Recommended strategy to prevent upper gastrointestinal bleeding in patients who need aspirin alone or aspirin combined with another antiplatelet agent

Treatment	Risk of gastrointestinal bleeding		
	Low	Moderate	High
Aspirin alone	No gastrointestinal prophylaxis	<i>H pylori</i> eradication	<i>H pylori</i> eradication plus proton pump inhibitor
Aspirin and another antiplatelet agent	Proton pump inhibitor	<i>H pylori</i> eradication plus proton pump inhibitor	<i>H pylori</i> eradication plus proton pump inhibitor plus short term combined treatment

Risk factors for gastrointestinal bleeding include age over 65 years, history of peptic ulcer, *Helicobacter pylori* infection, concurrent use of non-steroidal anti-inflammatory drugs, and concurrent use of cyclo-oxygenase-2 inhibitors. Low risk is defined as no risk factors for bleeding and no history of ulcer; moderate risk is one or two risk factors for bleeding and no history of ulcer complications; high risk is multiple risk factors for bleeding or history of ulcer.

or vitamin K antagonist) greatly increased the risk of bleeding. The highest risk of bleeding came from combining aspirin with clopidogrel (odds ratio 7.4, 95% confidence interval 3.5 to 15). Thus, should we or should we not use combined antiplatelet agents in patients with high risk of cardiovascular or cerebrovascular disease?

The risk of gastrointestinal bleeding varies among users of antiplatelet agents. Older people, those with a history of gastrointestinal bleeding or peptic ulcer, and those who use non-steroidal anti-inflammatory drugs or cyclo-oxygenase-2 inhibitors are more likely to develop aspirin induced bleeding.¹² Aspirin users who are infected by *Helicobacter pylori* are also more prone to bleeding, but the risk is greatly reduced when the infection is cleared.¹³ These variations provide some guidance for assessing and balancing the risk of cardiovascular or cerebrovascular events against the risk of gastrointestinal bleeding.

The table shows the recommended strategy to prevent upper gastrointestinal bleeding in patients who need aspirin alone or aspirin combined with another antiplatelet agent. No randomised trials or observational studies are available to inform recommendations for patients who need combined antithrombotic therapy (such as aspirin and clopidogrel). The recommendations are therefore based on logical deductions and are open for debate.

In addition to these strategies, combined antithrombotic therapy should be given for the shortest duration possible to minimise the risk of bleeding. As

the number of people needing combined antithrombotic therapy is increasing every day, carefully designed clinical trials are needed to devise the best ways to protect patients at high risk of cardiovascular and gastrointestinal events.

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Morbidity and mortality after emergency surgery

Quality measures and performance indicators may reduce this toll

Patients who have emergency surgery, especially those with comorbidities, have a high risk of adverse outcomes. Of 20 000 reported surgical deaths, most occurred within days of emergency or major surgery.¹ Pneumonia was the most common cause of death (www.ncepod.org.uk/pdf/200304DeathData.pdf), and suggests that organ (lung) failure can progress rapidly in susceptible people.

Recent initiatives, such as the National Confidential Enquiry into Patient Outcomes and Deaths (under the auspices of the Patients Safety Agency), aim to reduce morbidity and mortality after emergency surgery. The multidisciplinary Improving Surgical Outcomes Group has also released a document with the same aims.² It describes system changes (such as better preoperative assessment) and interventions (such as

non-invasive monitoring of cardiac output³) that will help patients reach the far end of their “surgical journey” alive and well.

Current systems for assessing risk preoperatively are of variable effectiveness. Traditional clerking often fails to prioritise resuscitation and physiological stabilisation (correction of organ dysfunction and biochemical abnormalities). Making a diagnosis can come at the price of delay, and over-investigation often has little impact on treatment. Comorbidities are often underestimated,⁴ and it can be difficult to predict the combined effects of diseases (such as cardiac, respiratory, and renal failure).

The grading system of the American Society of Anesthesiologists (ASA) is simple but subjective. Individual organ dysfunction scores, such as the Goldmann cardiac risk index, are rarely designed for daily use and lack validation when multiple diseases are present. However, the POSSUM score (physiological and operative severity score for the enumeration of mortality and morbidity) is simple, it acknowledges variability between patients and different types of operation, and allows planning of critical care support.⁵ “Track and trigger” systems can detect early deterioration, but until the composition and benefit of an “outreach team” are defined (and in many areas funded), these systems may fail to make an impact. Even the patient’s exercise capacity (for example, ability to climb one to two flights of stairs) can be misleading if patients do not exert themselves enough to enter the anaerobic respiration range.⁶ Formal cardiopulmonary exercise testing and determination of the anaerobic threshold (the level of exercise at which anaerobic respiration first occurs)^{2,7} may be a cost effective way of screening patients for major *elective* surgery (the equipment costs about £35 000, €51 000, \$65 000), but such testing cannot be used for patients with an acute abdomen.

Changes in shift patterns and training affect the delivery of emergency care. Initiatives such as the European Working Time Directive and the recommendations of the National Confidential Enquiry into Patient Outcomes and Deaths have resulted in trainees in most disciplines being exposed to fewer acutely ill patients. An audit of the effect of implementation of the European Working Time Directive showed that trainees in anaesthesia were exposed to up to 22% fewer cases, which essentially removes a full year of specialist training.⁸ Shorter working times and the need to do out of hours work mean that surgical trainees spend up to 79% less time working during the day.⁹ This results in less interaction between resident trainees and consultants, who work mainly during the day. In addition, although competency based training allows trainers to “tick boxes,” training may be fragmented and not result in a rounded education, particularly now that trainees are exposed to fewer cases. Proposals exist to extend the working day (for example, the “hospital at night” programme www.npsa.nhs.uk/health/currentprojects/hospitalatnight) but any plans will need to be flexible to ensure that appropriately trained workers deliver emergency care.

Lessons can be learnt from other areas of medicine that have improved practice through quality initiatives and performance indicators, such as the “surviving sepsis campaign.” Emergency surgery is suited to this approach where individual components of care are

“bundled” together to form a management protocol.¹⁰ The integration of different bundles will prove valuable—for example, combining emergency surgery of perforated viscus and sepsis management.

One key recommendation of the Improving Surgical Outcomes Group is that more patients should be admitted to critical care facilities.² However, the United Kingdom has proportionately fewer level II (high dependency) and level III (intensive care) critical care beds than Europe or the United States, and although the transatlantic gap in performance suggests the need to improve, change is unlikely to be rapid.^{11,12} Fast tracking certain patients or the provision of overnight ventilation facilities are potential ways to provide critical care beds.

Future progress will require a pragmatic approach and resolution of the confusion in professional roles, which is often produced by imposing track and trigger (outreach) systems.¹³ We should implement preoperative (POSSUM) scoring systems that are supported by computerised collection of clinical data. Theatre management systems must become more than tools for reordering stock and costing. Care bundles appropriate for emergency surgery should be developed, and emergency surgery and anaesthesia should be promoted as core skills. More emphasis should be placed on quality improvement and performance indicators, with less reliance on research alone.

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