

## Avoiding iatrogenic injuries in theatre

### *Human error most to blame for anaesthetic accidents*

An iatrogenic injury is "harm, hurt, damage or impairment" that results from the activities of a doctor—for example, the unwanted side effects of drugs or the unintended sequelae of surgical operations.<sup>1</sup> Some injuries that occur in operating theatres, such as anaphylaxis and the myalgia due to suxamethonium, are unavoidable, but many others, arising through ignorance, carelessness, or negligence, are not.

The prevention of iatrogenic injury depends on proper initial training of practitioners and continuing education throughout professional life, with widely disseminated updates as new problems arise. This requires five steps. Firstly, the cause of an unexpected injury after an operation has to be identified. Secondly, details of similar injuries must be collated centrally under conditions of anonymity to enable a sufficient database to be built up. Thirdly, if the potential hazard is common and prevention of error urgent a warning notice should be issued. Fourthly, the information about the injury should be evaluated by experts in conjunction with practising anaesthetists. Lastly, definitive advice should be published by the appropriate body. In Britain the Association of Anaesthetists has often assessed information and published advice, sometimes with a shortened version printed on cards for attachment to anaesthetic machines.<sup>2,3</sup>

An important cause of unavoidable harm is adverse reactions to drugs.<sup>4</sup> In anaesthesia, where most drugs are given intravenously, errors may arise from giving the wrong drug or dose. The most dangerous mishaps, however, are those related to unexpected responses, of which anaphylaxis is the most feared, although it is rare. Anticipating it is difficult without reliable tests. No patient should be anaesthetised before a comprehensive drug history has been elicited, and all anaesthetists must be aware of this danger and how to treat it.<sup>5</sup> In addition, many drugs used in anaesthesia provoke untoward effects, of which several are life threatening, such as malignant hyperthermia.

Most episodes resulting in avoidable harm to patients are due to human error.<sup>6</sup> These include failure to apply knowledge, poor standards of practice, failure of organisation, and inexperience. Failure of equipment is responsible for very few of these episodes<sup>7,8</sup>; thorough checks on the anaesthetic apparatus before anaesthesia should minimise the risk.<sup>9</sup> The provision of dedicated anaesthetic assistants (operating department assistants and nurses) has improved the preparation of equipment and the surveillance of the patient—thus reducing the chance of mishap. Eliminating human error is therefore of overriding importance, and this can be achieved

by adhering to strict protocols when they exist. Some risks have been identified in *Theatre Safeguards*, a booklet published jointly by the defence societies and nursing organisations, which lists the ways to avoid them.<sup>10</sup>

Statistics available from the Medical Protection Society suggest two large groups of anaesthetic mishap that may give rise to litigation: dental damage during airway manipulations and death or severe brain damage due to failure to secure or to protect the airway or maintain the circulation (J M Davies, data presented to the section of anaesthetics, Royal Society of Medicine, 1987). Although dental damage cannot always be avoided, a proper dental history and examination followed by a more gentle and careful approach to airway management minimises these mishaps. The Medical Protection Society has recently revised its booklet on preventing dental damage.<sup>11</sup>

Severe brain damage and deaths, especially when due to disconnection from the apparatus or failed or oesophageal intubation, have been reduced by the regular use of monitors with intrinsic alarms. These monitors detect disconnection and can be used to measure inspired oxygen, oxygen saturation, end tidal carbon dioxide, pulse rate, blood pressure, and electrocardiographic changes. Proposals for routine monitoring during anaesthesia in Britain, similar to those adopted by Harvard Medical School,<sup>12</sup> have been published by the Association of Anaesthetists,<sup>13</sup> although Sykes has noted the absence of controlled studies showing that they improve patient safety.<sup>14</sup>

The costs of mishap and the expense of prevention have been much discussed.<sup>15</sup> Monitoring that begins before induction and ends after full recovery should reduce iatrogenic injury by giving timely warning of untoward events. But this presupposes that the attendant is constantly present, is observant, and can interpret correctly the information displayed.<sup>16</sup> Despite repeated warnings anaesthetists still leave patients unattended. Many alarms are turned off; when alarms sound the monitor is often checked before the patient is observed clinically. These habits must be eliminated by better training and discipline.

