Can We Make Simulation More Accessible to Emergency Decision Makers?

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Hospital emergency rooms administrators, like managers in many other types of organizations, think their environments are unique, and that they need customized decision-support tools for operational decision-making. This study shows that the various emergency rooms have a great deal in common.

From an extensive study of over 16,000 patient visits to emergency rooms, it is shown that it is possible to classify patients into just eight patient types. More importantly, it is possible to design a single unified patient process flow chart that covers all eight patient types. The process flow chart represents the full collection of examinations and laboratory tests that a typical emergency room patient might need to undergo including the sequence in which they should performed.

Analysis of patient visits also led the conclusion that the time required to perform each of the examinations and tests, for each particular type of patient, were similar enough from one emergency room to the next that one could establish default values for use in the simulation. This reduces or eliminates the need for detailed time and motion studies that would usually be required.

With this understanding and quantification the next step was to develop a method to forecast patient arrivals that could be applied to all five hospitals with different parameters to reflect differences in hospital size and mix of patients. Putting all of these together, results in a generic simulation tool which requires only a modest amount of data input. The simulation tool can now be used in-house by technical hospital personnel to aid hospital management with decisions regarding staffing, equipment utilization, reducing patient waiting times and hospital operating costs.

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