according to the data provided from the alive group and deceased group in Table 1, the mean value of mean blood pressure, systolic blood pressure, diastolic blood pressure, heart rate, pulse oximetry in the overall population should be 66, 79, 56, 116 and 88 respectively, rather than 72, 99, 60, 121 and 83 respectively, so we suggest the authors check their data again.

Secondly, Jouffroy [1] et al. claimed they defined optimal fluid expansion as >20 ml/kg ideal body weight (IBW) according to 2012 version [2] of Surviving Sepsis Campaign (SSC) guidelines, however, we do not agree with this viewpoint. As a matter of fact, the 2012 version [2] of SSC guidelines recommended a minimum of 30 ml/kg of crystalloids should be administrated as an initial fluid challenge in patients with septic shock, while, the 2012 SSC guideline [2] recommended to deliver a bolus of 20 ml/kg of crystalloids over 5–10 min for pediatric septic shock patients not for the adults! The inadequate initial fluid resuscitation in adults may contribute mostly to the conclusion in the study [1] that fluid volume expansion indexed on IBW >20 ml/kg was associated with decreased mortality. Thus, we suggest the authors divide the 3 resuscitation groups according to the cut-offs of "<30 ml/kg IBW", "30 ml/kg–40 ml/kg" and ">40 ml/kg", which would be more scientific than the cut-offs of "<10 ml/kg IBW", "10 ml/kg–20 ml/kg" and ">20 ml/kg".

Thirdly, fluid resuscitation is essential and necessary for septic shock patients, but overzealous fluid administration can do harm too. One size does not fit all for fluid resuscitation in pre-hospital patients with septic shock. For patients with acute lung injury [3], acute respiratory distress syndrome or congestive heart failure second to septic shock, conservative fluid strategy should be applied, as sometimes positive fluid balance is associated with an increased risk of mortality in septic shock [4]. Multiple methods can be combined to assess the volume status and fluid responsiveness of the septic shock patients, including physical examination (mottled, clammy or dry skin, oliguria, altered mental state), laboratory parameters (blood lactate, blood urea nitrogen/creatinine ratio, urinary sodium), bedside ultrasound, chest X-ray, central venous pressure (CVP), passive leg-raising test, fluid challenge and etc. [5], though some are unavailable in the pre-hospital environment, the importance of assessing the volume status and fluid responsiveness should not be forgotten or ignored.

Fourthly, as the 2012 SSC guideline [2] stressed, not only fluid resuscitation was vital for reducing the mortality of septic shock patients, but also obtaining blood cultures, administration of antibiotics, measuring lactate levels, applying vasopressors if needed and achieving the resuscitation goals (CVP 8–12 mm Hg, mean arterial pressure (MAP) ≧ 65 mmHg, urine output ≧ 0.5 ml/kg/h, Superior vena cava oxygenation saturation ($ScvO_2$) ≧ 70% or mixed venous oxygen saturation (SvO_2) ≧ 65%) correlated closely with the mortality of the patients, and these vital elements had been integrated as 3 h/6 h bundles and got worldwide spreaded through the dissemination of SSC guidelines. Nevertheless, in the multivariate analysis of factors associated with mortality at Day 28 of septic shock patients in the commented paper [1], only age, immunosuppression, pre-hospital duration and volume of fluid were adjusted as covariables, disease severity and the aforementioned vital elements of bundles had not been included into the analysis, thus, we are afraid that the results may not be quite accurate.

At last, we appreciate Jouffroy et al. for their innovative and meaningful study, but the interpretation of their work should be cautious and further rigorous studies are warranted.

Declarations

Ethical Approval and Consent to Participate

Not applicable.

Consent for Publication

Not applicable.

Availability of Supporting Data

Not applicable.

Competing Interests

The authors declare that they have no competing interests.

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As title page.

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Reply to Zhou et al.: "fluid resuscitation in pre-hospital patients with septic shock: one size does not fit all"

Dear Editor,

We thank Dr. Zhou et al. [1] for their interest and relevant comments about our article [2].

First, as they underlined in their manuscript [1], typing errors are present in Table 1 of our article [2]. We apologize for these typing errors and we submit a corrected version of the Table 1 to the Editor.

