



NEWS RELEASE

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New clinical study proves inexpensive surgery technology takes one third off patient recovery time

The NHS could save up to £400million a year if new technology was introduced

An NHS hospital has reduced by one third the recovery time taken by patients following major surgery. The patients at the Freeman Hospital, Newcastle upon Tyne Hospitals NHS Foundation Trust, in a study published today in the British Journal of Surgery, suffered fewer complications and were fit for discharge three days sooner than other patients.

Doctors at the Freeman used the CardioQ, an inexpensive monitor, during surgery to help better maintain fluid balance and blood circulation in the patient group.

The double-blind prospective randomised controlled trial published today followed 108 patients undergoing colorectal surgery. Patients using the CardioQ monitor were, on average, fit for discharge after six days and actually discharged after seven days. Patients not using CardioQ were, on average, fit for discharge after nine days, three days longer. They were actually discharged after nine days, two days longer.

If all patients were healthy enough to leave hospital two days sooner, the NHS could save up to £400 million per year. This figure does not include the additional costs of treating the significantly higher rate of clinical complications and unplanned use of critical care experienced by patients in the study's control group not using CardioQ.

Comparison between today's study and recent data released by the NHS Institute show that the average length of stay for patients using the CardioQ is almost half that of NHS averages; 8 days compared with 15 days.

A day in an NHS general or surgical ward costs up to £400 a day, depending on additional care required; in an intensive care unit it costs £1,200 or more. The potential productivity gains and financial savings to the NHS from reducing the length of hospital stay are huge.

The study's main findings showed that patients using CardioQ:

- were fit for discharge three days sooner (6 days versus 9 days)
- were actually discharged from hospital two days sooner (7 days versus 9 days)
- suffered significantly fewer post-operative complications (2% of patients using CardioQ versus 15% of patients in the control group)

- did not require unplanned admission into the hospital's critical care unit following surgery, versus 11% of patients in the control group (0% patients versus 11%)
- tolerated food significantly earlier (2 days versus 4 days after surgery), which itself can speed up recovery

In addition to use of the CardioQ, Mr Horgan's team at The Freeman Hospital has implemented an Enhanced Surgical Recovery Programme which also contributes to faster recovery times. 80% of patients undergoing colorectal procedures have keyhole surgery, compared to a national NHS average of just 5%. 80% of its patients undergoing major colorectal resections are admitted on the day of surgery.

CardioQ has been proven to reduce length of hospital stay in numerous different surgical specialities including orthopaedic, colorectal, cardiac and general surgery. It is estimated that it could benefit 1million NHS patients a year.

The CardioQ is an oesophageal Doppler monitor (ODM) developed by small UK medical device company, Deltex Medical. The technology uses a disposable ultra-sound probe inserted into the oesophagus to determine the amount of blood being pumped around the body during surgery. This in turn enables the anaesthetist to more accurately monitor and maintain the patient's body fluid levels during and after surgery. CardioQ has shown both clinical and economic benefit in each of seven clinical trials published in leading peer-reviewed medical journals. The CardioQ monitor costs £7,000 and the probes used in the trial cost £55 each. Savings from reduced length of stay mean each monitor pays for itself in days.

Mr Alan Horgan, Consultant Colorectal Surgeon at the Freeman Hospital, leader of the study said:

"These results are remarkable. Everyone involved in surgery and NHS management should read this study.

"Fluid-balance during and after surgery is incredibly important to patient wellbeing. Being able to monitor and maintain balance more accurately with CardioQ has allowed us to take days off patient recovery time. We have proven that it is possible to save the NHS both time and money, while also enhancing patient care."

In January, the National Institute for Health and Clinical Excellence (NICE) declared the use of oesophageal Doppler monitors to be "standard clinical practice" yet this technology is currently used in only 2% of cases where patients and taxpayers could benefit.

The first NHS Trust to implement widescale use of the CardioQ during surgery, the Medway Maritime NHS Trust in Kent, undertook a comprehensive audit of the impact and delivered savings of over £1 million a year. It reduced length of stay by over three days per patient undergoing a broad range of surgical procedures, a saving of £800 per patient.

Ewan Phillips, Managing Director of Deltex Medical said:

"CardioQ has now been proven to work in seven independent trials. This study has shown once again that it benefits patients and can deliver dramatic improvements to hospital productivity and financial efficiency.

"In the current climate of financial deficits, embracing this technology should be a no-brainer for the NHS. There are two reasons why NHS Trusts should buy technology: to save money and improve patient care; CardioQ does both. If NHS Trusts are serious

about enhancing patient care and significantly reducing their costs, they should prioritise adopting our technology.”

