Introduction:
In the past, high-volume intravenous fluid resuscitation in severe sepsis and septic shock was common. More recently, concerns over the harmful effects of this practice have led some clinicians to adopt less liberal fluid strategies. We sought to analyse temporal trends in fluid administration in the control arms of recent adult sepsis trials and assess any correlation with patient severity and mortality.

Methods:
A literature search was conducted to identify relevant randomised controlled trials that reported fluid administration published post 2000. We recorded 4 outcomes: total amount of IV fluid administered in the control arms of these trials between hospital admission and hour 6 and hour 72 following trial enrolment, mortality rates at the latest reported time point and APACHE-II score at admission. We computed the Pearson correlation coefficient and linear regression between study dates and the 4 outcomes.

Results:
We identified 9 relevant trials, which recruited a total of 2,444 patients in their control arms, from 1997 to 2018. The temporal analysis revealed no obvious trend in the total volume of IV fluid given by hour 6 following trial enrolment (Correlation p=0.94). However, the total volume of fluid given by hour 72 decreased significantly over the period of interest (R=-0.78, p=0.02). In parallel, we observed a decrease in mortality (R=-0.6, p=0.08) but there was no evidence of decrease in illness severity over time (p=0.84).

Conclusion:
We found that in published RCTs over the last two decades, the amount of intravenous fluid given to patients with sepsis in the initial 6 hours did not appear to change, however less intravenous fluid was given over the first three days. Upcoming large RCTs will test the safety and efficacy of restrictive fluid administration approaches in sepsis.

References:

Image:
and 9 report 60-day mortality; references 4, 7 and 8 report 90-day mortality. The size of the circles is proportional to the size of patient cohorts.