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Surviving Sepsis Campaign: association between performance metrics and outcomes in a 7.5-year study

拯救脓毒症运动：一个7.5年研究中绩效指标和结局间的关系

Purpose: To determine the association between compliance with the Surviving Sepsis Campaign (SSC) performance bundles and mortality.

目的：探讨拯救脓毒症运动（SSC）集束治疗策略的依从性和死亡率之间关系.

Methods:A multifaceted, collaborative change intervention aimed at facilitating adoption of the SSC resuscitation and management bundles was introduced. Compliance with the SSC bundles and associated mortality rate was the primary outcome variable.
方法：通过引入一个多层面、协同变化的干预措施，旨在促进SSC复苏和治疗集束的采用。SSC集束化策略的依从性和相关死亡率是主要的结局变量。
Results: Overall lower mortality was observed in high (29.0 %) versus low (38.6 %) resuscitation bundle compliance sites ($p < 0.001$) and between high (33.4 %) and low (32.3 %) management bundle compliance sites ($p = 0.039$). Hospital mortality rates dropped 0.7 % per site for every 3 months (quarter) of participation ($p < 0.001$). Hospital and intensive care unit length of stay decreased 4 % (95 % CI 1–7 %; $p = 0.012$) for every 10 % increase in site compliance with the resuscitation bundle.
结果：与低集束化复苏依从点（38.6%）相比，总体上死亡率在高集束化复苏依从点（29.0%）更低（p<0.001），并且介于高（33.4%）和低集束化治疗依从点（32.3%）之间（p=0.039）。采用SSC后每三个月（季度）医院死亡率降低0.7%（p<0.001）。点依从率每增加10%，住院及入住ICU天数下降4%(95% CI: 1% -7%; p = 0.012)。

Conclusions: This analysis demonstrates that increased compliance with sepsis performance bundles was associated with a 25 % relative risk reduction in mortality rate. Every 10 % increase in compliance and additional quarter of participation in the SSC initiative was associated with a significant decrease in the odds ratio for hospital mortality. These results demonstrate that performance metrics can drive change in clinical behavior, improve quality of care, and may decrease mortality in patients with severe sepsis and septic shock.

这一研究显示，脓毒症集束治疗策略依从性的增加能使死亡率相对风险降低25%。依从性每10%的增高和随着采用SSC季度数的增加都显著降低医院死亡率的比值比。这些结果表明绩效指标能推动临床行为改变，改善医疗质量，还可能降低重症脓毒症和脓毒性休克患者的死亡率。

Mechanisms of the effects of prone positioning in acute respiratory distress syndrome
俯卧位在急性呼吸窘迫综合症中的作用机制

Introduction: Prone positioning has been used for many years in patients with acute respiratory distress syndrome (ARDS). The initial reason for prone positioning in ARDS patients was improvement in oxygenation. It was later shown that mechanical ventilation in the prone position can be less injurious to the lung and hence the primary reason to use prone positioning is prevention of ventilator-induced lung injury (VILI).

引言：俯卧位在急性呼吸窘迫综合症（ARDS）患者中已使用多年。最初俯卧位是为了改善ARDS患者的氧合。后来发现俯卧位机械通气能减轻肺损伤，因此使用俯卧位的主要原因是为了防止呼吸机相关性肺损伤（VILI）。

Methods:A large body of physiologic benefits of prone positioning in ARDS patients accumulated but these failed to translate into clinical benefits. More recently, meta-analyses and randomized controlled trial in a specific subgroup of ARDS patients demonstrated that prone positioning can improve survival. This review covers the effects of prone positioning on oxygenation, respiratory mechanics, and VILI.
方法：ARDS患者使用俯卧位累积大量生理上的益处，但是却无法转化为临床益处。新近对ARDS患者特定亚组的meta分析和随机对照研究证明俯卧位能改善预后。本综述包括俯卧位对氧合、呼吸力学和呼吸机相关性肺损伤的作用。

