Internet searches can predict volume of ER visits

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The correlation between Internet searches on a regional medical website and next-day visits to regional emergency departments was "significant," suggesting that Internet data may be used in the future to predict the level of demand at emergency departments. The first study to use Internet data to predict emergency department visits in either a region or a single hospital was published online Friday in *Annals of Emergency Medicine*.

"Website visits may be used to predict ER visits for a geographic region as well as for individual hospitals," said lead study author Andreas Ekstrom, MD, of Karolinska Institutet in Stockholm, Sweden. "Looking forward, we might be able to create a model to predict emergency department visits that would enable better matching of personnel scheduling to ER volumes."

Using Google Analytics, researchers tallied and graphed Internet searches of the Stockholm Health Care Guide (SHCG), a regional medical website, over a one-year period and compared them to emergency department visits over the same period. Visits to the SHCG between the hours of 6:00 p.m. and midnight were significantly correlated to the number of ER visits the next day. The most accurate forecasting for emergency department visits was achieved for the entire county, with an error rate of 4.8 percent. The error rate of forecasting individual hospitals' emergency department visit rates based on Internet searches ranged from 5.2 percent to 13.1 percent. (An error rate below 10 percent was considered good performance, as this is on par with other

methods already described for forecasting ER visit volumes.)

Emergency department visits were typically highest on Mondays and lowest during weekends, with peak visits occurring at noon and then slowly decreasing during the rest of the day. The three days in the year with the lowest number of ER visits were around Christmas, New Year and the midsummer holidays, which coincided with the lowest number of Internet searches as well.

"For this type of information to be useful, it is important that we be able to predict emergency department visits further into the future than the next day," said Dr. Ekstrom. "This may be possible by further investigating the correlation between website statistics and ER visits. This has the potential benefit of reflecting ongoing behavioral trends, which may allow us to adapt to sudden changes in patient behavior when predicting ER visits."

  More information: "Forecasting Emergency Department Visits Using Internet Data"

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