

Guidelines, protocols, regimens, procedures and processes: a recommendation for standardised terminology in ICU patient care activities, while we “bundle along”!

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In reviewing the literature on patient care from intensive care units around the world, we see a benefit in defining more accurately the terminology that is commonly — but variously — used. This would make it easier to compare “operational manuals” (manuals for the optimal, safe operation of an ICU) written by our colleagues from many countries for national and international use.¹⁻⁵ We thus propose a standard terminology for ICU manuals and patient care (Box 1).

Why are these definitions needed? Modern practitioners are deluged daily with information, from which they are expected to garner correct and relevant information to provide safe, effective treatment for ICU patients.⁶⁻¹² Needless to say, this treatment must also be evidence-based. We propose standardising the presentation of the commonly used information, so that it does not need to be re-invented for every new guideline or protocol. We believe this standardised approach will reduce the mundane work required to generate standards, as it could be applied from Beijing to Barcelona. The knowledge base is common, why not standardise the presentation?

With our definitions, is it possible to build standardised operational manuals for use in ICUs around the world? The definitions are perhaps a small first step in developing a common language for such manuals. There will always be gainsayers who prefer to ignore guidelines and protocols and to individualise their practice. This may help lateral thinking, but, whether we like it or not, much of intensive care practice is mundane. Our suggested definitions would help organise the plethora of everyday information in a way that is easily recognised by anyone working in the field. We applaud the individual striving for uniqueness but, when you call for an adrenaline infusion, do you really want to explain every time the exact dilution needed, the type of pump, where to infuse the medication and so on?

An example from an operational manual presented using our definitions is shown in Box 2. Let the mundane be well documented, and let the documentation be standardised, while we “bundle along” with new evidence-based grouping!

Box 1. Suggested standard terminology for use in the development of ICU operational manuals

Guideline: A statement of policy or procedure by which to determine facilities, structures and activities in an ICU.

Example: ICU staffing ratio for patients who are haemodynamically unstable or cannot protect their own airway.

Protocol: A plan for carrying out a patient’s care activity or process in the ICU. These ICU protocols are specific to the intervention and the disease.

Example: Insertion of a Sengstaken–Blakemore gastro-oesophageal tube to control bleeding varices.

Regimen: A regulated course or quantity of medicine, diet or activity in an ICU, intended to preserve or restore health.

Example: Sliding scale of insulin therapy for blood sugar control.

Procedure: An approved series of steps taken to accomplish perform or effect an ICU activity.

Example: Preparation of a tray of sterile equipment to help a doctor insert a central venous line.

Process: The handling of papers, records, equipment and patient interventions in a systematic organised way in the ICU; to file, record, make notations, intervene and follow up with appropriate actions in the ICU.

Example: Requesting, sampling, recording and notifying of results of blood gas analysis.

Bundle: A number of protocols considered, planned and applied together which have scientific evidence-based benefit to improve a patient’s outcome in the ICU. These bundles are designed to reduce complications of ICU management in all diseases treated in the ICU.

Example: A bundle to prevent central venous catheter complications.

Operational manual: Appropriate information, steps and instructions on how the managers and staff of the ICU unit want guidelines, protocols, regimens, procedures, processes and bundles applied in their particular unit.

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Box 2. Example of a patient care activity presented according to the suggested terminology

Protocol for intravenous use of α - and β -agonists

A. Guidelines

1. Legislative (medicolegal) requirement guidelines

Vasoactive and inotropic medications are potent and therefore potentially dangerous; they should only be administered by qualified ICU nursing staff on the written orders of a medical practitioner.

2. Safety precautions guidelines

Inotropes should only be administered via a dedicated lumen of a central venous catheter (CVC), using a reliable infusion pump. Concentrations of adrenaline and noradrenaline should not exceed 4 mg per 50 mL. Concentrations of dopamine and dobutamine should not exceed 200 mg per 50 mL and 250 mg per 50 mL, respectively. Inotropes should be administered in a controlled environment, with continuous monitoring of electrocardiogram and blood pressure. Lines used to infuse these medications must be clearly labelled.

