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Systems analysis of adverse drug events.

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Leape L, Bates DW, Cullen DJ, et al. Systems analysis of adverse drug events. ADE Prevention Study Group. JAMA. 1995;274(1):35-43.
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The authors report a "systems analysis" of the adverse drug events (ADEs) detected in their seminal 1993 study at the Massachusetts General Hospital and Brigham and Women's Hospital, Boston. Using 11 intensive and general care units at the two hospitals, the authors prospectively identified actual and potential ADEs by contemporaneous chart review, provider interview, and voluntary incident reporting. The authors report their analysis of the underlying, or "system," causes of the ADEs as distinct from attributing the ADEs solely to individual provider error. They found the leading cause of error was lack of drug knowledge on the part of the ordering physician, accounting for 22% of errors. Overall, the authors describe 16 system failures leading to ADEs, with seven accounting for 78% of all errors. Using the airline industry as an example, the authors advocate a nonpunitive systems approach as a more effective means of preventing error than approaches focused on the individual.