

# Tecniche di somministrazione di agenti anestetici per inalazione, esposizione professionale ed effetti neurocomportamentali precoci

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## KEY WORDS

Operating room pollution; open-circuit system; low-flow anaesthesia; neurobehavioral effects

## SUMMARY

**«Anaesthesia techniques, occupational exposure and early neurobehavioral effects».** Background: Occupational exposure to high concentrations of anaesthetic gases can cause neurobehavioral effects in operating room personnel. The measures taken to reduce waste gas exposures, including the installation of active scavenging devices and air-conditioning systems, are not effective, so that the NIOSH recommendations for maximum exposure are currently unattainable in practice. Objectives: The aim of the present study was to measure operating room pollution and neurobehavioral functions in a group of anaesthesiologists during open-system and low-flow anaesthesia. Methods: Environmental concentrations of N<sub>2</sub>O and isoflurane were measured by an infrared gas analyzer (Brüel & Kjaer) in open system and in low flow anaesthesia. Under the same stress condition, but with different exposure levels to anaesthetic gases, psychomotor vigilance and response speed were evaluated four times with the Reaction Time Test at the beginning and at the end of the first weekday shift and at the beginning and at the end of the last weekday shift. Exclusion criteria were considered excessive alcohol and coffee intake and use of CNS medication. Results: Concentrations of N<sub>2</sub>O and isoflurane in the operating room were 4.83 ppm and 0.4 ppm respectively, which are lower compared with open systems: 301 ppm and 11.1 ppm respectively. The mean of the Reaction Time was significantly higher ( $p < 0.01$ ) during work with the open system compared to work in low flow at the end of the first weekday shift and at the end of the last weekday shift. Conclusions: Low-flow anaesthesia appears to be effective in reducing waste gas exposure: lower flows produced lower values and protect the integrity of neurobehavioral functions.