Agitation or delirium on withdrawal of sedation is a frequent problem in the ICU with a reported prevalence of 15–40%. The incidence is likely to increase further as critical care becomes more comprehensive, enabling increasing numbers of elderly and more severely ill patients to gain admission. The consequences of agitation in the ICU are potentially life-threatening as a result of self-extubation or removal of vital catheters, drains and other invasive monitoring devices. The importance of agitation in the critical care setting was highlighted at a recent international multidisciplinary expert panel meeting where its aetiology, pathophysiology and therapeutics were considered in detail. The participants, however, steered clear of some of the difficult ethical issues including those related to the use of physical restraints.

Physical restraint of patients is considered unacceptable in the UK as it is frequently associated with ‘imprisonment’ or with the sorts of restraints seen in prisoners. Dr Philippe Pinel is hailed as the first physician to remove chains from mentally ill patients in France against the backdrop of the French revolution. The significance of this event was enshrined in a historic painting completed in 1878 by Tony Robert-Fleury, which decorates the wall of the Charcot Library at the Salpêtrière Hospital in Paris. This, and other similar historic events, contributed immensely in conditioning subsequent generations of physicians to see the meaning
of physical restraint in terms of ‘loss of freedom’ or ‘violation of liberty’ and equate it with criminality or affront to patient dignity. In spite of these reservations, the use of physical restraints continued in psychiatric institutions and in nursing homes caring for agitated/demented patients. In an editorial in 1984, *The Lancet* commented on the ‘absurd’ and ‘distasteful’ use of bed restraints in the USA, in contrast to the practice in Britain where bed restraints ‘are rarely and selectively used’. The indiscriminate and therefore dangerous use of physical restraints in the USA led to the ‘free from restraints’ clause, which became the cornerstone of the Nursing Home Reform Amendments of the Federal Omnibus Budget Reconciliation Act (FOBRA) 1987, and the FDA in 1995 issued guidelines on the safe use of restraints. The relatively infrequent use of physical restraints has often been sited as a measure of empathy and ‘kindness’ inherent in the care of vulnerable patients in the UK. The above historic and contemporary sentiments, the FOBRA 1987 and the FDA guidelines and their ramifications invariably cloud clinical thinking whenever the role of physical restraint is considered even in the context of a modern ICU. This brief review will explore the ethical basis of patient restraints in the ICU, placing patient safety and clinical outcome at the heart of the debate. In order to make these arguments in context, it is essential to set out the causes of agitation and the consequences of prolonged sedation.

**Causes of agitation in the ICU**

In many patients there are clearly identifiable causes such as pain, sepsis, hypoxia, head injury, positional discomfort, full bladder, withdrawal from addictive substances, noise pollution, and excessive lighting. Inability to vocalize these complaints because of the presence of a tracheal tube may lead to frustration manifesting as agitation. These underlying causes, though not always readily apparent, should obviously be recognized and treated. It is also known that benzodiazepines, opioids, anaesthetic agents, phenothiazines, and most other psychotropic drugs may result in paradoxical agitation, particularly in elderly patients. This paradoxical effect, related to the parent drug or its metabolites, is usually exaggerated and more sustained in ICU patients with impaired drug clearance. When many sedative infusions are discontinued, plasma concentrations of the drug and its metabolites undergo an exponential decline and sub-therapeutic concentrations may remain in the tissues for prolonged periods. The effects of many of these substances in sub-therapeutic concentrations are currently unknown and the problem may be compounded when several agents are used.

**Consequences of prolonged ICU stay**

Prolonged and excessive sedation increases the length of stay in the ICU with serious consequences to the patient and the provision of critical care services. Multi-resistant bacterial infections, muscle wasting, critical illness polyneuropathy, and malnutrition are some of the recognized complications of prolonged length of stay. Sedative agents also significantly reduce neutrophil function and thereby compromise host immunity. These complications not only compromise immediate survival but may also lead to impaired quality of life for prolonged periods after discharge, increased need for rehabilitation services and increased consumption of health care resources. Given the current shortage of critical care beds in the UK, practices that prolong the length of stay will also have life-threatening consequences to many other patients requiring critical care.

The role of sedatives and their metabolites in the aetiology of agitation and the consequences of prolonged stay should be important considerations in determining the ethics of physical restraint.

**Physical restraints in the ICU**

Physical restraint in the ICU takes two common forms:

- Wrapping the hands in cotton bandages in the form of ‘boxing gloves’. This method while allowing free movement of the arms denies free use of the fingers.
- Tying the arms loosely to the bed frame so that even though the trunk and legs are relatively free to move, patients are unable to use their arms.

Although both methods are frequently employed in many European and North American ICUs, they draw considerable criticism in the UK on the basis of inflicting unacceptable levels of distress and suffering to the patient, the immediate family and attending staff. It is necessary to point out that the above methods are employed only when patients are considered to be at risk of self-harm at a stage when continuing pharmacological sedation is no longer appropriate or desirable and the underlying disorder is assessed to be transient. Both methods should be employed under close supervision and neither method involves firm strapping that allows little or no movement. It is pertinent that within a legal framework the FOBRA 1987 does not make a distinction between physical and pharmacological restraints, and a relatively recent review, having evaluated all the available evidence, explicitly authorized the use of physical restraints for relatively short periods when ‘required for patient’s immediate welfare and medical needs’.