Conclusions: We conclude with the effects of prone positioning on patient outcome, in particular on survival.
结论：总结了俯卧位对患者结局，特别是预后上的作用。

The assessment of transpulmonary pressure in mechanically ventilated ARDS patients
机械通气ARDS患者跨肺压的测定

Purpose: The optimal method for estimating transpulmonary pressure (i.e. the fraction of the airway pressure transmitted to the lung) has not yet been established.
目的：目前尚未确立理想的跨肺压（例如传递到肺的气道压力分数）测定方法。

Methods: In this study on 44 patients with acute respiratory distress syndrome (ARDS), we computed the end-inspiratory transpulmonary pressure as the change in airway and esophageal pressure from end-inspiration to atmospheric pressure (i.e. release derived) and as the product of the end-inspiratory airway pressure and the ratio of lung to respiratory system elastance (i.e. elastance derived). The end-expiratory transpulmonary pressure was estimated as the product of positive end-expiratory pressure (PEEP) minus the direct measurement of esophageal pressure and by the release method.

方法：本研究纳入44名急性呼吸窘迫综合症（ARDS）患者，我们将吸气末跨肺压当作气道和食管压力从吸气末到大气压（放松源性）的变化，并且作为吸气末气道压力的产物以及肺与呼吸系统弹性（弹性源性）的比例。呼气末正压（PEEP）减去直接测定的食管压力作为呼气末跨肺压，使用释放法测定。

Results: The mean elastance- and release-derived transpulmonary pressure were 14.4 ± 3.7 and 14.4 ± 3.8 cmH_2O at 5 cmH_2O of PEEP and 21.8 ± 5.1 and 21.8 ± 4.9 cmH_2O at 15 cmH_2O of PEEP, respectively ($P = 0.32$, $P = 0.98$, respectively), indicating that these parameters were significantly related ($r^2 = 0.98$, $P < 0.001$ at 5 cmH_2O of PEEP; $r^2 = 0.93$, $P < 0.001$ at 15 cmH_2O of PEEP). The percentage error was 5.6 and 12.0 %, respectively. The mean directly measured and release-derived transpulmonary pressure were −8.0 ± 3.8 and 3.9 ± 0.9 cmH_2O at 5 cmH_2O of PEEP and −1.2 ± 3.2 and 10.6 ± 2.2 cmH_2O at 15 cmH_2O of PEEP, respectively, indicating that these parameters were not related ($r^2 = 0.07$, $P = 0.08$ at 5 cmH_2O of PEEP; $r^2 = 0.10$, $P = 0.53$ at 15 cmH_2O of PEEP).

结果：弹性源性和放松源性跨肺压平均分别为在PEEP为5 cmH2O时14.4 ± 3.7和14.4 ± 3.8 cmH2O，在PEEP 为15 cmH2O时21.8 ± 5.1 和21.8 ± 4.9 cmH2O（p=0.32,p=0.98），表明这些参数显著相关（(r2 = 0.98, P < 0.001 at 5 cmH2O of PEEP; r2 = 0.93, P < 0.001 at 15 cmH2O of PEEP）。百分误差分别为5.6和12.0%。直接测定的和放松源性跨肺压平均分别为在PEEP为5 cmH2O时−8.0 ± 3.8和3.9 ± 0.9 cmH2O，PEEP为15 cmH2O时，−1.2 ± 3.2 和10.6 ± 2.2 cmH2O，表明这些参数无相关性（r2 = 0.07, P = 0.08 at 5 cmH2O of PEEP; r2 = 0.10, P = 0.53 at 15 cmH2O of PEEP）。

Conclusions: Based on our observations, elastance-derived transpulmonary pressure can be considered to be an adequate surrogate of the release-derived transpulmonary pressure, while the release-derived and directly measured end-expiratory transpulmonary pressure are not related.

