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Protocolized weaning from mechanical ventilation: ICU physicians' views

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Protocolized weaning from mechanical ventilation: ICU physicians' views

Background. The use of protocols during weaning from mechanical ventilation is uncommon in the UK, despite research pointing to their potential benefits. This may be because the research evidence is considered not to apply in different settings. Intensive care unit consultant physicians are the major decision-makers in weaning in the UK and any attempt to introduce protocolized weaning will require consideration of their views.

Aim. The aim of this paper is to report a study exploring intensive care physicians' views on (i) weaning from mechanical ventilation, (ii) the utility of weaning protocols and (iii) nurses' roles in the weaning process. A specific goal was to identify potential aids and barriers to developing weaning protocols and their introduction into clinical practice.

Methods. Qualitative interviews were conducted with a purposive sample of 10 consultant physicians in two intensive care units in Northern Ireland and subjected to content analysis.

Findings. The primary themes identified were (i) information required for weaning decisions and clinical judgement, (ii) professional boundaries, (iii) protocol issues and (iv) timing of weaning. Three types of information were deemed to be required for weaning decisions – empirical objective, empirical subjective and abstract – and interviewees considered that it would be challenging to incorporate all into a protocol. They were divided on whether protocols were useful when nursing experience was limited. Some groups of patients were thought more suitable than others for protocolized weaning.

Conclusions. Although local physicians were supportive in theory, introduction of protocolized weaning is likely to be difficult because of the breadth of information required for successful decision-making. Consultant views in this study were not consistent with American findings that physicians' caution may unnecessarily prolong weaning.

Keywords: physicians, interviews, mechanical ventilation, protocolized weaning, nurse's role

Background

Despite its life-saving potential, mechanical ventilation is associated with many adverse physiological and psychological experiences for patients. An important objective, therefore, is to wean and discontinue mechanical support as soon as patients are able to breathe independently. Gradual reduction in support is known as weaning, and its optimization is important because currently 40% of the time patients receive mechanical ventilation is spent in the process of weaning from it (Esteban *et al.* 1994). For the majority of patients, spontaneous unassisted breathing is accomplished easily (Brochard *et al.* 1994, Esteban *et al.* 1995), but for others it is more difficult, particularly those who have a protracted critical illness. Patients who experience difficulty in weaning require a longer subsequent intensive care unit (ICU) and hospital stay and generally have higher morbidity (Meade & Cook 1995, Vincent *et al.* 1995, Papazian *et al.* 1996, Meade *et al.* 1997, Cook *et al.* 1998, Slutsky & Tremblay 1998), and higher mortality (Mancebo 1996, Dries 1997). Hence, both for the benefit of patients, and to ensure best use of expensive and limited resources, it follows that weaning should not be unnecessarily protracted.

A recent systematic review suggests that standardized weaning protocols can be safe and effective in reducing time spent on mechanical ventilation and ICU stay (Cook *et al.* 2000). Randomized, controlled trials have demonstrated that patients weaned by respiratory therapist- or nurse-led protocols spend less time on mechanical ventilation than those weaned by traditional methods (Ely *et al.* 1996, Kollef *et al.* 1997, Marelich *et al.* 2000). The evidence stems mainly from research in the United States of America (USA), where there are differences in case mix, staffing levels and the role of ICU physicians compared with the United Kingdom (UK). There is a dearth of research involving weaning protocols in the UK.

For any protocol to be effective, it must have the support of key staff. In order to secure that support, its introduction must be planned with reference to the views of those leading treatment decisions. ICU consultants play a major role in directing the weaning process in the UK and successful establishment of protocolized weaning, in any institution, will require accommodation of their views. One of the difficulties in establishing protocols is resistance to change from current practice. Hence, protocols that reflect local weaning practice are more likely to achieve success (Kupfer & Tessler 2001).

The study

Aim

The aim of this qualitative study was to identify ICU consultant physicians' preferred methods of weaning from mechanical ventilation and explore their views on the usefulness of protocols and nurses' role in weaning. Potential aids and barriers identified from these interviews would be essential in further work involving the development of weaning protocols and devising a successful implementation strategy.

Design

A qualitative exploratory design was used.