If all patients were seen by and known to both the surgeon and the anaesthetist before operation errors of identification would be few and the patient would probably be in a better position to give informed consent to the whole procedure. Without this ideal the routine checking of the patient's name, record number, age, and sex from a wrist band against the notes and the operating list is mandatory and must be the responsibility of a named person. The procedure should

include noting the contents of a correctly signed consent form but should not extend to a full interrogation about other matters in a premedicated patient.<sup>10</sup>

Incorrect positioning on the operating table or subsequently in the recovery area can lead to backache, nerve damage, diathermy burns, and other injuries (p 660).<sup>17</sup> Nerve damage due to the patient's position during operation is still unacceptably common, and the ulnar nerve seems particularly prone to permanent damage.

The surgeon is ultimately responsible for the patient's position, although the duty is usually shared with the theatre nursing team and the anaesthetist. After normal working hours, when juniors may be dealing with complicated cases with fewer adequately trained support staff, errors are more likely.<sup>8</sup> These could be avoided if non-urgent emergency work was held over to a regular session the next working day.

All hospital staff have benefited from the reports evaluating equipment published in various specialist journals. More recently this has been organised by government agencies throughout the world.<sup>18</sup> In Britain this is done by the supplies technology division of the Department of Health, which issues hazard notices and safety information bulletins. Publication of these does not always imply that they are read by those in charge of patients, and surer methods of dissemination are required.

To reduce iatrogenic injury due to anaesthetic mishap there must be more careful observation and monitoring of patients, more critical reporting of incidents, and more dissemination of the lessons so learnt to others. But, above all, practising anaesthetists must be completely familiar with mishaps that

have already been reported and eliminate them as far as possible. Repetition of error is all too common.

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## Emergency feeding programmes

### *Still not delivering the goods*

Once again the faces of Africa's starving blight our television screens as the "news" of famine in Somalia finally breaks. Those aid agencies brave enough to face the anarchy of Mogadishu are found overseeing the unloading and distribution of sacks of grain and the feeding of starving children in overcrowded feeding centres. The familiar cry of "too little too late" is repeated. So are the accusations of neglect and late response levelled at the United Nations and African governments. Yet there is another story that is rarely heard in relation to this type of food emergency. This is the story of failure to supply an adequate balance of foods and of poorly designed feeding programmes once the emergency interventions have got under way.

Confronted by famine or refugee crisis, aid agencies usually administer emergency feeding programmes in two forms. Most food resources are devoted to general feeding programmes, which are supposed to provide about 7.9 MJ (1900 kcal) per person.<sup>1</sup> Such programmes are usually designed to supply a cereal, a legume, and an oil. The second option, smaller scale supplementary feeding programmes, are often used in conjunction with general feeding programmes to supply extra energy and nutrients to physiologically vulnerable groups—usually children under 5 and pregnant and lactating women. The supplementary feeding programmes can be operated as a "wet" on site programme—where mothers take young children every day to receive several prepared meals—or as a "dry" take home programme—where mothers attend once or twice a month to receive a dry supplement, which can be prepared at home for the child.

Experience of both types of emergency feeding programme over the past 15 years has shown how they fail, predictably and often spectacularly, to achieve what they set out to do—that is, to improve nutritional status or, at the very least, to prevent further deterioration and deaths from starvation.

Some of the reasons for this were discussed at a symposium held in Oxford last year by the refugee study programme to highlight the inadequate provision of food rations to refugee populations. Micronutrient deficiency diseases were shown to be endemic among many refugee populations dependent on international food aid.<sup>2</sup> For example, scurvy is common among refugees in Somalia, Ethiopia, and Malawi; pellagra affects Mozambiquan refugees in Malawi. Speakers at the symposium said that predicting such outbreaks was easy. A general ration based on cereal, legume, and oil for a population dependent on food aid will inevitably be grossly deficient in vitamins A, B-3, and C and iron. The fact that such outbreaks are less commonly reported among non-refugee populations dependent on the same ration probably reflects both the less protracted nature of their problem and, in contrast to what happens in refugee camps, the absence of surveillance to identify such conditions. It seems likely, however, that the prevalence of unreported, subclinical micronutrient deficiencies among these populations is high.

That this has been allowed to endure for so long is clearly scandalous (outbreaks of scurvy were reported in Somali refugee camps as early as 1984). Blaming the United Nations for its lack of a clear mandate and lines of responsibility and a system of food aid which is driven by and dependent on