结论：基于我们的观察，弹性源性跨肺压可考虑作为放松源性跨肺压合适的替代指标，而放松源性与直接测定的呼气末跨肺压不相关。

The impact of using estimated GFR versus creatinine clearance on the evaluation of recovery from acute kidney injury in the ICU

使用肾小球滤过率代替肌酐清除率作为ICU中急性肾损伤恢复评估指标的影响

Purpose: To quantify the error in evaluating recovery from acute kidney injury (AKI) with estimated GFR (eGFR) in relation to ICU stay.

目的：量化ICU住院中用肾小球滤过率（eGFR）评估急性肾损伤（AKI）的误差

Methods: Secondary analysis performed on the database of the EPaNIC trial. In a cohort of patients who developed AKI during ICU stay we compared eGFR with measured creatinine clearance (Clcr) at ICU discharge. Recovery of kidney function was assessed by comparison with baseline eGFR and the accuracy of eGFR to detect “potential CKD status” defined by Clcr was quantified. The same analysis was performed in subgroups with different ICU stay. Multivariate regression was performed to determine independent predictors of the eGFR–Clcr difference.

方法：在PaNIC试验数据库基础上做二次分析。我们在ICU住院期间发展为AKI的患者队列中，对比ICU出院时的eGFR和肌酐清除率（Clcr）。肾功能恢复程度用基线eGFR和eGFR检测“潜在慢性肾病状态”的准确性作比较来评估，“潜在慢性肾病状态”用量化的Clcr界定。在不同的ICU住院亚组中用同样的方法分析。用多元回归分析eGFR-Clcr差异的独立预测因素。

Results:A total of 757 patients were included. The bias (limits of agreement (LOA)) between eGFR and Clcr at ICU discharge related to ICU stay, increasing from +1.3 (−37.4/+40) ml/min/1.73 m^2 in patients with short stay to +34.7 (−54.4/+123.8) ml/min/1.73 m^2 in patients with ICU stay of more than 14 days. This resulted in a significantly different incidence of complete recovery with the two evaluation methods and reduced sensitivity to detect “potential CKD status” with eGFR in patients with prolonged ICU stay. Independent predictors of the bias included creatinine excretion on the last day in ICU, baseline eGFR, ICU stay, gender, and age.

结果：总共纳入757名患者。ICU出院时eGFR和Clcr间的偏倚（限制一致性）与和ICU住院时间相关，从短暂住院患者的+1.3 (−37.4/+40) ml/min/1.73 m2增加到ICU住院超过14天患者的+34.7 (−54.4/+123.8) ml/min/1.73 m2。这导致两种评估方法在完全恢复的发生率上有很大差异，并且减少了长期ICU住院患者中eGFR检测“潜在慢性肾病状态”的灵敏度。此偏倚的独立预测因素包括ICU住院最后一天的肌酐排泄，基线eGFR，ICU住院时间，性别以及年龄。

Conclusion: Compared to Clcr, discharge eGFR results in overestimation of renal recovery in patients with prolonged ICU stay and in reduced accuracy of “CKD staging”. Since age, gender and race do not change during ICU stay the same conclusion can be drawn with regard to plasma creatinine.

结论：相比于Clcr，出院时eGFR会导致高估长期ICU住院患者肾功能恢复程度，降低“CKD分期”的准确性。因为年龄、性别和种族在ICU住院期间不会改变，因此同样的结论也适用于血浆肌酐。

Comparison of two repositioning schedules for the prevention of pressure ulcers in patients on mechanical ventilation with alternating pressure air mattresses

两种翻身频度对使用气垫床的机械通气患者压疮预防效果比较

Purpose: The objective was to compare the effectiveness of repositioning every 2 or 4 h for preventing pressure ulcer development in patients in intensive care unit under mechanical ventilation (MV).