**Ethics of restraint**

The ethical choice between physical or chemical restraints in a given situation should consider the nature of the respective methods, their inherent meanings, and the consequences to patients and other relevant third parties. It is assumed that patients are unable to make an autonomous decision as to whether some form of physical restraint may be employed as part of their overall care. If the patient is competent to make this choice no ethical problems arise, as the patient’s expressed wishes can be respected. When this decision has
to be made by the attending physician, the patient’s best interests should be of prime concern.\textsuperscript{17,18} English law gives a broad interpretation to the term ‘best interests’ that requires the patient’s ‘wishes and beliefs when competent, general well being and spiritual/religious welfare’ be taken into account in determining what constitutes a patient’s best interests (www.doh.gov.uk/consent/faqs.htm). Since self-harm is clearly against a patient’s interests, the attending teams should decide whether physical restraint or re-sedation is more appropriate in a given patient and the following issues need careful consideration.

Nature of the respective methods
Pharmacological restraint involves many, relatively unpredictable, immediate and long-term consequences but seems ‘kinder’ and ‘more acceptable’. Physical restraint, on the other hand, ‘looks cruel’ and therefore may cause distress to the patient, next-of-kin or the attending staff. The views of the next-of-kin or the general public on issues related to the limited use of physical restraints in critical illness have not been studied systematically. Therefore, in order to meet the legal requirements on ‘best interests’, it may be necessary to undertake a detailed discussion with the family, carers, or close friends to ascertain the patient’s beliefs and values-systems (www.doh.gov.uk/consent/faqs.htm). These discussions also serve to explain the advantages and disadvantages of physical or chemical restraints to the next-of-kin. A recent survey by the University of Texas Cancer Centre Restraints Improvement Group showed that even though an overwhelming majority of nurses were aware of the potential problems associated with sedation, the majority still preferred to see patients sedated with prescriptive medications rather than physically restrained (www.ispub.com/journals/IJANP/Vol3N1/myths.htm). These findings imply that considerable multidisciplinary education and training programmes are required before physical restraints can be introduced in a unit.

Consequences for the patient
Increased use of sedatives clearly affects outcome adversely, resulting in the continued search for ultra-short acting sedative drugs and sedation protocols that minimize the use of conventional sedative agents. In a recent study, Kress and colleagues have demonstrated that daily interruption of sedation (until the patients were awake enough to perform simple verbal commands) leads to significant improvements in outcome.\textsuperscript{10} Even so, the consequences of physical restraint should not be taken lightly. Inappropriate use of restraints may result in considerable physical damage, hypertension, tachycardia and worsening of agitation, resulting in increased metabolic demand for oxygen. These changes may aggravate the underlying disease process and influence outcome adversely. However, unlike pharmacological restraint, the adverse consequences of physical restraint are overt, easy to recognize and hence are easily preventable in a closely monitored environment.

Consequences for third parties
Increased length of stay consequent to repeated use of sedatives might deprive many other patients’ access to vital critical care services. The increased duration of stay also leads to an escalation in the cost of care and imposes additional burdens on society. Occasionally, unrestrained, agitated patient behaviour results in physical injury to the attending staff. Although the indirect consequences to third parties are extremely relevant to the overall provision of critical care services, the patient’s best interests should, as a general rule, override concerns related to third parties in any clinical decision.\textsuperscript{17,18}

We believe that the above objective considerations, rather than other external and more subjective objections based on metaphor or misunderstanding, should be the guiding factors in decision making. In addressing metaphors related to ‘imprisonment’ or ‘loss of liberty’, the best one can do is to point out that many forms of treatments involve physical restraint to a greater or a lesser extent, from being ‘confined’ to bed or ‘institutionalized’ in hospital: restraint by bandages, casts or prostheses; long-term dependence on physical therapy; and the more drastic states of being attached to dialysis machines or ventilators all impose significant physical restraint. We do not usually think of these as analogous to imprisonment, although metaphors drawn from police or prison custody are often employed to describe what it is like to be in a particular disease state or receive certain therapies.

In summary, we should not lose sight of the crucial differences between restraint which violates rights or dignity and restraint which does not violate any autonomously expressed wishes, protects the patient from self-harm and is in the patient’s best interests. Prolonged and repeated use of sedatives has the potential to cause many immediate and long-term complications. In the words of Pinel ‘it is an art of no little importance to administer medications properly: but, it is an art of much greater and more difficult acquisition to know when to suspend or altogether omit them’.\textsuperscript{3} The importance of timely withdrawal of sedation cannot be overemphasized and the judicious use of physical restraints may legitimately be built into an overall treatment plan in a cohort of ICU patients to achieve this objective safely. The decision to use physical restraints (as all other interventions) should be subject to regular mandatory multi-disciplinary reviews as suggested by the University of Texas Cancer Centre Restraints Improvement Group. Such an approach, in our view, cannot rationally be considered unethical, cruel or primitive.

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