuse and workplace injury is thus extremely difficult to establish. Anyway international data indicate that at least half of the accidents that might result from substance abuse behaviour occur during driving, often with lethal consequences; in the remaining 50% of cases, the injuries are less serious (e.g., body trauma, collision with static objects) (5).

In a recent review that examined the impact of substance use on occupational accidents (23) an association between psychotropic substance use and increased accident risk emerged. This association was stronger for males and in some particular industries such as construction and manufacturing. However, these studies have suggested that risk determinants, such as a subject's inclination to hazard, are simultaneously a primary cause for substance abuse and for the hazardous behaviour. If this proposed conflation is confirmed by further investigations, the role of drug consumption must be reconsidered within the wider scope of a subject's behaviour, not solely as a risk factor for accidents. On the other hand some authors have indicated that abuse behaviour characterized by even moderate substance consumption did not reduce subjects' working performance, but exposed them to a higher risk of accidents only in the execution of simple and repetitive tasks (9, 16).

The effectiveness of preventive programmes implemented in the workplace on a company's initiative or by law must also be assessed. However, few data are currently available and differences in study procedures make the *post hoc* comparison of programme effectiveness difficult. No reliable evidence has established the ability of test-based monitoring to achieve acceptable and permanent results in terms of risk reduction (4, 28), although multidisciplinary, company-mandated, preventive campaigns [employee assistance programmes (EAPs)] have demonstrated a reduction in adverse events (20, 21, 30).

Thus, accumulating evidence suggests that simultaneous action on several fronts, including deterrent and prevention/education approaches (3, 27), can achieve a reduction in workplace accidents due to substance abuse more effectively than a merely deterrent approach, such as biological monitoring (e.g., urine testing) (18). A multidisciplinary approach would have a major impact because it could also focus on subjects' behavioural inclinations. Moreover, some authors have argued that such an approach would allow the effective and structured management of problems identified at the workplace but originating in a subject's behaviour outside the workplace (19). To assess the effectiveness of such multidisciplinary experiences, a sufficient observation period and an adequate number of subjects are necessary.

Similar considerations can be applied to alcohol consumption, which is widespread in Italy; in 2007, 3,300,000 males [20% of working-aged subjects (25-65 years)] and 850,000 females (5%) exhibited at-risk consumption patterns (non-moderate consumption, binge drinking) according to WHO criteria (32).

## THE PROBLEM OF ALCOHOL AND DRUG CONSUMPTION IN THE HEALTH CARE SECTOR

Three issues must be considered to define the real dimension and consequences of alcohol and drug consumption in the health care sector: the size of the population at risk, the probability of event (work accident) occurrence, and the severity of damage to oneself (biological or other injury) and to others (diagnostic or therapeutic error). Especially in English-speaking countries the problem of substance abuse among health care workers has been well known for a long time (the first reports date from the early 20th century ) (2, 12), but systematic investigations addressed to define its magnitude are quite few and with methodological limitations (2).

In 1984, Keeve (12) reported estimates varying between 1% and 15% of physicians with addiction problems, 10% of whom committed suicide because of this condition. The same author refers that of 116 physicians treated in *ad hoc* detoxification centers in California from 1972 to 1982, 92% were men (modal age, 50 years), 57% were addicted to alcohol, 27% were addicted to drugs, and 16% were addicted to both. More recently other authors (22), resuming also previous studies, estimated that 6% of physicians had abused alcohol at least once in their life, and 1.6% had done so in the past year. Data on illicit substance abuse among physicians have not been reported, but the rates of such abuse have been stated to be similar to those in the general population. They refer also a non-negligible frequency of benzodiazepine (11.4%) and opiate (14.6%) self-prescription within the past year, which suggests the risk of abuse. A study of substance addiction among health care staff found alcohol addiction or abuse in 14% and drug addiction or abuse in 7.5% of subjects; 26% of alcohol-abusing subjects also used illicit substances (10). These rates are similar to those observed in the general population.