目的：旨在比较每隔2小时或者4小时翻身对于预防ICU机械通气患者压疮发生的效果

Methods: This was a pragmatic, open-label randomized clinical trial in consecutive patients on an alternating pressure air mattress (APAM) requiring invasive MV for at least 24 h in a university hospital in Spain. Eligible participants were randomly assigned to groups for repositioning every 2 (*n* = 165) or 4 (*n* = 164) h. The primary outcome was the incidence of a pressure ulcer of at least grade II during ICU stay.

方法：本研究是一个实用性的，非盲法随机临床试验，连续观察西班牙一家大学医院内使用气垫床（APAM）需行有创机械通气至少24小时的患者。合格的纳入者随机分入每2小时翻身组（n=165）或每4小时翻身组（n=164）。主要结局为ICU住院期间II级以上压疮的发生率。

Results:A pressure ulcer of at least grade II developed in 10.3 % (17/165) of patients turned every 2 h versus 13.4 % (22/164) of those turned every 4 h (hazard ratio [HR] 0.89, 95 % confidence interval [CI] 0.46–1.71, *P* = 0.73). The composite end point of device-related adverse events was recorded in 47.9 versus 36.6 % (HR 1.50, CI 95 % 1.06–2.11, *P* = 0.02), unplanned extubation in 11.5 versus 6.7 % (HR 1.77, 95 % CI 0.84–3.75, *P* = 0. 13), and endotracheal tube obstruction in 36.4 versus 30.5 %, respectively (HR 1.44, 95 % CI 0.98–2.12, *P* = 0.065). The median (interquartile range) daily nursing workload for manual repositioning was 21 (14–27) versus 11 min/patient (8–15) (*P* < 0.001).

结果：每2小时翻身患者II级以上压疮发生率为10.3%（17/165），每4小时翻身组患者发生率为13.4%（22/164）（风险比[HR] 0.89, 95 % 置信区间[CI] 0.46–1.71, P = 0.73）。两组患者作为复合结局的器械相关不良事件发生率分别为47.9和36.6%（HR 1.50, CI 95 % 1.06–2.11, P = 0.02），意外拔管率分别为11.5%和6.7%（HR 1.77, 95 % CI 0.84–3.75, P = 0. 13），气管导管阻塞率分别为36.4和30.5%（HR 1.44, 95 % CI 0.98–2.12, P = 0.065）。手动翻身的日常护理工作量中位数（四分位数）为21 (14–27)分钟/患者和11 (8–15)分钟/患者。(P < 0.001)

Conclusions:A strategy aimed at increasing repositioning frequency (2 versus 4 h) in patients under MV and on an APAM did not reduce the incidence of pressure ulcers. However, it did increase device-related adverse events and daily nursing workload.

结论：增加使用气垫床的机械通气患者翻身频率并不能减少压疮的发生。而且增加器械相关不良事件发生率和日常护理工作量。

Impact of intra-arrest therapeutic hypothermia in outcomes of prehospital cardiac arrest: a randomized controlled trial治疗性低体温对院外心脏骤停预后的影响：一个随机对照试验

Purpose：Mild therapeutic hypothermia (TH) is recommended as soon as possible after the return of spontaneous circulation to improve outcomes after out-of-hospital cardiac arrest (OHCA). Preclinical data suggest that the benefit of TH could be increased if treatment is started during cardiac arrest. We aimed to study the impact of intra-arrest therapeutic hypothermia (IATH) on neurological injury and inflammation following OHCA.

目的:院外心脏骤停（OHCA）后为了改善预后结果，在恢复自主循环之后，推荐尽早进行轻度治疗性低体温。临床前数据表明，如果在心脏骤停的时候就开始治疗性低体温则益处更大。我们目标是研究院外心脏骤停时候低体温对神经损伤及炎症的影响。

Methods：We conducted a 1:1 randomized, multicenter study in three prehospital emergency medical services and four critical care units in France. OHCA patients, irrespective of the initial rhythm, received either an infusion of cold saline and external cooling during cardiac arrest (IATH group) or TH started after hospital admission (hospital-cooling group). The primary endpoint was neuron-specific enolase (NSE) serum concentrations at 24 h. Secondary endpoints included IL-6, IL-8, and IL-10 concentrations, and clinical outcome.

