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NEWS

Fatal breathing problems are four times as likely in intensive care as in general anaesthesia for surgery

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Intensive care units should routinely use a capnograph to monitor breathing to significantly reduce numbers of deaths and brain damage, a new report concludes.

The report by the Royal College of Anaesthetists and the Difficult Airway Society also found that obese patients are twice as likely to develop serious airway problems while under a general anaesthetic as non-obese patients. Patients with severe obesity (body mass index over 40) are four times as likely to develop such problems.

The prospective study monitored all major complications of airway management that occurred among the 2.9 million patients given a general anaesthetic in the United Kingdom each year and in intensive care units and emergency departments in 2008-9.

The findings show that anaesthesia is extremely safe: a life threatening airway complication occurs in less than one in 20 000 operations involving general anaesthetic (0.005%) and death in about one in 180 000.

But deaths resulting from airway problems were more likely in patients who had been sedated in intensive care units than in patients undergoing anaesthesia for surgery. Half of such events in intensive care resulted in a death, four times the proportion (12%) who died as a result of airway problems during anaesthesia for surgery.

Some of this difference can be explained by the fact that patients in intensive care are in poor physical condition, but the report identified a number of other causes. For example, often there is a less extensive range of equipment available to manage patients with airway problems in intensive care than in operating theatres. Also, patients at risk of airway problems were less likely to be identified in intensive care.

Tim Cook, consultant in anaesthesia and intensive care at the Royal United Hospital in Bath and an author of the study, told the *BMJ*: "I think the findings are quite stark. Only 20% of the adverse events happen in ICU [intensive care units], but these result in almost half of those causing deaths and brain damage. We can't be complacent in anaesthesia, but it is clear that much work needs to be done in ICU."

The absence of a breathing monitor, or capnograph, contributed to 74% of airway related deaths reported in intensive care units. A capnograph detects exhaled carbon dioxide and helps detect breathing problems at an earlier stage. It is used almost universally in anaesthesia but not routinely in intensive care units: a survey in 2010 found that only 32% of units always use capnography for tracheal intubation and that 25% always use capnography for continuous monitoring of patients requiring controlled ventilation (*Anaesthesia* 2010,65:462-7, doi:10.1111/j.1365-2044.2010.06308.x).

Dr Cook said, "We recommend that a capnograph is used for all patients receiving help with breathing on ICU. Greater use of this device will save lives."

The report also highlighted the increased risk of anaesthesia in obese patients. And it pointed out that some obese patients died from complications of general anaesthesia when their procedure could have been carried out under local or regional anaesthesia. In some cases this option did not seem to have been considered.

Nick Woodall, a consultant anaesthetist at the Norfolk and Norwich Hospital and a report coauthor, said, "We hope our findings will encourage anaesthetists to recognise these risks and choose anaesthetic techniques with a lower risk, such as regional anaesthesia where possible, and also prepare for airway difficulties when anaesthetising obese patients."

Major Complications of Airway Management in the United Kingdom: 4th National Audit Project of the Royal College of Anaesthetists and the Difficult Airway Society is at www.rcoa.ac.uk/nap4.

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