A recent study (14) compared the prevalence of alcohol consumption among different health care professionals, including physicians, dentists, nurses, and pharmacists. Alcohol abuse was less prevalent among these professionals than in the general population. Dentists had higher rates of alcohol consumption than did other professionals, but alcohol abuse by nurses may have a wider impact on the population. The same authors published a subsequent study (13) that assessed illicit substance consumption among physicians and dentists. A larger proportion of dentists (9.8% in the past year, 6.2% in the past month) than physicians (6.7% and 3.8%, respectively) consumed illicit substances; the consumption rates among physicians were comparable to those in the general population (6.5% and 3.4%, respectively). In particular, the prevalence of marijuana consumption was much higher among dentists than among physicians, and lower among physicians than in the general population. However, the prevalence of tranquilizer and sedative/hypnotic drug consumption was clearly higher among physicians.

In 2007, Baldisseri (2) reviewing the available data from the literature emphasized that the exact prevalence of substance abuse among health care workers remained unknown. It is estimated that approximately 10% to 15% of these workers have probably used alcohol or drugs at some time during their careers and approximately 6% to 8% of physicians have substance use disorders and up to 14% an alcohol use disorder (these frequencies are similar to those observed in the general population). In contrast, physicians' use of medicines, especially opiates and benzodiazepine, is five times more prevalent than in the general population. Substance abuse is more frequent among men than among women, who rather consume more alcohol than medicines. Some areas of specialization (anesthesia, emergency medicine, psychiatry) may be associated with a three-fold higher risk of substance abuse. The prevalence of benzodiazepine use is higher among psychiatrists, while the prevalence of marijuana and cocaine use is higher among emergency workers.

No data are available for health care workers in Italy. If we apply the prevalence of drug and alcohol consumption in the general population (aged 25-65 years) to the estimated 815,000 health care workers in Italy (using data compiled from the rosters of professional associations) and assume a male:female distribution of 40:60, approximately

90,000 workers may have alcohol-related problems and approximately 55,000 workers may have drug consumption problems. Similar values are obtained when the estimates from the United States are applied: 114,400 (14%) for alcohol consumption and 49,000-65,000 (6%-8%) for drug consumption. In both scenarios the number of involved workers is not negligible.

Information on the possible impact of substance abuse or addiction among health care professionals in terms of injury to oneself and to third parties is even more limited. Several cases of infection (HBV, HCV, HIV) transmission from drug-using health care workers (mainly anesthetists) to patients have been reported (25, 26), mainly during surgical operations or exposure prone procedures. However, these reports prompt thought and discussion about biological injury risk prevention rather than opposition to substance use, because drug addiction was the condition favouring the operator's infectious state rather than the cause of injury and infection transmission. Thus, no currently available evidence allows the assessment of the probability of harmful event occurrence and the severity of injury to oneself or others as a direct consequence of psychotropic substance use.

## Possible operational recommendations for the formulation and management of fitness for work of health care professionals

At present, in Italy occupational physicians are not formally required to take any action regarding alcohol and drug consumption among health care workers, with the possible exception of blood alcohol concentration testing to monitor compliance with the prohibition of alcohol consumption at work. Further actions could be justified and supported by Article 41 of Law Decree 81/08, amended by Law Decree 106/09, which provides for monitoring to eliminate alcohol addiction and psychotropic and narcotic substance consumption among workers. However, occupational physicians find themselves caught between two strong arguments, both in favour of protecting civil rights but antithetical to one another: the maximization of protection for workers and third parties, and the protection of the operator's privacy and professional security.

Generally, legislation is assumed to solve such problems by outlining clear, unequivocal, and binding behaviour. In this case, however, the legislation is rather confusing and disorganized. Moreover, although we have scientific evidence for the existence of the problem, we lack sound knowledge about its magnitude and seriousness. We are thus convinced that a realistic and effective solution should not be sought by developing excessive legislation, but by improving occupational physicians' functions and practice. These professionals are in a position to address a variety of problems by providing all involved parties (employers, workers, third parties) with the tools and appropriate responses to fulfill their personal and individual responsibilities.

Legislators must issue substantial and simple norms forbidding the use of alcohol and psychotropic and narcotic substances at work and the performance of work duties under the effect of such substances. They must also provide for the detection of the presence of abuse and/or addiction to protect workers and third parties by clearly identifying and allocating the responsibilities involved and the skills and procedures to be applied.

