

Chapter 2

“Less Is More”: The New Paradigm in Critical Care

The art of medicine consists of amusing the patient while nature cures the disease

Voltaire, French writer and historian (1694–1778).

What appears to be the world’s first ICU was established at the Municipal Hospital of Copenhagen in December of 1953 by the Danish anesthesiologist Bjorn Ibsen during the polio epidemic of 1952–1953 [1]. The first patient admitted to the unit was a 43 year old man who had unsuccessfully attempted to hang himself. The patient had a tracheotomy performed and received manual positive pressure ventilation with 60 % oxygen in N₂O [2]. The first physician staffed ICU’s in the US were developed in 1958 by Max Harry Weil and Herbert Shubin at the Los Angeles County General Hospital and by Peter Safar in Baltimore [3, 4]. The introduction of the pulmonary artery catheter (PAC) in the early 1970s by Swan and colleagues became the monitoring tool that defined critical care medicine for the next four decades [5, 6]. The PAC became synonymous with critical care medicine. The era of the PAC resulted in a style of medicine that can best be characterized as aggressive. If some care is good, more care is even better. However almost all medical interventions be they invasive procedures, diagnostic tests, imaging studies, mechanical ventilation, surgery or drugs have some risk of adverse effects [7]. In some cases, these harms outweigh the benefits. This may be particularly so in ICU patients who are highly vulnerable and at an increased risk of iatrogenic complications [8]. Beginning in 1996 the safety and effectiveness of the PAC came into question [9]. Subsequent studies demonstrated that the PAC provided misleading (“physiologic variables”) that could lead to inappropriate therapeutic interventions and that the use of the PAC did not improve patient outcome [10–12]. The PAC has now all but been abandoned [13]. In 2000 the ARDSnet group published their now landmark study which demonstrated that mechanical ventilation with low tidal volume of 6 mL/kg/IBW improved patient outcome as compared to the standard approach (12 mL/kg/IBW) [14]. The last decade has witnessed a slew of studies that have challenged conventional wisdom and which have led to a gentler, less invasive approach to the critically ill patient... this has led to the paradigm that “*Less may be More*” (see list below) [7, 8]. We now realize that our goal as intensivists is too be supportive and allow the body to heal itself while at the same time limiting the harm we cause with are arsenal of therapeutic and diagnostic weapons.

Interventions for which less has been shown to be associated with better outcomes:

- Lower tidal volume and lower plateau pressures [14]
- Less blood [15, 16]
- Less invasive hemodynamic monitoring [13, 17]
- Less fluids [18–20]
- Less insulin and less intensive glycemic control [21]
- Less antibiotics; de-escalation of empiric therapy and shorter course [22–24]
- Less sedation and less benzodiazepines [25–27]
- Less corticosteroids; 200 mg hydrocortisone (equ) daily for sepsis and COPD [28–31]
- Less CXR; no daily CXR [32, 33]
- Less oxygen; hyperoxia kills (COPD) and damages the brain and lungs [34–43]
- Less calories and protein; trophic feeds may be safe; less protein = less muscle breakdown [44, 45]
- Less antiarrhythmics; no prophylactic lidocaine in AMI [46]
- Less stress ulcer prophylaxis (=less *C. diff.* and less HAP) [47, 48]
- Less intense renal replacement therapy [49–52]
- Less blood pressure control (in ischemic stroke) [53, 54]
- NO dopamine [55–57]
- NO “supranormal” hemodynamic targets [58, 59]
- NO TPN [60, 61]
- NO diuretics for acute renal failure [62]
- NO hetastarch [63, 64]
- NO Activated Protein C [65]
- NO MRSA/MDRO screening and protective isolation [66–68]
- NO therapeutic hypothermia [69, 70]

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