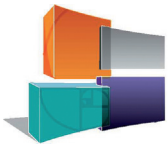
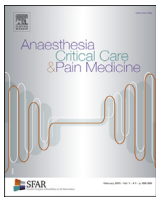
Anaesth Crit Care Pain Med 38 (2019) 589–590



SFAR
Société Française d'Anesthésie et de Réanimation



Editorial

Time is what we make of it

ARTICLE INFO

Keywords:
Emergency medical services
Multicentre study
Physicians
Registries
Trauma centres
Wounds and injuries

For a long time, the debate about emergency systems has been subjugated to a controversy about concepts such as "scoop and run" and an opposition of paramedic- *versus* physician-staffed emergency medical systems (EMS), especially in trauma care. A considerable amount of observational evidence stems from paramedic-staffed systems, more particularly from North America [1]. Physician-staffed systems, predominantly implemented in continental Europe, with France being a pioneer, have been studied to a lesser extent. The ensuing debate comparing both systems is often passionate and concentrates on a central issue: the influence of prehospital time on patient outcome [2]. For advocates of paramedic-staffed systems, the "scoop and run" appears to be the only acceptable dogma, convinced that physician-staffed systems add futile complexity to a complex situation and prolong prehospital times with nefarious consequences for the patients. Proponents of the physician-led critical care team advocate that a tailored provision of advanced prehospital critical care allows taking faster control of derailed physiology. This controversy in mind, it is important to remember that all systems and concepts have grown and evolved within their specific and unique political, socio-historic and -economic context. Often, clinical strategies are to a higher extent determined by context rather than by evidence [3]. For this reason, it may actually not be useful to compare the different systems to one another. They are probably not comparable. All have distinct advantages and disadvantages and cannot be detached from their environment. In contradiction to the position defending paramedic-staffed systems, evidence has emerged in favour of physician-staffed systems [4,5]. In fact, formerly paramedic-only systems evolve to develop more and more physician-staffed components such as HEMS and/or very advanced critical care paramedics. This evolution is in part due to the experience of armed conflicts in Afghanistan and Iraq and the need for advanced enhanced care teams (British MERT or the US Marine Corps equivalent). Instead of comparing or simply transposing a doctrine from one context to another, it appears crucial to study a given doctrine within every specific context. The difference between a dogma and a scientific hypothesis is that a hypothesis should hold in different contexts. The dogma of trauma as time sensitive disease has been transposed from paramedic-staffed systems to very different trauma systems including physician-staffed systems. It was about time to study this dogma in a physician-staffed system.

This is the rationale behind the study "Association of prehospital time to in-hospital trauma mortality in a physician-staffed emergency medicine system" published in September in *Journal of the American Medical Association Surgery* [6]. This work tested the hypothesis whether longer prehospital times in a physician-staffed EMS were associated with increased in-hospital trauma mortality. This cohort study, based on the Paris region and Rhône-Alpes trauma registries, was conducted from 2009 to 2016. All adult trauma patients admitted to a participating trauma centre were attended on scene by a physician-led enhanced care team (*Structures Mobiles d'Urgence et de Réanimation*, SMUR) and triaged by a physician central dispatcher (*Service d'Aide Médicale Urgente*, SAMU). The association between prehospital time and in-hospital trauma mortality was assessed using a multivariate model adjusted for confounding factors. A total of 10,216 patients were included. The average age of the patients was 41 years (SD = 18) and the population was 7937 males (78%). The predominating mechanism was non-penetrating trauma (91%), the average Injury Severity Score was 17 (14), 1259 patients (12%) were in shock and 2724 (27%) had a severe head injury. The probability of death increased by 9% for every 10 min increase in prehospital time before (OR = 1.09; 95% CI: [1.07–1.11]) and by 4% after adjustment for confounders (ORa = 1.04 [1.01–1.07]). In contrast to previous studies, after adjusting for confounders, the association of prehospital delay with inhospital mortality related to head and bleeding injuries was not significant.

