Methods (cont.)

- We used probability density functions to display distributions of potassium values, showing the relative likelihood of potassium values falling within a particular range; total area under each curve equals one.
- For hospitalized patients with more than one potassium value, we calculated within-hospitalization standard deviations, and assessed the association with mortality.

Results

- We included 17,317 hospitalizations with potassium values, among 11,827 patients.
- The mean age was 50.2 years; 57.3% of patients were male, 47.5% white, 33.5% black; 35.6% had diabetes, 27.4% chronic kidney disease, and 18.6% heart failure.
- We found a U-shaped relationship between extremes of potassium levels and mortality. Mortality rates were <80% for patients with values ≥7 mEq/L, and 12.3% for patients with values <3 mEq/L.

Conclusions

- Although both low and high potassium values were associated with a higher risk of mortality, the risk increased once potassium exceeded 5.5 mEq/L and increased markedly thereafter.
- Limitations: Observational data with likely occurrence of confounded relationship of serum potassium and mortality (i.e., high serum potassium is a marker for severe, life-threatening illness).
- It is unclear how much of the observed mortality is directly attributable (and potentially preventable) to hyperkalemia (or hypokalemia) vs. other serious illnesses (e.g., sepsis, acute myocardial infarction, trauma) accompanied by extremes of serum potassium values.
- Prospective clinical trials on the prevention and treatment of hyperkalemia (and its effect on mortality) are warranted.