Here, we offer some suggestions for the revision of the present Italian legislation. First, the legislation must provide a single list of work activities for which the consumption of all psychotropic substances must be controlled. This list must account for the real incidence and characteristics of injury ascribable to such consumption by defining different hazards for workers and third parties, and define different extents and frequencies of monitoring based on these differences. Second, the legislation must clearly state that the employer shall prepare a special document (possibly combined with the risk assessment document) identifying all work activities on the above-mentioned list that are present in the workplace, and describing the monitoring procedures implemented within his/her company. These procedures should include not only testing, but also appropriate information distribution, education, and training. Third, the legislation

must provide a list of specific jobs and activities, carefully identified, for which the occupational physician can decide (even though he is not bound) to carry out biological tests; workers when requested by occupational physician must undergo controls. Fourth, the legislation should outline different procedures for the assessment of alcohol or drug addiction and alcohol or psychotropic/narcotic substance consumption. The diagnosis of addiction is necessarily constrained by strict medico-legal definitions, whereas the assessment of substance consumption requires the establishment of a trusting relationship between the occupational physician and the worker. Fifth, the legislation should require the disclosure of a company's monitoring procedures and the collection of monitoring documentation from former employers before hiring a new worker. Finally, self-employed workers should be obligated to perform the same monitoring as used for workers employed in the same sector, and to keep related documentation and present it during official inspections.

These legal provisions should be supplemented by instructions for implementation (guidelines from national scientific organizations); the instructions related to alcohol and drug consumption should be separate, updated periodically, and allow occupational physicians to fully carry out their professional duties according to scientific and ethical principles. Under such legislation, occupational physicians would not be required to conduct monitoring, but to assess (possibly including the use of tests) the worker's condition with respect to alcohol and drug consumption. In this way, they could assess workers' job fitness according to criteria developed by scientific consent, and address problems using approaches that protect mainly workers or third parties according to the activities and jobs considered.

At the same time, it is also important that occupational physicians be allowed to implement voluntary health promotion programmes within the framework of social responsibility. The European Alcohol Action Plan 2000-2005 (WHO European Regional Office) (32) advocates the promotion of "anti-alcohol policies in the workplace, based on education, prevention, early identification and treatment." However, such programmes can only be implemented successfully if they are clearly defined, shared with employers and workers, and activated collaboratively and synergistically (not only by the occupational physician) with the structures concurring to its success, such as the Prevention and Addiction Services of National Health Units and the Occupational Health Hospital Services (31). In this context, the primary aim is not merely the designation of a specific section in the risk assessment document, but rather the proposal and implementation of an action plan that specifically seeks to control and prevent substance abuse at work.

The issue then becomes the appropriate design of a health surveillance programme that meets these specific requirements, keeping in mind that the occupational physician's role is not the investigation and control of possibly illegal behaviour, but rather the establishment of a trusting relationship with the worker that targets prevention and health promotion among workers and third parties.

Although many detailed operational plans are available for the control of narcotics, few such plans are designed to assess hazardous or harmful alcohol consumption or alcohol addiction. In our opinion, it would be useful to consider at least the following factors in the development of such plans.

### Alcohol case history supplemented by the Alcohol Use Disorders Identification Test C

The Alcohol Use Disorders Identification Test (AUDIT) is a 10-item questionnaire; the first three items (AUDIT C) are sufficient to assess whether the subject's condition suggests hazardous drinking. AUDIT C scores indicate whether the individual's consumption places them at risk; a score of ≥5 for men and ≥4 for women indicates possibly hazardous alcohol consumption that requires the evaluator to proceed with a brief intervention and the administration of a full AUDIT.

### Brief intervention

The brief intervention is a motivational interview addressed to subjects with high or harmful

levels of alcohol consumption. It provides information about the hazardous or harmful risks associated with alcohol and allows the interviewer to make *ad hoc* personal suggestions. The aim of the brief intervention is to increase the subject's awareness of risks associated with alcohol consumption and to provide him/her with tools that increase the likelihood of and motivation for making changes in his/her lifestyle and behaviour. A short follow-up meeting may be necessary to monitor and support the change.

During a brief intervention with a worker, it is important to discuss the professional risks that may develop due to alcohol consumption; the worker should understand that alcohol, even in small doses, increases the rate of workplace accidents and morbidity and alters work ability. The interviewer should also emphasize that recently implemented norms for workers' health and safety, which provide for the assessment of blood alcohol concentration, are based on our increased epidemiological knowledge of the seriously harmful effects of alcohol consumption, even in the absence of addiction.