Participants

In April 2001, participation of all consultant physicians ($n = 11$) from two ICUs in two university-affiliated hospitals in Northern Ireland was requested. These consultants were all anaesthetists. Unit 1 was served by five consultants: one was a full-time intensivist, the other four rotated between the operating theatres and ICU. Unit 2 was served by six consultants rotating between the operating theatres and ICU. All agreed to participate, but one was unavailable at the time of the interviews. The characteristics of the units and the patient populations are outlined in Table 1.

Ethical considerations

Approval was granted from the Local Research Ethics Committee. Individual consent to be interviewed was gained

Table 1 Characteristics of the units and patient populations

Characteristics	Unit 1	Unit 2
No. of ICU beds	14	6
No. of HDU beds	5	0
Admissions/year	538	249
Emergency	88%	86%
Elective	12%	14%
Medical	18%	33%
Surgical	41%	67%
Neurosurgical	39%	0.8%
Mean APACHE II	17.5	19.6

from participating physicians and confidentiality was assured.

Data collection

Semi-structured interviews (see Table 2) were conducted in quiet rooms within the intensive care units. They ranged from 20 to 45 minutes duration and were audiotaped. The recordings were transcribed and the textual data were analysed systematically using a variant of content analysis (Pope *et al.* 2000), which entailed the following:

- The lead researcher (BB reviewed all transcripts).
- The data were preserved in their textual form and indexed to generate analytical categories.
- These categories were further refined and reduced in number by grouping them to develop key or primary themes.
- Explanations were developed by clarifying patterns within, and connections between, the range of perceptions and experiences in relation to each of the identified primary themes.

Rigour

Bearing in mind the current focus on consumerism and the debate on assessing the quality of qualitative research (Mays & Pope 2000, Barbour 2001), a number of methods were used to assure truthfulness and consistency in data collection and analysis. The use of tape-recording and verbatim typing of transcripts assured consistent and accurate recording of data. Subsequent presentation of unaltered text ensured truthful presentation of findings. To enhance reliability and reduce researcher bias, the emerging categories were cross-checked by the lead researcher and another co-author. In addition, respondent validation was undertaken. This involved distributing the findings and interpretations to the physicians to ensure their agreement with the themes generated.

Table 2 Interview schedule

-
1. What information do you use to decide that a patient is ready for weaning?
  2. Can you describe your preferred method of weaning?
  3. How do you perceive the nurse's role in weaning?
  4. What information do you use to decide that a patient is ready for extubation?
  5. What do you feel is the most important issue related to weaning patients from mechanical ventilation?
  6. What are your perceptions about the use of protocols in weaning?
  7. Are there any other issues about weaning that we haven't discussed and you'd like to tell me about?
-

Results

Primary themes identified were:

- Information required and clinical judgement
- Professional boundaries
- Protocol issues
- Timing of the weaning process

Information required and clinical judgement

Interviewees considered the weaning process to be both an art and an applied science, and to require an extensive knowledge of physiology and pathophysiology. They felt that successful weaning required both sound clinical judgement and a solid evidence base (where available) for decisions. Information required for successful weaning fell into three subcategories: empirical objective, empirical subjective and abstract information.

In relation to weaning, *empirical, objective information* is that acquired by observation and measurement of the physiological parameters in relevant physiological systems. Such information is subsequently independently verifiable (at least insofar as there is an explicit record). There was widespread agreement on the following objectively verifiable information being pertinent to successful weaning:

- Resolution of the state which necessitated mechanical ventilation, e.g. (i) recovery from a depressed conscious level (Glasgow Coma Scale), from a distributive shock state (need for vasoactive agents), or from lower respiratory tract infection (severity of radiographic infiltrates); (ii) definitive treatment such as surgical fixation of fractures.
- Most/all of the patient's physiological observations are within an acceptable range, e.g. respiratory rate and tidal volume, heart rate and blood pressure, electrolytes.

Weaning decisions were seen as requiring information relating to many systems, not just the respiratory system, because of the interactions between and interdependence of organ systems. *Empirical, subjective information* referred to information acquired by clinically examining the patient. It involved observing and identifying relevant signs which may not be independently verifiable at a later stage, for example, if chest movements were coordinated and effective, or if diaphoresis or clamminess were present. Such information is empirical, in that its acquisition involves observation and touch, but does not lend itself easily to objective verification at a later stage.