Table 1
Demographic, clinical and biological characteristics of patients with septic shock managed by pre-hospital mobile intensive care units.
Quantitative variables are expressed as mean ± standard deviation. Qualitative variables are expressed as absolute value and percentage

	Alive at D28 (n = 63)	Deceased at D28 (n = 32)	Overall population (n = 95)
Age (years)	68 ± 15	73 ± 14	70 ± 15
Weight (kg)	69 ± 14	65 ± 15	67 ± 15
Size (cm)	171 ± 8	168 ± 7	170 ± 8
Male gender	40 (63%)	16 (50%)	56 (59%)
Immunosuppression	35 (56%)	14 (44%)	49 (52%)
Mean blood pressure (mmHg)	65 ± 21	69 ± 24	67 ± 22
Systolic blood pressure (mmHg)	90 ± 27	95 ± 29	92 ± 28
Diastolic blood pressure (mmHg)	55 ± 21	58 ± 19	56 ± 20
Heart rate (beats/min)	120 ± 28	109 ± 27	117 ± 28
Pulse oximetry (%)	89 ± 10	87 ± 12	88 ± 11
Respiratory rate (moves/min)	30 ± 8	33 ± 7	31 ± 8
Duration of pre-hospital care (min)	101 ± 34	93 ± 34	99 ± 34
Length of stay in the ICU (days)	10 ± 12	7 ± 6	9 ± 10
Fluid volume expansion (ml)	1287 ± 553	906 ± 488	1158 ± 559
Fluid volume expansion indexed on BW (ml/kg)	20 ± 10	16 ± 12	18 ± 11
Fluid volume expansion indexed on IBW (ml/kg)	20 ± 9	15 ± 8	18 ± 9
Fluid volume expansion indexed on IBW < 10 ml/kg	11 (42%)	15 (58%)	26 (27.4%)
Fluid volume expansion indexed on 10 < IBW < 20 ml/kg	17 (65%)	9 (35%)	26 (27.4%)
Fluid volume expansion indexed on IBW > 20 ml/kg	35 (81%)	8 (19%)	43 (45.2%)

Second, we understand your statement concerning the one size that seems not to fit all. But the question should be: Is it the one size that fits in the guidelines but that does not fit for the prehospital setting? Or is it that this one size does not fit all? Indeed, the Surviving Sepsis Campaign recommends fluid challenge in patients with suspected hypovolemia being started with at least 30 $ml \cdot kg^{-1}$ of crystalloids within 3 h [3]. However, in the French version of these guidelines, a fluid expansion of 20–40 $ml \cdot kg^{-1}$ ideal body weight (IBW) crystalloids is advised during the first 6 h [4]. Even in the Rivers et al. study, patients were included after a crystalloid-fluid challenge of 20 to 30 $ml \cdot kg^{-1}$ IBW [5]. Interestingly, the above guidelines were based on studies performed in the emergency department [3,4]. In this optic, we wonder whether it is possible to extrapolate these values to the prehospital setting and whether this one size fit at all and in all?

The French guidelines [4], followed by the SAMU of Paris, are not precise concerning the exact threshold to be used. Therefore, we decided to set it to 20 $ml \cdot kg^{-1}$ IBW. As described in our study, mean pre-hospital fluid expansion indexed on IBW was 18 ± 9 $ml \cdot kg^{-1}$ in the overall population, 20 ± 9 $ml \cdot kg^{-1}$ in alive and 15 ± 8 $ml \cdot kg^{-1}$ in deceased patients within the initial 99 ± 34 min of prehospital medical care. Interestingly, in our work, only 10 (11%) patients received >30 $ml \cdot kg^{-1}$ IBW volume expansion in the prehospital setting. This observation clearly shows that fluid expansion within the first 2 h is far under the objectives set by the guidelines for management of sepsis patients. Anyhow, we observed reduced mortality when patients were administered >20 $ml \cdot kg^{-1}$ IBW of fluid expansion in this context. We are aware that this work is only descriptive and warrants further studies to assess the impact of greater amount of fluid expansion in the prehospital setting. Despite these limitations, we suggest, to prehospital teams, to early perform a fluid expansion of at least 20 $ml \cdot kg^{-1}$ IBW.