## Objective examination and biological testing

An objective clinical examination that includes biological testing should always be performed to evaluate medically detectable signs and symptoms of alcohol consumption or addiction, regardless of AUDIT C outcome. At present, no single laboratory test is sufficiently specific and sensitive to be considered reliable (table 1). Thus, it is more accurate to evaluate several biological markers, and to understand the need to adjust the use of laboratory tests in response to new scientific evidence.

**Table 1** -Accuracy of ethanol chronic abuse biomarkers

| Test | Sensitivity | Specificity | Half life |
|---|---|---|---|
| γGT | 34-85% | 20-85% | 3-4 weeks |
| RBC-MCV | 40-90% | 60-90% | 3 months |
| AST | 15-69% | Low | 2-3 weeks |
| ALT | 26-58% | Low | 2-3 weeks |
| CDT | 66-80% | 90-97% | 2 weeks |

γGT: gamma-glutamyl transpeptidase
RBC-MCV: red blood cell mean corpuscular volume
AST: aspartate aminotransferase
ALT: alanine aminotransferase
CDT: carbohydrate deficient transferrin

Although the performance of these examinations increases the work commitment and responsibility of the occupational physician, it also offers an opportunity to better fulfill his/her professional function. The physician should not limit his/her action to bureaucratic/administrative issues, but should expand his/her practice of modern occupational health to include activities such as risk assessment, health surveillance, fitness for work, information/education provision, and management. An occupational physician must develop his/her technical and scientific role as a global consultant to the employer and as a health promoter, and must take the responsibility of addressing major ethical and social issues pertinent to his/her profession for the benefit of workers, companies, and society as a whole.

NO POTENTIAL CONFLICT OF INTEREST RELEVANT TO THIS ARTICLE WAS REPORTED

## REFERENCES

1. Accordo, ai sensi dell'articolo 8, comma 2, dell'Intesa in materia di accertamento di assenza di tossicodipendenza perfezionata nella seduta della Conferenza Unificata del 30 ottobre 2007 (Rep. Atti n.99/CU), sul documento recante "Procedure per gli accertamenti sanitari di assenza di tossicodipendenza o di assunzione di sostanze stupefacenti o psicotrope in lavoratori addetti a mansioni che comportano particolari rischi per la sicurezza, l'incolumità e la salute di terzi" (Rep. Atti n. 178/CSR). G.U. n. 236 dell'8 ottobre 2008.
2. Baldisseri MR: Impaired health care professional. Crit Care Med 2007; *35:* 106-116
3. Carpenter CS: Workplace drug testing and worker drug use. Health Serv Res 2007; *42*: 2
4. Cashman CM, Ruotsalainen JH, Greiner BA et al: Alcohol and drug screening of occupational drivers for preventing injuries. Cochrane Database of Systematic Reviews 2009, *Issue 2*. Art. No.: CD006566. DOI: 10.1002/14651858.CD006566.pub2
5. Centers for Disease Control and Prevention: Fatal occupational injuries: United States, 2005. Morbidity and Mortality Weekly Report 2007; *56 :* 297–301. Available at: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5613a1.htm