Abstract information is the remaining information deemed important in decision-making, and does not fit easily into either of the above categories. Five participants described

how patients could 'look' during weaning as, e.g., 'not happy', 'not right', 'not comfortable'. This information is abstract because no descriptors were used to define such terms, but physicians considered that there was an intuitive component to decision-making, based on information whose acquisition arose from experience:

The sort of thing you pick up just by experience...by looking at the patient, there's something not right. ...it's being able to look at patients and say, 'I don't really know what's not right, but there's something... (Physician 5).

All physicians subscribed to a view of weaning as an art and a science, but placed heavier weight on science. These two components were not considered to be independent from one another. It was uniformly recognized that over-reliance on 'objective' parameters can result in inappropriate attempts to wean, or inappropriate deferral of weaning. However, one interviewee cautioned that perceptions relying on intuition and feelings should not go unchallenged. He felt that, when possible, judgements should be evidence-based and open to rigorous scrutiny:

I think medicine is always going to be to some extent an art...but at the same time I think the art should be subject to scientific methods, and that just because one clinician feels that something is better (such a view) should not go unchallenged.

I think that when possible, we should substitute science for intuition, but I'm not naïve enough to think we will always be able to do that successfully. (Physician 7)

Professional boundaries

Interviewees described professional boundaries in terms of how each viewed their role and that of nurses during the weaning process. Nursing and medical roles were seen as complementing one another. Three physicians described what they viewed as distinctive aspects of the nurse's weaning role: monitoring objective data, regular assessment of the patient for subjective data, and execution of the process. This was reflected in one quote:

She [sic] probably has got three roles. She...looks at the objective data and will flag up when some of the numbers are not right. She...will be best placed to spot the 'soft things'...that aren't easy to put into number form. And then, thirdly, she can be the executor; she...can say, 'I was told to wean this patient down to two breaths, or to CPAP, provided everything was ok – and everything is ok. It is an hour since I did anything, so I'll cut the rate another two'. So I would view that the good nurse has all those roles. She is the one that makes use of the monitor parameters, she eyeballs all the soft issues

and she actually executes the changes, provided everything is OK. (Physician 11)

Two issues emerged in this context: education/experience and control. The capacity to deliver the tripartite role was viewed as depending on the experience of the nurse, and physicians recognized that not all nurses were sufficiently experienced. Experienced nurses often undertook all three functions, but less experienced nurses could not do so. Whilst they might recognize differences in objective parameters, the latter might be less able to recognize the softer, more subtle, issues and might not execute any changes but rely on others for guidance. Five interviewees felt that further education, together with the development of protocol guidelines, had the potential to be useful in increasing the contribution of less experienced nurses in the weaning process. Four expressed concern about extending the role of nurses to use protocols without the accompanying experience necessary for appropriate use:

I think that you're going to need an experienced nurse in tandem with this protocol...I think the protocol will have to be in the hands of somebody who's experienced...and can make those judgement decisions. (Physician 6)

Thus, because of varied levels of nursing experience and the disparate kinds of patients, control of the weaning process became an issue. In the main, current practice was described as being initiated by the physician, with a series of intermediate goals being set and intermittently reviewed. For example, the nurse might be asked to reduce the oxygen concentration and respiratory rate on the ventilator to enable the patient to breathe spontaneously on a pressure support mode by the afternoon. Thus, nurses had partial autonomy in terms of how they set about achieving those goals, (e.g. when to monitor arterial blood gas values, how frequently to reduce the preset breaths and oxygen concentration), but with much control being maintained by the medical profession (e.g. the decision to decrease the set rate rather than to substitute a high level of pressure support for controlled breaths).

In general, physicians considered that the patient's severity of illness determined the amount of control they needed to exercise. Two recounted their national and international experiences of nurse-led weaning protocols with homogeneous groups of patients (e.g. postoperative cardiac surgical patients), and commended the practice. They viewed elective postoperative ICU patients – 'the bed and breakfast trade' – as relatively straightforward cases where nurses could exercise more autonomy using protocols, but severely ill patients required tighter control by doctors of the weaning process.

Protocol issues

In relation to protocols, there was some disparity in views between those who felt them to be generally useful and efficient, and those who expressed doubts about their efficiency in certain contexts. Those who were enthusiastic viewed them as guidelines indicating a safe range of monitored parameters within which nurses could make autonomous decisions. Five felt that guidelines could prompt frequent review of the parameters, thus potentially speeding up the weaning process. Two, however, doubted whether there would be additional benefit from using weaning protocols in their unit. They felt that, because staff were encouraged to titrate respiratory support frequently to individual patient's needs, protocols would not necessarily speed up weaning. Three physicians expressed mistrust of protocols because they could be too rigidly followed, while those who welcomed protocolized weaning cautiously added that its value depended on how it was used.

