Commentary

Recently published papers: choose well, treat well, get well – which matters most?

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Choice underpins everything we do as critical care clinicians. We choose whether to treat, when to treat and how to treat from an ever-increasing selection of alternatives, and whether to afford the costs associated with the decisions we have made. Some recent articles have looked at how one chooses to ventilate patients (noninvasively or not), how to deal with and avoid ventilator-acquired pneumonia, and which regimens of antibiotics to use and how it affects outcome. It is these articles on which we shall focus.

Choose well

Choosing the antibiotic to use in early sepsis is influenced by many things: likely causative organisms for the source found, if any; local variations of pathogens; and known patterns of resistance. Logically, then, targeting sepsis with the correct initial antibiotic choice should influence overall patient outcome. But does it?

Garnacho-Montero and colleagues looked at how adequate empirical antibiotic choice affected outcome and the mortality rate in 400 patients on admission to the intensive care unit (ICU) [1]. Adequate meant at least one effective drug (two drugs for *Pseudomonas* infection), as judged by antimicrobial susceptibility, included in the empirical antibiotic treatment. Garnacho-Montero and colleagues found that inhospital mortality was eight times more probable in patients receiving inadequate antimicrobial therapy in the first 24 hours, and that adequate therapy reduced mortality by almost two-thirds in surgical sepsis (where surgery is a necessary part of infection treatment). Antibiotic therapy in the preceding month and, not surprisingly, fungal infection meant empirical therapy was likely to be inadequate.

Early adequate antibiotics do seem to matter, but not as much in ventilator-acquired pneumonia (VAP) as expected when considered by Leroy and colleagues [2]. Although adequate antibiotics were associated with a significantly lower mortality rate, they were not an independent prognostic factor. However, thrombocytopaenia and extensive lung radiographic appearances (as these authors have stated previously [3]) were an independent prognostic factor.

Still with the antibiotic theme, many units are adopting rotating schedules of antibiotics in an effort to combat multiresistance. Raymond and colleagues have already suggested that this regimen may improve mortality on the ICU [4], but what happens when patients are discharged to the ward? It seems that if the regimen is carried over, then so are the benefits – even to patients on the ward admitted from elsewhere [5]. Interestingly, the length of stay on the ward seemed to increase with the rotating regimen but, as Raymond and colleagues point out, this may be because it allows sicker ICU patients to survive longer; and they then require a protracted ward stay. In any case, their results suggest rotation may be the way forward in our war against the bacteria.

Treat well

VAP is regrettably the most common nosocomial infection on the ICU. Its implications for patient care are manifold. Does giving a patient a percutaneous tracheostomy (PCT) predispose them to VAP? If so, how does it affect outcome?

Rello and colleagues studied this association in almost 100 patients [6]. They found in their cohort that at least performing PCT increased the risk of VAP. This in turn lengthened the duration of ventilation and of the ICU stay, but did not seem to increase mortality. Neither did organisms colonising pre-PCT predict the pneumonic organism. However, patients receiving PCT are slower to wean from

ICU = intensive care unit; NIV = noninvasive ventilation; PCT = percutaneous tracheostomy; VAP = ventilator-acquired pneumonia.

ventilation (and therefore to undergo PCT) and so are predisposed to VAP by definition. The only real way to show that these slow weaners are worse off with a PCT would be to randomise them to PCT or to continued oral intubation. Would continued oral intubation have more morbidity and VAP because of the continued need for sedation? Perhaps this is the trial we need. But then again, prolonged oral intubation has problems all of its own.

So how can we prevent VAP? Many strategies have been tried but, mortality and morbidity aside, is their implementation cost-effective in terms of the increased treatment costs associated with VAP? van Nieuwenhoven and colleagues set out to find the cost of oral decontamination [7], having previously shown it to reduce the incidence of VAP [8], and to show that there are benefits, at least in terms of costs incurred on the ICU and those associated with VAP. Assuming similar costs elsewhere, notwithstanding the benefits of oral decontamination, perhaps this is a strategy we should all be adopting.

Get well

There is definitely growing interest in noninvasive ventilation (NIV); more so where inspiratory effort is supported by increased positive pressure, pressure support. The debate continues as to whether NIV is truly effective, under what circumstances, and which patients should receive it. Thankfully more studies are being powered to answer these questions.

Nava and colleagues looked at NIV with pressure support in a pre-ICU setting [9]. Their end points were the reduction in mortality and the need for intubation using this modality in patients with cardiogenic pulmonary oedema. Outcomes were the same overall but, importantly, NIV did not increase the risk of myocardial infarction. Specifically, however, hypercapnoeic patients improved faster and avoided the need for intubation when compared with those patients receiving only medical therapy and oxygen. Of course, in terms of feasibility, these patients will need at least level 1 care.

Ferrer and colleagues considered NIV in 105 acutely hypoxic patients [10], excluding hypercapnoeic patients. They also showed decreased necessity for intubation, improved survival on the ICU and beyond, and reduced incidence of nosocomial pneumonia (with shock). Ferrer and colleagues also specifically show reduced intubation rates in those patients with pneumonia and no underlying predisposition to respiratory failure, perhaps for the first time.

Choose best?

Finally, which is the expert choice, and on what basis? Perrin and colleagues surveyed UK clinicians (general and respiratory physicians, and intensivists) to investigate their clinical decision-making and criteria for initiation of ventilation in patients with respiratory failure due to exacerbation of chronic obstructive pulmonary disease [11]. All three groups selected similar factors for withholding or initiating ventilation, but these were not necessarily recognised predictors of outcome. There were, however, wide variations between individuals. Guidelines are needed.

Competing interests

None declared.

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