

The Volatile Consumption: Uptake Ratio – A proposed performance indicator for anaesthesia

Background

Performance indicators that have value for individual anaesthetists and anaesthetic departments have not been readily identified, mainly because of the team-based nature of anaesthetists' work which results in shared responsibility for clinical outcomes with other health professionals. The efficiency with which an anaesthetist delivers volatile anaesthesia is not subject to these problems. Improving efficiency of volatile use reduces volatile drug costs and associated unwarranted environmental pollution in addition to minimising loss of heat and moisture via the patient's breathing circuit. Both the individual and the department can therefore potentially demonstrate cost and quality of care improvements.

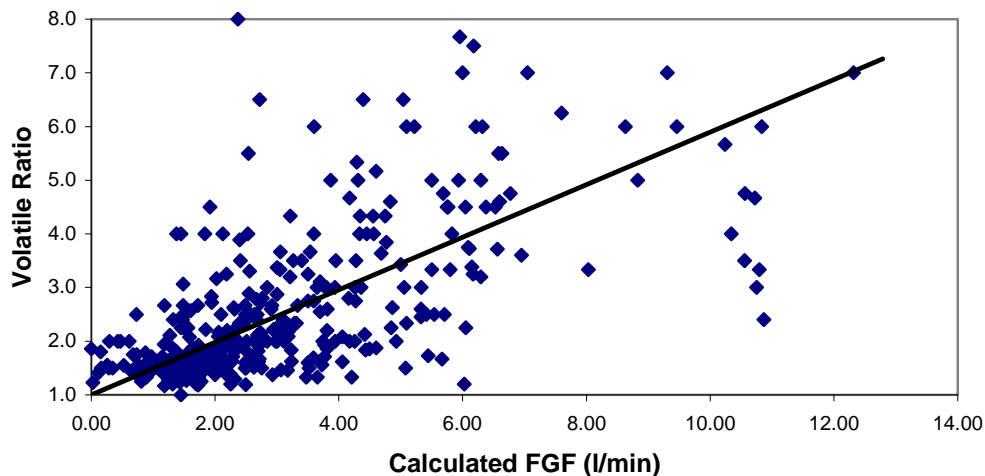
Method

The Draeger Primus software 4 update provides a logbook of fresh gas consumption, volatile agent consumption and volatile agent uptake on a case-by-case basis. Auditors accessed this logbook manually to create a record according to individual anaesthetist, which could be assimilated into a departmental record of performance. Data for circle breathing system use only was collected. In addition to calculating an average fresh gas flow rate per case, a volatile consumption: uptake ratio was constructed to demonstrate the proportion of wasted volatile agent. Data collections took place in April 09 and July 09 with an intervening presentation to the department on the analysis of the data collected.

Results

There was reasonable correlation between the Volatile Consumption: Uptake ratio and calculated average fresh gas flow rates (correlation coefficient of 0.56).

Relationship between Calculated FGF and Volatile Ratio
Reasonable correlation $r=0.56$



Initial data capture in April collected 364 cases covering 422 hours of anaesthesia with an overall cost of volatile calculated to be £6.20 per hour. In July, 285 cases were recorded covering 324 hours of anaesthesia with a volatile cost of £4.19 per hour. The majority of the cost savings was attributable to reduction in inefficient use of sevoflurane.

Discussion

The performance indicator described is an objective, readily available and appropriate measure that has been useful both for individual anaesthetists to adjust their own performance and for the department, which has benefited from significant drug cost savings.