An issue about rigidity of protocols emerged, and this was inter-linked with views of weaning as an art and a science. Given that optimal weaning was deemed by many to require empirical and abstract information, interviewees suggested that it would be difficult to develop a protocol to encompass such factors. They felt that their own education and experience might lead them appropriately at times to deviate from a protocol, but suggested that nurses could not do this. They were concerned that, while a patient's physiological values might be within the range of the parameters in the protocol, subjective signs of other underlying difficulties might be missed. Thus, there were fears that staff (particularly inexperienced staff) might follow the protocol rigidly without interpreting those softer issues, and that this might ultimately lead to failed weaning or patient harm:

A protocol is there to bring about a process, the basis of which is sound professional education. It is not there to replace education. Sometimes... – and I'm talking about medics as well – if there's a protocol, the brain switches off. The protocol says I do this, then I do this, and we blindly follow this – in spite of increasing pieces of evidence on the periphery, which suggest that perhaps if you look at some other things that aren't strictly in the protocol – you are not perhaps doing the best that you could. (Physician 9)

There was general agreement that protocols were more easily applied to homogeneous groups of patients, such as after cardiac surgery or sedative overdose. However, for patients with multi-system disease, developing a single protocol was viewed as difficult because of the complexity of the illness and the inability to ensure inclusion of all appropriate parameters. Therefore, clinical judgement was still required.

Timing of the process

The fourth category was timing of the weaning process, and this was defined as beginning when the decision was made to wean and ending at extubation. There were a number of subcategories within this: when to wean, speed of weaning, timing of the decision to extubate and organizational management issues.

With regard to timing, all shared the view that patients required ongoing mechanical respiratory support while they were physiologically unstable, and until their underlying reason for their need for ventilation had improved. Getting the patient in the right condition before attempting to wean was considered to increase the chances of success, rather than having repeated attempts, which can set the patient back. However, pinpointing the start of weaning is difficult because there is a fine line between active weaning and reducing respiratory support to 'test the waters'. That weaning was actually occurring could only be demonstrated in retrospect, and the time-point when it started could be difficult to identify precisely:

I think it's one of those things like how long is a piece of string?...when did the patient become sick?...when did their pneumonia start? I don't know, the infiltrates were first noted at this point – but that's not (the time) when it (the pneumonia) started. It's the same with weaning. The patient may be ready for the weaning process to start but won't necessarily start at that point. You know when a decision is made to start weaning, again that's not (always) the point when they are ready for it. They may have been ready before that. And after the decision it may be another two hours before anything happens. (Physician 9)

Once active weaning is underway, the speed of progress was considered an important point. Progressing too quickly was seen as deleterious for the patient in terms of causing fatigue. It was also not easily remedied by putting the patient back on the ventilator for an hour to resolve fatigue. Weaning too quickly could cause a setback of 1–2 days. On the other hand, weaning too slowly, or delaying extubation for too long, could also be deleterious for the patient in that they could develop nosocomial pneumonia, necessitating protracted ventilatory support. It was recognized that complex cases were perhaps weaned too slowly because the process was doctor-led and there was a limited number of doctors, particularly out-of-hours. All physicians agreed that it was important that patients continued with adequate mechanical support while they needed it, but should have it reduced and discontinued as soon as they could manage without it.

Deciding the time to extubate was an issue that required the patient to fulfil certain criteria (e.g. low sedation levels,

normal respiratory parameters), but also required a certain degree of clinical judgement and risk-taking. Clinical judgement involved balancing the ratio of likely success to likely failure, and the risks associated with the latter. This risk assessment included determining the patient's ability to cough, amount of secretions, and previous intubation difficulties.

Patient management and organizational issues were also deemed relevant. If the patient required surgery or investigations such as computerized tomography, it was better to postpone extubation until these had occurred. Organizational issues such as the time of day and experience of staff also played a part. Weaning was often initiated in the morning, and it was considered less safe to wean and extubate in the evening because resident medical staff were doctors in training.