These results were viewed by many in the emergency and critical care community as challenging the concept of physician-staffed prehospital care. Although a conclusion against physician-staffed systems may offer itself all too easily, this was neither the objective, nor the hypothesis of the study. Within the limits of large cohort observational research, the study identifies time as a crucial prehospital management component to treat major trauma patients, no matter which system one operates in, including a system run by expert prehospital physicians. Instead of nurturing a misleading debate about systems and oversimplifying concepts to

https://doi.org/10.1016/j.accpm.2019.10.003

oppose paramedic- and physician-staffed systems, the authors of the study propose to move towards a new concept: the intervention to time ratio. This ratio is specific to every patient and every prehospital situation. Time is important, but what really matters is how this time is used and what interventions are performed in a given amount of time in a given context [7]. For example, patients with a bleeding penetrating thorax trauma may require only two crucial interventions, such as decompression and tranexamic acid, and benefit from a rapid transport to an appropriate centre. Other patients such as those with traumatic brain injury require a more complex strategy, as their physiological needs, transport time and conditions impose a higher level of care. Choosing the ratio that seems the best for their patient in a given situation is the daily and inspiring challenge that all prehospital clinicians, physicians and paramedics have to face, no matter the system they operate in. The prehospital team is called upon to use the precious prehospital time to modify the patient's care, and bring an added value that only expert clinicians can provide. This sometimes means to scoop, sometimes to play; in any case, the challenge of time should not be taken lightly and leaves no room for complacency. Furthermore, time is a result of complex interactions, such as access to the patient, entrapment, transport conditions and vector, dispatch, access to specialised centres. For these reasons the findings appeal to all trauma players, pre- and inhospital, to further streamline trauma care and identify through future research the crucial and beneficial interventions that help patients surviving and finding their way back to their life before trauma. Some systems are physician-staffed, some are paramedic-staffed; the question is not who provides the care, but that the provided care is timely, appropriate and efficient. The debate about physician or paramedic-based systems is sterile and the trauma community should take a step ahead and leave this question aside to ask which prehospital interventions are crucial. The community of prehospital physicians in France is particularly capable to provide innovative and invaluable contributions to this endeavour. France offers the enormous privilege to offer a physician-staffed EMS with expert clinicians to its citizens, and the work by Gauss et al. does not provide any reason to question this privilege.

Disclosure of interest

T. Gauss and P. Bouzat were authors of the commented article [6]. The other authors declare that they have no competing interest.

References

[1] Sampalis JS, Denis R, Lavoie A, et al. Trauma care regionalization: a process-outcome evaluation. J Trauma 1999;46(4):565–79.
[2] Rogers FB, Rittenhouse KJ, Gross BW. The golden hour in trauma: dogma or medical folklore? Injury 2015;46(4):525–7. http://dx.doi.org/10.1016/j.injury.2014.08.043.
[3] Kelly MP. The need for a rationalist turn in evidence-based medicine. Eval Clin Pract 2018;24(5):1158–65. http://dx.doi.org/10.1111/jep.12974.
[4] Knapp J, Häske D, Böttiger BW, Limacher A, Stalder O, Schmid A, et al. Influence of prehospital physician presence on survival after severe trauma: Systematic review and meta-analysis. J Trauma Acute Care Surg 2019;87(4):978–89.
[5] Fukuda T, Ohashi-Fukuda N, Kondo Y, Hayashida K, Kukita I. Association of prehospital advanced life support by physician with survival after out-of-hospital cardiac arrest with blunt trauma following traffic collisions: japanese registry-based study. JAMA Surg 2018;153(6):e180674.
[6] Gauss T, Ageron FX, Devaud ML, Debaty G, Travers S, Garrigue D, et al. Association of prehospital time to in-hospital trauma mortality in a physician-staffed emergency medicine system. JAMA Surg 2019 [in press].
[7] Maegele M. In acute trauma care, time matters but is not everything. JAMA Surg 2019. http://dx.doi.org/10.1001/jamasurg.2019.3476.

Pierre-Géraud Claret[a], Tobias Gauss[b], Pierre Bouzat[c,*]
[a]*Department of anaesthesia, intensive care, pain and emergency, Nîmes University Hospital, place du Professeur-Robert-Debré, 30029 Nîmes cedex 9, France*
[b]*Department of Anaesthesia and Intensive Care, Beaujon Hospital, hôpitaux-Paris-Nord-Val-De-Seine, AP–HP, 92110 Clichy, France*
[c]*Grenoble Alps Trauma Centre, Grenoble Alps University, Grenoble University Hospital, 38000 Grenoble, France*

*Corresponding author
E-mail address: PBouzat@chu-grenoble.fr (P. Bouzat).