方法:我们在法国3个院前急救机构和四个重症医学科进行了1：1随机多中心研究。OHCA患者，不考虑初次心律失常如何，接受冷盐水灌注或者心脏骤停时外部冷却或者入院后目标性低体温治疗。主要终点为24小时神经特异性烯醇血清浓度。第二个终点包括IL-6,IL-8, 和IL-10浓度及临床结果。

Results：Of the 245 patients included, 123 were analyzed in the IATH group and 122 in the hospital-cooling group. IATH decreased time to reach temperature ≤34 ° C by 75 min (95 % CI: 4; 269). The rate of patients admitted alive to hospital was not different between groups [IATH *n* = 41 (33 %) vs. hospital cooling *n* = 36 (30 %); *p* = 0.51]. Levels of NSE and inflammatory biomarkers were not different between groups [median NSE at 24 h: IATH 96.7 μg/l (IQR: 49.9–142.8) vs. hospital cooling 97.6 μg/l (IQR: 74.3–142.4), *p* = 0.64]. No difference in survival and cerebral performance were found at 1 month.

结果:共纳入245例患者，IATH组123例，住院降温组122例。IATA组将达到目标体温（≤34 ° C）的时间减少了75分钟(95 %CI: 4; 269)。患者入院生存率两组之间无差异[IATHn = 41 (33 %) vs. 住院降温组n = 36 (30 %); p = 0.51]。NSE及炎性生物标记物水平两组间无差异[medianNSE at 24 h: IATH 96.7 μg/l (IQR: 49.9-142.8) vs. hospital cooling97.6 μg/l (IQR: 74.3-142.4), p = 0.64]。生存率及脑功能在随访1个月后无差异。

Conclusions：IATH did not affect biological markers of inflammation or brain damage or clinical outcome

结论：IATH不改善炎症的生物学标志物、脑损伤及临床预后。

Methicillin-resistant Staphylococcus aureus bloodstream infections are associated with a higher energy deficit than other ICU-acquired bacteremia

相对于其它病原菌的ICU获得性感染，耐甲氧西林金黄色葡萄球菌血液感染与能量不足更高有关

Purpose：Caloric insufficiency during the first week of intensive care unit (ICU) stay was reported to be associated with increased infection rates, especially ICU-acquired bloodstream infection (ICU-BSI). However, the predisposition to ICU-BSI by a given pathogen remains not well known. We aimed to determine the impact of early energy-calorie deficit on the pathogens responsible for ICU-BSI.
目的：既往研究报道入ICU第一周的热量不足与感染率增加相关，特别是ICU获得性血液感染（ICU-BSI）。但是对于给定病原体的ICU-BSI易感倾向仍然不清楚。我们的目的是研究早期能量不足对病原体性ICU-BSI的影响。

Design：Prospective, observational, cohort study in a 18-bed medical ICU of a tertiary care hospital.

设计：前瞻性观察研究，研究单位为三级诊疗医院18个床的内科ICU

Methods：Daily energy balance (energy-calorie intakes minus calculated energy-calorie expenditure) was compared according to the microbiological results of the blood cultures of 92 consecutive prolonged (at least 96 h) acute mechanically ventilated patients who developed a first episode of ICU-BSI.

