maintained regular salt. Kitchen use of sodium and potassium intake was reported. However, methods for assessing sodium and potassium were not described but instead referenced to an unpublished thesis; urine electrolyte data were reported for only 25% of participants. Sodium intakes were reported as 3.8 vs 5.2 g for the experimental and control groups, respectively, although in contrast sodium-creatinine ratios were surprisingly equivalent, 1.22 vs 1.23 (potassium-creatinine ratios were 0.48 vs 0.27). Any recommendation for universal sodium restriction deserves support from RCTs that are appropriately designed, rigorously implemented, and completely reported.

Medical science thus provides an empirical framework upon which to resolve this controversy. McCarron et al, as well as Cook et al, implicitly accept the unique ability of RCTs to determine the efficacy, safety, and benefit of universal reduction of sodium intake. I believe that all researchers should press for well-designed, rigorous, and robust RCTs to determine the health consequences of universal salt restriction.

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Financial Disclosures: Dr Alderman reported that he has been a member of the Diet and Cardiovascular Risk Advisory Committee of the Salt Institute since 1996. This has involved participation in an annual scientific consultants meeting for which he received honorarium but has not been compensated in any way since, by either the Salt Institute, its member companies, or any organization or agency connected with it, including the related food industry. Dr Alderman reported that he has not served as a speaker (paid or otherwise) for the Salt Institute or any associated institution and that he has not received research funding from the Salt Institute or any connected organization.

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Monitoring and Evaluating the Use of Electronic Health Records

To the Editor: In their Commentary on the need for a comprehensive monitoring and evaluation framework for electronic health record (EHR) use, Drs Sittig and Classen[1] called for a national EHR adverse event investigation board, similar to the National Transportation Safety Board. I believe that this approach confuses systemic errors within EHRs with errors caused by inadequate EHRs and would miss almost all of the latter.

Sittig and Classen called for reporting structures for catastrophic system-caused errors, for example, in which all patients prescribed one drug receive another. However, it is likely that there are far more errors and near misses associated with poor but not obviously catastrophic design (for example, EHR screen displays that obscure critical information, drop-down menus reflecting inappropriate options, or oversensitive drug-drug interaction alerts). These types of near misses and errors may be unrecognized, underreported, and attributed to inadequate physician training or commitment.

There are a number of reasons such medical errors may be undetected. Clinician health record analysis may miss errors linked to undocumented, improper, or delayed diagnosis entries.[2] Clinical presentations are complex and may involve obscured causes, polypharmacy, or multiple systems problems.[3] Self-reports of prescribing errors are rare because they are seldom recognized and may also be limited by concerns of litigation and status loss. Errors intercepted by colleagues and pharmacists may often be corrected informally and infrequently reported. Observational methods are expensive and are likely to catch procedure mistakes and errors of medication administration or dispensing rather than misdiagnoses, missing information, or poor prescribing. Sentinel or trigger signals quickly generate alert fatigue and are not standardized; computerized decision support alerts may be overridden 80% to 96% of the time.[4]

Although Sittig and Classen correctly emphasized monitoring systemic failures of EHRs, EHR-linked errors and near misses must also be addressed. A program to identify, monitor, and remediate such EHR-engendered errors should accompany the efforts to promote EHR use.

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Financial Disclosures: None reported.

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In Reply: We share Dr Koppel's concern regarding challenges of detecting noncatastrophic errors that might result from inadequate EHR design, development, implementation, and use. We agree that the voluntary national reporting structure we advocate will cover only a small fraction of actual errors and likely miss errors that are minor and never lead to an adverse event.

It was our intent that these types of errors would be addressed through the enhanced EHR certification approaches we recommended. Our recommendation for investigation by a national EHR adverse event investigation board, similar to the National Transportation Safety Board

or the Commercial Aviation Safety Team, applies only to extremely serious EHR-related events resulting from problems in 1 or more of the 8 dimensions of safe EHR use.[1] The severity of these events should be akin to those identified as reviewable sentinel events by the Joint Commission (eg, unanticipated death of a full-term infant, discharge of an infant to the wrong family, hemolytic transfusion reaction involving administration of blood or blood products having major blood group incompatibilities, surgery on the wrong patient or wrong body part, or unintended retention of a foreign object in a patient after surgery or other procedure).

At a minimum, we would expect a national EHR adverse event investigation board to investigate (1) any Joint Commission reviewable sentinel event for which the organization's root cause analysis suggests that the EHR was a major contributing factor; (2) any EHR-related adverse event that affects more than 100 patients[2]; and (3) all unplanned EHR system downtimes that adversely affect patient care, or create potential for an adverse event, and last for more than 24 hours; affect more than 100 patients; are not the direct result of a natural disaster; occur in organizations that have implemented the key components of an EHR (admission/discharge/transfer; clinical results review; clinician order entry, communication, verification; barcode medication verification; picture archiving and communication; clinical documentation; alert notification; access to the local health information exchange); and simultaneously affect at least 2 of these key EHR components.

We believe that failing to detect such serious events would be highly unlikely. Nevertheless, we agree that newer approaches to detect less serious and perhaps more common EHR-engendered errors are also needed. Ongoing work to refine and implement EHR-based triggers to detect and investigate these errors might have some potential.[3-5] These triggers could be operationalized using a more population-based approach rather than alerting already overwhelmed clinicians at the point of care. We believe that all 5 components of our EHR monitoring and evaluation framework are necessary to identify these errors, reduce associated adverse events, and create a safer and more effective health care delivery system.

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Financial Disclosures: Dr Classen reported being an employee and stockholder of CSC (Salt Lake City, Utah), a technology services company. Dr Sittig reported no financial disclosures.

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