

# Identificazione e valutazione del danno epatico in soggetti esposti a rischio occupazionale da anestetici generali

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## KEY WORDS

Early diagnosis; liver damage; general anaesthetics; decision support system

## SUMMARY

**«Identification and assessment of liver damage in subjects exposed to occupational risk due to general anaesthetics».** Background: The program Hepascore was produced by an interdisciplinary group working in the Laboratory of Clinical Informatics of the San Giovanni Battista Hospital in Turin with the aim of supporting physicians in the early diagnosis of hepatic damage and in its qualitative and quantitative characterization. The methodology used by this program can be useful especially for investigations concerning Industrial Medicine, which intend to control the occupational risk due to environmental exposure, not only to perform an early diagnosis (secondary prevention), but also to control the temporal evolution of the disease, by comparing significant data in a reproducible way. **Objective:** This study was conducted with the aim of monitoring, by using the screening protocol of Hepascore, a group of workers exposed to an occupational risk by general anaesthetics, assessing the reliability of the proposed model and comparing it to the conventional approach in a cost/effectiveness analysis. **Methods:** We evaluated 280 subjects (nurses and physicians) professionally exposed to anaesthetic gas; the environmental presence of anaesthetic agents was tested in all operating room of the hospital by the measurement of halogenated anaesthetics and nitrogen protoxide in the air. All the 280 subjects were submitted to a complete clinical evaluation and laboratory analyses, as recommended by monitoring protocols; in parallel, but independently from the clinical evaluation, also the sequential way used in the program Hepascore (a first screening phase evaluating only a few laboratory parameters, followed by a confirmation phase based on a larger number of blood tests with more restricted limits) was performed. The protocol applied in this study foresaw that subjects in which clinical evaluation and/or Hepascore brought to suspect a 'likely' liver alteration, had to be investigated thoroughly and to be reevaluated after 6 months by clinical examination and by Hepascore. **Results:** The environmental determinations did never demonstrated the presence of anaesthetics over the threshold value (50 ppm for the N<sub>2</sub>O and 2 ppm for halogenated anaesthetics). The conventional clinical evaluation recognized as pathological 22 subjects with one or more liver parameters altered, which were explained as mild cytolytic or cholestatic alterations. The

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*screening protocol carried out by Hepascore in the preliminary phase evidenced as pathological 38 subjects on 280 and 22 of them (corresponding to the 22 subjects identified by the clinical evaluation) were confirmed in the following phase (disease likely). **Conclusions:** This fact confirms that the sequential approach used by Hepascore provides the same outcomes obtained by performing all tests in the entire population under study, allowing a saving of 57% of the total cost spent for the traditional evaluation. The sequential approach proposed by Hepascore could be employed in all the clinical settings in which an evaluation of liver functional state is required, both in presence of environmental risk factors and in the case of a programme for the optimization of the alimentary people life style.*