Third, we are not certain about the scientific relevance of evaluating fluid expansion >40 $ml \cdot kg^{-1}$. As Dr. Zhou et al. [1] clearly describes, overzealous fluid administration can do harm. Actually, positive fluid balance is associated with an increased risk of mortality in septic shock [3,6]. We agree that, for patients with acute lung injury, acute respiratory distress syndrome or congestive heart failure second to septic shock, conservative fluid strategy should be applied. Additionally, most of the time, we lack clear information of the patient's medical history in the prehospital setting. Most of all, assessment of the volume status and early fluid responsiveness is not always feasible due to the short time patients being cared for till hospital arrival. Actually, in Paris, prehospital transportation is quite efficient and may last <60 min. Consequently, liberal fluid expansion can be deleterious. Actually, even when a mobile intensive care unit is dispatched to the scene, neither laboratory parameters, nor bedside ultrasound, chest X-ray, central venous pressure is performed. Venous access is sometimes difficult to obtain in hypovolemic patients and mostly restricted to one peripheral venous access. Let's not even discuss about the implementation of a central venous catheter. We encourage research teams to evaluate these technics in the prehospital setting. Consequently, technical limitations have to be taken into account when big amounts of fluid are to be administered at this early stage and in this environment.

Fourthly and of major importance, early goal-directed therapy adapted to prehospital sepsis patients should not only be limited to fluid expansion. The 3 h-bundle of cares concept clearly describes the need to introduce broad-spectrum antibiotic to reduce mortality of sepsis patients. However, in France, the use of prehospital antibiotherapy is yet restricted to purpura fulminans. Still, blood lactate measurement, blood cultures, antibiotic administration, vasopressors, central venous pressure, urine output, superior vena cava oxygenation saturation, which are correlated with patients' mortality, cannot unfortunately be monitored in the prehospital setting. This is the main reason why our multivariate analysis does not include the above-cited variables. Performing and implementing all others measures than antibiotics and vasopressors, in the prehospital setting, would probably significantly delay the access to specialized medical care in an intensive care unit and thus impact mortality. Such strategy is actually evaluated by a randomized controlled study “SAMU Save Sepsis” [7].

At last, we thank Dr. Zhou et al. [1] for their letter. Indeed, communication between research teams is a key tool to improve our clinical practices. We agree that interpretation of our work should be done with caution, similarly to the guidelines referring to hospital management of sepsis patients, when considering out-of-hospital septic patients. We highly encourage further rigorous studies.

Authors' contribution

Drafting of the manuscript: Jouffroy, Saade.

Critical revision of the manuscript for important intellectual content: Philippe, Muret, Michaloux, Carli, Vivien.

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Conflict of interest

The authors declare no competing interests.

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The risk stratification in community-acquired pneumonia

We have greatly enjoyed reading the recently published article by Zhou and colleagues [1]. The authors evaluated 226 consecutive adult patients with community-acquired pneumonia (CAP) admitted in ED of a tertiary teaching hospital and investigated the risk stratification and prognostic prediction value of procalcitonin and several clinical severity scores on patients with community-acquired pneumonia in ED. They found that combination of procalcitonin and The Sequential Organ Failure Assessment (SOFA) score achieved the highest superiority to other combinations in predicting not only severe CAP, but also 28-day mortality.

Despite the efficacy of modern treatment, CAP is the leading cause of death due to infection and also a frequent cause of medical consultations. Prognostic scores, like the CURB-65 (confusion, urea, respiratory rate, arterial blood pressure and age) score and the pneumonia severity index have been developed and validated to estimate the risk of adverse outcome and to register a patient with CAP for hospital admission. Biomarkers are also useful tools in the diagnosis, prognostics and follow-up treatment of CAP [2]. Since CAP is an infectious disease, commonly-used laboratory parameters include the C-reactive protein, white blood cell count, and procalcitonin. However, recent studies showed that cardiac complications are common in patients with CAP, and cardiovascular biomarkers are found to be superior compared to inflammatory markers, especially for the determination of long-term prognosis in CAP [3]. Elevated levels of natriuretic peptides and troponins are reported to be common and are associated with a higher risk of adverse outcome in CAP. Moreover, decreased right ventricular systolic function [4] or presence of small pericardial effusion at transhoracic echocardiography [5] has been shown to be associated with increased rates of adverse events in patients with CAP.

Therefore, we think that combination of biomarkers of cardiac dysfunction with well-known biomarkers such as procalcitonin and CRP or combination of transthoracic echocardiography findings with classical prognostic scores, like the CURB-65 and SOFA, could improve the performance of single predictors in patients with CAP.

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Ambu® AuraGain™ laryngeal mask as a method of airway management of patient entrapped in vehicle

Sir,

We read the article by Evrin et al. [1] investigating the use of Ambu® AuraGain™ laryngeal mask by firefighters with a great interest. Undoubtedly, it is vitally important to keep looking for new methods of maintaining airway patency and to educate both medical and emergency services personnel in this aspect of medicine [2]. One group, from the emergency services personnel, which was examined by Evrin et al. [1] are lifeguards, however, firefighters are another professional