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**For further information on the Study please visit
www.reducinglengthofstay.org.uk**

Editors' Notes

1. The clinical trial assessing the effect of Doppler-optimized fluid management on outcome after elective colorectal surgery was authored by S.E Noble, C.P Snowden, B.K Shenton, and A.F Horgan, Departments of Surgery, Anaesthesia and Colorectal Surgery, Freeman Hospital, Newcastle upon Tyne.
2. Mr Alan F Horgan is a Consultant in Colorectal Surgery at the Freeman Hospital, Newcastle Hospitals NHS Trust. In 1992 he was a Research Fellow at Harvard Medical School, Boston, Massachusetts, USA and has worked in the speciality of Colorectal Surgery at The Mayo Clinic, USA
3. Oesophageal Doppler monitoring is a minimally invasive method of accurately measuring beat-by-beat circulating blood volume in patients undergoing surgery. It allows doctors to use fluids and drugs to optimise the flow of blood around the system, thus maintaining an adequate supply of oxygen to the body's organs and tissues.
4. Deltex Medical has developed the CardioQ monitor to allow anaesthetists to monitor and optimise circulating blood volume.
5. The Freeman study found that patients using the CardioQ had a reduced post-operative length of hospital stay of at least two days, that there was an 87.5% reduction in serious post-operative complications and that patients tolerated food up to two days earlier than those who underwent a standardised anaesthetic.
6. Reduced circulating blood volume is known as hypovolemia, similar to dehydration, which leads to insufficient oxygen being delivered to the organs. Insufficient oxygen causes medical complications including major organ failure which leads to longer hospital stays and in some cases death.
7. It should be noted that the Freeman study shows the median length of stay for patients, and the NHS Institute data shows the mean length of stay.
8. The data of costs of a day in an NHS general or surgical ward is published by Department of Health, Healthcare Resource Groups.
9. The data on CardioQ reducing length of stay in numerous different surgical specialities is published in the Improving Surgical Outcomes Group submission to House of Commons Select Committee inquiry into NHS Deficits.
10. The Enhanced Surgical Recovery Programme at the Freeman Hospital involves better preparation of patients for surgery including carbohydrate loading; more detailed education for patients about the type of surgery they will be having; and more thorough post operative assessment of patient circumstances.

11. A recent study on UK hospital length of stay for colo-rectal surgery was published by the National Bowel Cancer Audit Project, "Knowing Your Results", in June 2005 by the Association of Coloproctology of Great Britain and Ireland identified an average surgical mortality rate for colorectal surgery of 7%. None of the CardioQ patients in the Freeman study died.

12. The seven clinical trials referred to are listed below:

1. Mythen MG, Webb AR, perioperative plasma volume expansion reduces the incidence of gut mucosal hypoperfusion during cardiac surgery. *Arch Surg* 1995; 130: 423-429.
2. Sinclair S, James S, Singer M, Intraoperative intravascular volume optimisation and length of hospital stay after repair of proximal femoral fracture; randomised trial. *BMJ* 1997; 315: 909-912.
3. Venn R, Steele A, Richardson P, Poloniecki J, Grounds M, Newman P, Randomised controlled trial to investigate influence of the fluid challenge on duration of hospital stay and perioperative morbidity in patients with hip fractures. *BJA* 2002; 88: (1): 65-71.
4. Gan TJ, Soppitt A, Maroof M, El-Moalem H, Robertson KM, Moretti E, Dwane P, Glass PSA, Goal directed intra-operative fluid administration reduces length of stay after major surgery. *Anaesthesiology* 2002; 97: 820-826.
5. Wakeling HG, McFall MR, Jenkins CS, Woods WGA, Miles WFA, Barclay GR, Fleming SC. Intraoperative oesophageal Doppler guided fluid management shortens postoperative hospital stay after major bowel surgery. *BJA* 2005 95: (5); 634-642.
6. Noblett SE, Snowden CP, Shenton BK, Horgan AF. Intraoperative fluid optimisation improves outcome after major colorectal surgery. *BJS* 2006 93; issue 9; 1069-1076.
7. M McKendry, H McGloin, D Saberi, L Caudwell, AR Brady, M Singer. Randomised controlled trial assessing the impact of a nurse delivered, flow monitored protocol for optimisation of circulatory status after cardiac surgery. *BMJ*, doi:10.1136/bmj.38156.767118.7C (published 8 July 2004).