Many factors impinged on the timing and progress of the weaning process:

So there are organizational things that may impact on when you actually start the process...and the process is not like driving to the shops and you get in the car, you turn on the engine and you drive and you get to the shops. You get in the car, start the engine, drive up the road a bit, and reverse a (little) bit, and then go down a side street for a couple of days and then you may eventually get to the shops in 4 day's time. But it's not just straight down that road. ...For various reasons the whole thing stops, stalls, reverses...(Physician 9)

Overall, the timing and length of the weaning process was something that was considered to be unpredictable and thus required a flexible approach.

Methodological considerations

All consultant physicians working in two ICUs were invited for interview. The two ICUs were chosen because of planned further work in establishing and testing the efficacy of protocolized weaning. Whilst it is acknowledged that their views may not be applicable outside those ICUs, there are a number of arguments to support use of this purposive sample. First, it was important to recruit a sample to reflect the diversity of views in these units. In addition, some of the most important questions in health services research concern the organization and culture of those who provide care. Randomized, controlled trials have been criticized in that their results are difficult to apply in day-to-day clinical practice (Pope & Mays 1995), or may not be applicable to the reality of the clinical setting (Hellman & Hellman 1991). Their ultimate validation is the successful implementation of their findings into practice and this study was useful in identifying consultants' views as a step towards enhancing the implementation of protocolized weaning.

Discussion

Despite evidence to support the use of weaning protocols in some situations, implementation in a general mixed medical/surgical ICU in the UK is fraught with difficulty. This may be because the research evidence is considered not to apply to a different setting. It is clear, therefore, that other factors influence the uptake of evidence into practice. This study revealed that consultant physicians were open to the introduction of protocolized weaning in theory, but perceived a variety of reasons why suitable protocols would be difficult to generate and implement in practice. These involved issues of protocol rigidity and inability to account for clinical judgement and abstract issues. In addition, the complexity of the patient's condition and variability in nursing experience were factors that mitigated against physicians relinquishing control of the weaning process.

In order to generate an effective and applicable weaning protocol, locally preferred methods of weaning should be included, as these are more likely to achieve success. This may require a 'menu' of protocols outlining stepwise reductions in support for each weaning mode used in the unit. It is apparent that no single protocol can be applied to every patient, but protocols can be adapted to the needs of specific patient groups. For example, Scheinhorn *et al.* (2001) developed a 19-step protocol for patients with respiratory failure requiring long-term mechanical ventilation, while Ely *et al.* (1996) developed a two-step protocol for those with acute respiratory failure. Using a number of protocols, tailored to specific patient populations, may go some way to addressing physicians' concerns about the utility of protocols for complex patients whose progress may be unpredictable. It was the view of some interviewees that weaning decisions for these patients should be doctor-led because they require a high level of intuition (use of abstract information), although they acknowledged that intuition may also delay weaning progress. Evidence suggests, however, that in comparison with doctor-led management, protocolized weaning by respiratory therapists and nurses significantly reduces mechanical ventilation time (Ely *et al.* 1996, Kollef *et al.* 1997, Marelich *et al.* 2000). This could be because non-medical personnel tend to follow protocols in a timely fashion and rely less on intuition or assumptions that the patient might not be ready for weaning (Hill 2001). This possibility is supported by other work suggesting that more efficient weaning occurs by using protocols that objectively test for the opportunity to reduce support soon after intubation and at every available opportunity, thus reducing reliance on intuition (Cook *et al.* 2000). Developing the role of the nurse in this area, therefore, has strong advantages.

Objectively testing for the opportunity to reduce support will require establishing and agreeing easy-to-use readiness-to-wean criteria that can be assessed on a daily basis. While more than 450 predictive weaning indices have been studied (Cook *et al.* 2000), the more commonly used indicators include vital signs, pulmonary mechanics and oxygenation. In addition, subjective indicators, such as absence of anxiety and ability to cough, have also been used. A major challenge will be to incorporate the subjective information and particularly abstract knowledge deemed necessary in decision-making. The magnitude of this latter category is unknown and it is self-evident that it is difficult to demonstrate that it is even pertinent. It is conceivable that this category exists simply on the basis of failure to describe adequately the information being processed. For example, use of accessory muscles or paradoxical breathing pattern may be what is meant by 'not right' or 'not comfortable'. Hence, it may be that some or much of such information could be allocated to the subjective information category. Given the views of many of those interviewed, it would be impractical when constructing/implementing a weaning protocol to ignore 'abstract' information, but perhaps strenuous efforts should be made to redefine it in subjective terms.