方法：根据连续92例延长急性机械通气（至少96小时）患者并第一次发生ICU-BSI患者的血培养微生物结果，比较其日常能量平衡（卡路里摄入量减去计算出的卡路里消耗）

Results：Among the 92 ICU-BSI, nine were due to methicillin-resistant *Staphylococcus aureus* (MRSA). The cumulated energy deficit of patients with MRSA ICU-BSI was greater than those with ICU-BSI caused by other pathogens (−1,348 ± 260 vs −1,000 ± 401 kcal/day from ICU admission to day of ICU-BSI, $p = 0.008$). ICU admission, risk factors for nosocomial infections, nutritional status, and conditions potentially limiting feeding did not differ significantly between the two groups. Patients with MRSA ICU-BSI had lower delivered energy and similar energy expenditure, causing higher energy deficits. More severe energy deficit and higher rate of MRSA blood cultures ($p = 0.01$ comparing quartiles) were observed.

结果：92例ICU-BSI患者中，9例是MRSA感染。MRSA ICU-BSI患者的累积能量缺损多于其他病原菌引起的ICU-BSI(-1,348 ± 260 vs -1,000 ± 401 kcal/day from ICU admission to day of ICU-BSI, p = 0.008)。ICU入住、医源性感染的危险因素、营养状态、喂养限制潜在状态在两组间无差异。MRSA ICU-BSI患者释放的能量更低，而能量消耗相似，这导致了更多的能量缺损。可以观察到更严重的能量缺损和更高的MRSA血培养阳性率(p = 0.01 比较四分位区间)。

Conclusions

Early in-ICU energy deficit was associated with MRSA ICU-BSI in prolonged acute mechanically ventilated patients. Results suggest that limiting the early energy deficit could be a way to optimize MRSA ICU-BSI prevention.

结论：对于延长急性机械通气患者，ICU早期能量不足与MRSA ICU获得性血液感染相关。结果表明，减少早期能量不足可能是一种优化MRSA ICU-BSI预防的方法。

Early therapy with IgM-enriched polyclonal immunoglobulin in patients with septic shock
富IgM多克隆免疫球蛋白早期治疗脓毒症患者

Purpose：To determine whether there was an association between adjunctive therapy with IgM-enriched immunoglobulin (IgM) and the 30-day mortality rate in patients with septic shock.

目的：研究富IgM多克隆免疫球蛋白辅助治疗是否能够降低脓毒症休克患者30天死亡率。

Methods：In 2008 we introduced IgM as a possible adjunctive therapy to be provided within 24 h after shock onset in the management protocol for patients with septic shock. In this retrospective study we included the adult patients suitable for IgM therapy admitted to our ICU from January 2008 to December 2011. An unadjusted comparison between patients who did or did not receive IgM therapy, a multivariate logistic model adjusted for confounders and propensity score-based matching were used to evaluate the association between early IgM treatment and mortality.

方法：2008年，我们开始对脓毒症休克24小时内患者采用IgM作为辅助治疗。本回顾性研究中，我们纳入2008年1月到2011年12月我们ICU中收入的脓毒症患者并进行IgM治疗。评估早期IgM与死亡率的关系时，对是否接受IgM治疗的患者进行单因素分析，并采用多变量logistic回归模型校正混杂因素，并进行倾向性评分配比。

Results：One hundred and sixty-eight patients were included in the study. Of these, 92 (54.8 %) received IgM therapy. Patients who did or did not receive IgM were similar with regards to infection characteristics, severity scores and sepsis treatment bundle compliance. Patients who received IgM were more likely to have blood cultures before antibiotics and to attain a plateau inspiratory pressure less than 30 cmH_2O ($p < 0.05$). The 30-day mortality rate was reduced by 21.1 % ($p < 0.05$) in the group that received IgM compared to the group that did not. The multivariate adjusted regression model (OR 0.17; CI 95 % 0.06–0.49; $p = 0.001$) and the propensity score-based analysis (OR 0.35; CI 95 % 0.14–0.85; $p = 0.021$) confirmed that IgM therapy was associated with reduced mortality at 30 days after the onset of septic shock.

