

Perioperative CNAP monitoring

Position and benefit of CNAP monitoring

Patient population	■ Patients who experience or at the risk of episodes of perioperative episodes of hypotension.
Patient benefit	■ Significant reduction of the risk of a cardiac arrest during or after surgery ⁱ .
Physician benefit	■ Detect and treat hypotensive episodes which can lead to intra-/postoperative MI in those patients where an A-line is not indicated.
Advantage in patient monitoring	<ul style="list-style-type: none"> ■ Combines the benefits of A-line and NIBP without their respective disadvantages. ■ Unmet by other methods with respect to accuracy, ease of use and lifecycle cost.

Presently, blood pressure monitoring during surgery is done with invasive continuous A-line or intermittent non-invasive upper arm measurement.

The A-line is used in all cardiac surgery and in 15% of those non-cardiac surgeries where blood gas analysis is needed and cardiovascular instabilities are expected.

In all other 85% of non-cardiac surgery upper arm measurement is applied. Given the risk of complications, invasive monitoring is not warranted in this patient population and current non-invasive devices are not suitable for routine clinical use.

The 85% of non-cardiac surgery with upper arm measuring could, however, significantly benefit from continuous non-invasive blood pressure monitoring.

In the US 35 million non-cardiac procedures per year are performed, in which the use of an A-line is not indicated due to cost and complication reasons. Based on interviews and literature analysis a really continuous but yet non-invasive monitoring is definitely indicated in at least 6 million of these proceduresⁱⁱ. These patients are at elevated risk of complications as a result of unrecognized hypotensive episodes during or after surgery and can usually not be identified before the surgical procedure.

Intermittent blood pressure measurement leads to an under-diagnosis of and a delayed treatment response to perioperative hypotension and significantly increases the risk of dying either during or within 1-year after surgeryⁱⁱⁱ.

Clinical studies have shown that the consequent monitoring and aggressive treatment of intra-operative hypotension can reduce the risk of cardiac arrest and the rate of myocardial infarction considerably, especially in a patient population which is at high risk of perioperative myocardial re-infarction^{iv}.

Summary

The current situation of perioperative blood pressure monitoring

- 85% of patients receive unrepresentative intermittent NIBP monitoring^v
- Today, in the US alone 6 million patients are at risk and can benefit from CNAP
- Short-lasting intra-operative hypotension significantly increases the risk of postoperative death
- Continuous monitoring combined with aggressive treatment reduces the rate of MI drastically
- The number of patients at risk is increasing due to the aging of the population and its associated expected increase in surgery

All of this results in the need for reliable, easy-to-use continuous non-invasive blood pressure monitoring, which CNAP delivers today.

CNAP monitoring is available today as part of the Dräger® Infinity® patient monitoring system and will be available by Q4/2007 through the CNAP Monitor 500.

ⁱ Sprung J et al. Predictors of Survival following Cardiac Arrest in Patients Undergoing Noncardiac Surgery. *Anesthesiology* 2003;99:259-69

ⁱⁱ based on numbers of non-cardiac surgical procedures that are prone to BP drops due to blood loss, etc.

ⁱⁱⁱ Monk TG et al. Anesthetic Management and One-Year Mortality After Noncardiac Surgery. *Anesth Analg* 2005;100:4-10

^{iv} Rao TL, Jacobs KH, El-Etr AA: Reinfarction following anesthesia in patients with myocardial infarction. *Anesthesiology* 59(6):499-505, 1983

^v *Anesthesiologist's Manual of Surgical Procedures*. Jaffe RA, Stanley IS (Eds.). Lippincott Williams and Wilkins; 3rd edition 01/2004