Physicians considered that protocols should not be slavishly applied, and that those using them need to have the necessary judgement skills and understand the need to retain a degree of flexibility. This view reflects common criticisms of protocols for their rigidity and 'cookbook' style (Kupfer & Tessler 2001, Keenan 2002). Incorporating an additional criterion of 'resolution of the underlying reason for ventilation' to readiness-to-wean criteria will be useful because it provides the opportunity to assess other factors associated with weaning that cannot be included in the protocol.

Variability in nursing experience was viewed as a factor that mitigates against doctors relinquishing control of the weaning process. There is generally a high turnover of nursing staff in ICU, particularly in the lower grades. It is understandable, therefore, that there are concerns about how protocols may be used in the hands of the less experienced. It also explains interviewees' reasons for maintaining a high level of control over the weaning process. This is consistent with previously published work emphasizing that one of the reasons why people resist change is concern about competence in a new context (Kanter *et al.* 1992, Dawson 1996). Successful strategies used elsewhere when implementing protocolized weaning have been to involve physicians closely in the development of protocols (Kollef *et al.* 1997, 1998, Horst *et al.* 1998, Marelich *et al.* 2000) and to ensure that all staff (medical and nursing) receive appropriate in-service education in using them (Davies 1996, Burns *et al.* 1998).

To provide consistency and ongoing support, it is useful to explore how other units have addressed this issue and to consider whether their methods could be usefully employed. Burns *et al.* (1998) designated an experienced nurse to specifically oversee this aspect of practice. The role involved attending the daily round, reviewing patients' progress, ensuring compliance with weaning plans, offering support, advice and guidance to junior staff caring for weaning patients, and coordinating weaning around other organizational issues. Additionally, establishing an individual daily weaning plan for patients, including results of readiness-to-wean criteria, weaning objectives set by the physician, and progress, may be useful in providing a safe structure for the dissemination and feedback of information on a patient's weaning progress. This would potentially increase the safe and effective contribution of less experienced staff to the weaning process (a view acknowledged by our participants) and consequently reduce the need for tight control.

Conclusion

In conclusion, three main points emerged from the study that have implications for weaning practice. First, the introduction of protocolized weaning needs to go hand-in-hand with education, and units wishing to introduce this need to plan a strategy for identifying and meeting staff education needs. Education should address those informational aspects that participants viewed as requisites for weaning:

- sound knowledge of physiology and pathophysiology,
- ability to interpret empirical objective information,
- ability to recognize, interpret and record empirical subjective information.

Information on the abstract, intuitive component of decision-making could be delivered by experienced staff using case studies, through which they could share insights into their experiences and decision-making processes.

Secondly, a team approach involving nurses, physicians and relevant others should be deployed to develop the protocols and plan the implementation process. This would ensure that protocolized weaning addressed unit-specific issues. Those involved in protocol development then need to 'champion' its implementation. Education in the use of protocols should be provided for all staff, and a system devised for recording patient progress. This could be in the form of a bedside weaning plan.

Thirdly, due to frequent turnover of medical and nursing staff, experience levels of ICU staff are prone to variation. A designated, experienced nurse specifically to oversee weaning may be helpful in alleviating concerns about this. However, individual units will need to consider carefully their

What is already known about this topic

- Weaning from mechanical ventilation poses problems for 25% of intensive care unit patients who survive to that point.
- In the USA, nurse-directed protocolized weaning has reduced mechanical ventilation time and intensive care unit length of stay.
- Little evidence exists about the use and effectiveness of protocolized weaning in the United Kingdom, and physicians' views are not known.

What this paper adds

- Barriers to adopting nurse-directed protocolized weaning in the United Kingdom relate to the perceived rigidity of weaning protocols, difficulty in encompassing the information necessary to devise algorithms, competence of staff using protocols and unpredictability of weaning.
- The method used in this study could be employed to generate unit-specific weaning protocols which address the concerns of physicians currently leading decision-making in this area.
- Only when physicians' concerns are addressed will patients be able to benefit from the potential advantages of weaning protocols.

resources, particularly personnel, time and commitment (Blackwood 2003).

Physicians' views can only provide part of the information needed to generate protocols. Nevertheless, it is unlikely that (in the UK, at least) protocolized weaning will be introduced without the enthusiastic support of intensive care physicians. Therefore, accommodating their views is an important step.

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