结果：本研究中共纳入168例患者，其中92例(54.8 %)接受IgM治疗。是否接受IgM治疗的患者在以下方面相似：感染特点、严重评分、脓毒症集束处理方案。接受IgM治疗的患者更可能在抗菌治疗前进行血培养并获得平稳的吸气压小于30 cmH2O(p < 0.05)。IgM组30天死亡率比无IgM组减少21.1%(p < 0.05)。多变量校正回归模型(OR0.17; CI 95 % 0.06-0.49; p = 0.001)及倾向性评分匹配分析(OR0.35; CI 95 % 0.14-0.85; p = 0.021)都显示IgM治疗能够降低脓毒症休克后30天死亡率。

Conclusions：Our experience indicates that early adjunctive treatment with IgM may be associated with a survival benefit in patients with septic shock. However, additional studies are needed to better evaluate the role of IgM therapy in the early phases of septic shock.

结论：我们的经验表明，早期附加IgM治疗可能可以提高脓毒症休克患者的生存机会。但是，仍然需要未来的研究更好的评价IgM治疗对脓毒症休克早期的效果。

Association between intravenous chloride load during resuscitation and in-hospital mortality among patients with SIRS

SIRS患者复苏时静脉氯负载与住院死亡风险的相关性

Purpose：Recent data suggest that both elevated serum chloride levels and volume overload may be harmful during fluid resuscitation. The purpose of this study was to examine the relationship between the intravenous chloride load and in-hospital mortality among patients with systemic inflammatory response syndrome (SIRS), with and without adjustment for the crystalloid volume administered.

目的：最近的研究数据显示，在液体复苏时血清中氯离子水平过高及容量超载是有害的。本研究的目的是研究SIRS患者静脉氯负载及住院死亡风险的关系，并进行容量管理的校正。

Methods：We conducted a retrospective analysis of 109,836 patients ≥18 years old that met criteria for SIRS and received fluid resuscitation with crystalloids. We examined the association between changes in serum chloride concentration, the administered chloride load and fluid volume, and the 'volume-adjusted chloride load' and in-hospital mortality.

方法：我们对109,836名18岁以上符合SIRS诊断并进行晶体复苏的患者进行回顾性分析。我们研究血清氯离子浓度、执行的氯负载和液体量、容量校正的率负载及住院死亡风险的关系。

Results：In general, increases in the serum chloride concentration were associated with increased mortality. Mortality was lowest (3.7 %) among patients with minimal increases in serum chloride concentration (0–10 mmol/L) and when the total administered chloride load was low (3.5 % among patients receiving 100–200 mmol; *P* < 0.05 versus patients receiving ≥500 mmol). After controlling for crystalloid fluid volume, mortality was lowest (2.6 %) when the volume-adjusted chloride load was 105–115 mmol/L. With adjustment for severity of illness, the odds of mortality increased (1.094, 95 % CI 1.062, 1.127) with increasing volume-adjusted chloride load (≥105 mmol/L).

结果：血清氯离子浓度与死亡率增加相关。血清氯浓度增加较少的患者(0-10 mmol/L)和全部执行氯负载较低(3.5 %among patients receiving 100-200 mmol; P < 0.05 versuspatients receiving ≥500 mmol)时死亡率最低(3.7 %).对晶体液体量进行控制后，当容量校正的氯负载为105-115 mmol/L时，死亡率最低(2.6 %)。疾病严重性进行校正之后，当容量校正氯负载增加(≥105 mmol/L)时死亡率可能性也同时增加(1.094,95 % CI 1.062, 1.127)

Conclusions：Among patients with SIRS, a fluid resuscitation strategy employing lower chloride loads was associated with lower in-hospital mortality. This association was independent of the total fluid volume administered and remained significant after adjustment for severity of illness, supporting the hypothesis that crystalloids with lower chloride content may be preferable for managing patients with SIRS.

结论：SIRS患者中使用低氯化物负载的复苏策略与低住院死亡率相关。这种相关性与全部液体容量不相关，而且在校正疾病严重程度后仍然显著。此结论支持了既往假设：SIRS复苏时采用低氯成分的晶体液更佳。