6. Conferenza Permanente per i Rapporti tra lo Stato, le Regioni e le Province Autonome di Trento e Bolzano. provvedimento 16 marzo 2006. Intesa in materia di individuazione delle attività lavorative che comportano un elevato rischio di infortuni sul lavoro ovvero per la sicurezza, l'incolumità' o la salute dei terzi, ai fini del divieto di assunzione e di somministrazione di bevande alcoliche e superalcoliche, ai sensi dell'articolo 15 della legge 30 marzo 2001, n. 125. Intesa ai sensi dell'articolo 8, comma 6, della legge 5 giugno 2003, n. 131. Gazzetta Ufficiale N. 75 del 30 Marzo 2006.
7. Decreto Legislativo 9 aprile 2008, n. 81. Attuazione dell'articolo 1 della legge 3 agosto 2007, n. 123, in materia di tutela della salute e della sicurezza nei luoghi di lavoro. GU N. 101 del 30 Aprile 2008
8. Dipartimento Politiche Antidroga. Relazione annuale al Parlamento sullo stato delle tossicodipendenze in Italia (dati 2010 - elaborazioni 2011). Roma, 28 giugno 2011. http://www.iss.it/binary/drog/cont/sintesi_2011.pdf
9. Fischman MW, Schuster CR: Cocaine effects in sleep-deprived humans. Psychopharmacology 1980; *72:* 1-8
10. Griffith J: Substance abuse disorders in nurses. Nursing Forum 1999; *34:* 19-28
11. International Labor Organization: *Management of alcohol and drug-related issues in the workplace*. Geneva, Switzerland: International Labor Organization, 1996
12. Keeve JP: Physicians at risk. Some epidemiologic considerations of alcoholism, drug abuse, and suicide. J Occup Med 1984; *26:* 503-508
13. Kenna GA, Wood MD: Alcohol use by health care professionals. Drug Alcohol Depen 2004; *75*: 107-116
14. Kenna GA, Wood MD: The prevalence of alcohol, cigarette and illicit drug use and problems among dentists. J Am Dent Assoc 2005; *136*: 1023-1032
15. Legge 30 marzo 2001, n.125 "Legge quadro in materia di alcol e di problemi alcol correlati". (G.U. 18 aprile 2001, n. 90).
16. Lehman WEK, Farabee DJ, Holcom ML, Simpson DD: Prediction of substance use in the workplace: unique contributions of personal background and work environment variables. J Drug Issues 1995; *25:* 253-274
17. Leigh JP: *Costs of occupational injuries and illnesses*. Ann Arbor (MI): University of Michigan Press, 2000
18. Macdonald S, Hall W, Roman P, et al: Testing for cannabis in the work-place: a review of the evidence. Addiction 2010; *105*: 408-416
19. Maltby L: Why drug testing is a bad idea. Security Management 1987; *31:* 85-90
20. Merrick ES, Volpe-Vartanian J, Horgan CM, McCann B: Alcohol & drug abuse: revisiting employee assistance programs and substance use problems in the workplace: key issues and a research agenda. Psychiatr Serv 2007; *58*: 1262-1264
21. Miller TR: Effectiveness and benefit-cost of peer-based workplace substances abuse prevention coupled with random testing. Accident Anal Prev 2007; *39*: 565-573
22. O'Connor PJ, Spickard A Jr: Physician impairment by substance abuse. Med Clin N Am 1997; *81*: 1037-1052
23. Ramchand R, Pomeroy A, Arkes J: The effects of substance use on workplace injuries. A study by the RAND Institute for Civil Justice and RAND Health. Pittsburgh (PA): Rand Center For Health and Safety in the Workplace, 2009
24. Relazione del Ministro della Salute al Parlamento sugli interventi realizzati ai sensi della legge 30.3.2001 n. 125 "legge quadro in materia di Alcol e problemi alcol-correlati". Roma, 13 dicembre 2010. http://www.iss.it/binary/alco/cont/relazione_2010.pdf
25. Riboldi L: Rischio biologico nelle professioni sanitarie. Stato attuale e prospettive. G Ital Med Lav Erg 2008; *30* (Suppl 1): 301-308
26. Riboldi L, Carrer P, Magnavita N, Porru S: Il rischio biologico. Problematiche di rilievo: il rischio verso terzi. G Ital Med Lav Erg 2010; *32*: 304-311
27. Spicer RS: Impact of a workplace peer-focused substance abuse prevention and early intervention program. Alcohol Clin Exper Res 2005; *29*: 609-611
28. Swena DD, Gaines W Jr: Effect of random drug screening on fatal commercial truck accident rates. Int J Drug Testing 1999; *2*: 1-13
29. United Nations Office on Drugs and Crime: World drug report 2010. Available at: http://www.iss.it/binary/drog/cont/WDR_2010_eng_web.pdf
30. van derMolen H, Lehtola MM, Lappalainen J et al: Intervention for preventing injuries in the construction industry. Cochrane Database of Systematic Reviews 2007, *Issue 4*. Art. No.: CD006251. DOI:10.1002/14651858.CD006251.pub2.
31. Wickizier TM, Kopjar B, Franklin G, Joesch J: Do drug-free workplace programs prevent occupational injuries? Evidence from Washington State. Health Serv Res 2004; *39*: 91-110
32. World Health Organization Europe: European status report on alcohol and health 2010. Available at: http://www.iss.it/binary/alco/cont/European_status_report_on_alcohol_and_health_2010.pdf