3. Indications guidelines

Alpha- and β -agonists are used:

- to *VASOCONSTRICT* the circulation in conditions where vasoplegia is a consequence (eg, severe sepsis) — drugs acting predominantly at the α -catecholamine receptor are used for this purpose.
- to provide *INOTROPY* when the cardiac output is not meeting the metabolic requirements of the patient — drugs acting predominantly at the β -catecholamine receptor are used for this purpose.
- to provide *CHRONOTROPY* in the event of pathological bradycardia — drugs acting at the β -catecholamine receptor are used for this purpose.

Actions of α - and β -agonists

Drug	Vasoconstriction	Inotropy	Chronotropy
Adrenaline	+	+++	++
Noradrenaline	++	++	–
Dopamine	+	++	+
Dobutamine	–	++	++
Isoprenaline	–	++	+++
Vasopressin	+++	–	–

4. Contraindications guidelines

Vasoactive substances should never be used to counteract hypovolaemia — they should be used only after the intravascular volume has been corrected. These drugs should be used with circumspection in patients with severe ischaemic heart disease and severe peripheral vascular disease as they can result in increased cardiac work, worsening ischaemia and reduced tissue perfusion. All these drugs are arrhythmogenic, and severe arrhythmia states may limit their benefit.

5. Potential complications guidelines

- Arrhythmia
- Worsening myocardial ischaemia
- Reduced tissue perfusion (eg, peripheries, splanchnic circulation)
- Local tissue necrosis if the drug extravasates from the infusion line
- Hypokalaemia
- Hyperglycaemia
- Neutrophilia — leading to incorrect diagnosis of sepsis

B. Regimens

1. Quantities regimen

- Adrenaline 4 mg per 50 mL
- Noradrenaline 4 mg per 50 mL
- Dopamine 200 mg per 50 mL
- Dobutamine 250 mg per 50 mL

2. Routes regimen

Dopamine and dobutamine are occasionally given via a peripheral intravenous line, but ideally all these drugs should be given via a dedicated lumen of a CVC.

3. Equipment regimen

- Drug solution
- Syringe pump — calibrated to pump at fractions of 1 mL/h
- Sterile infusion line
- Dedicated lumen of a CVC

C. Procedures

1. Preparation procedure

- a. The patient's volume status is corrected as assessed by clinical examination of physiological parameters (blood pressure, heart rate, urine output, tissue perfusion) and by special investigations (central venous pressure, pulmonary capillary wedge pressure, chest x-ray and echocardiography).
- b. If the patient remains hypotensive, bradycardic or vasoplegic, then the appropriate vasoactive agent is selected.
- c. The appropriate solution is ordered by the doctor and administered by the nursing staff via the CVC.
- d. Monitoring as appropriate to determine the effect of the drug.

2. Application procedure

The appropriate vasoactive agent is administered via the CVC, and the patient is monitored for effect. The general approach to the hypotensive patient is a three-step process:

- a. Correct volume status (as described in *Preparation procedure*) and exclude other correctable causes of hypotension (eg, tension pneumothorax, high auto-PEEP [positive end-expiratory pressure], cardiac tamponade).
- b. Commence a predominantly inotropic agent (dopamine, dobutamine or adrenaline) if hypotension is thought to be due to cardiogenic shock.
- c. Commence a predominantly vasoconstrictive agent if there is no response to (a) and (b), and hypotension is thought to be due to vasodilatation or vasoplegia. Chronotropic agents such as isoprenaline may be used for pathological bradycardia. Vasopressin may be added in patients unresponsive to the usual vasoconstrictors.

D. Processes (of doctors, nurses or management)

1. Documentation process

Medication orders are charted on the ICU chart by the doctor.

2. Recording process

Hourly rate of administration and cardiovascular parameters are charted by the nursing staff.

3. Interpretation process

The physiological response to treatment is assessed by the nursing and medical staff. Drugs are administered to pre-determined end-points (eg, mean arterial pressure).

4. Intervention process

Constant assessment of the patient's condition is required to determine response to treatment and appropriateness of the current treatment regimen.

POINTS OF VIEW

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