Inside Medical Liability

ONLINE EXTRA

Working Collaboratively May Help Reduce Medical Errors:
An interview with Juliane Kämmer and Wolf Hautz

An article published earlier this year by Juliane Kämmer, PhD, and colleagues, “Working Collaboratively May Help Reduce Medical Errors” (JAMA press release, January 20, 2015) addressed the complex problem of misdiagnosis with a direct and relatively simple strategy. Inside Medical Liability wanted to find out more, so we posed some questions to Dr. Kämmer and the other first author of the article, Dr. Wolf Hautz, an anesthesiologist. They jointly answered IML’s questions.

Inside Medical Liability: What prompted you to do this study—prior studies in the medical literature? Observations you had made yourselves in working with students? Something else?

Kämmer: Our motivation for this study was mainly driven by two observations: First, we know from the literature that diagnostic errors contribute substantially to preventable medical error. Of the multiple reasons for diagnostic error (such as technical failure or poorly cooperating patients), cognitive error is among the most frequent. Second, diagnostic decisions are usually made in a team context. Specifically, at the beginning of clinical training students frequently work in (often informal) pairs. However, the literature that explores ways to reduce cognitive errors—for example, during data synthesis—has, to date, largely neglected the collaborative aspect of clinical decision-making. Thus, the aim of our study was to investigate the effect of working in teams, as opposed to working alone, on diagnostic accuracy and the diagnostic decision process per se (including the time needed to make a diagnosis, number of ordered diagnostic tests, and calibration between level of confidence in the diagnosis and diagnostic accuracy).

IML: What did you hope to learn from the study, e.g., new approaches to teaching or practice?

Kämmer: We hoped to be able to quantify the benefits and trade-offs of teamwork and gain a better understanding of what happens in teamwork such that performance is improved, in order to gain insights on how to improve training and practice (e.g., by recommending more training and the use of collaboration among physicians in the daily routine at hospitals).
IML: Why did you choose a simulation of difficult breathing as the test case?

Kämmer: Difficult breathing is a medical domain that is sufficiently restricted that we could avoid any problems with the well-established content specificity of clinical reasoning, but also sufficiently large to allow for a number of different cases/causes, in order to increase test reliability.

IML: Were the results what you had anticipated, or were there some surprises?

Kämmer: Concerning the superior performance of the teams, the results were as we had anticipated. The most interesting result, for us, was that working in pairs reduced diagnostic error without requiring more diagnostic data-gathering. Also, neither differences in knowledge nor in amount and relevance of acquired diagnostic information could explain the superior accuracy of the pairs; neither did the statistically increased likelihood of containing a knowledgeable member. We thus have shown that—similar to findings in studies outside of medicine—collaboration may help correct errors, fill knowledge gaps, and counteract reasoning flaws—and thus may save lives.

A surprising result for us was the observation that large discrepancies between team members’ degree of confidence in their diagnosis might point to an incorrect diagnosis. This requires further investigation.

IML: Did it matter whether the individuals working in pairs were similar in one or more demographic factors (e.g., same gender), in terms of whether or not they found the correct diagnosis?

Kämmer: We cannot answer this question at this point, because we had only pairs that were very similar (e.g., in terms of years of training, gender). We plan to investigate the effect of diversity within teams on performance in future studies. For the current study, we aimed for homogeneity within teams in order to exclude any effects of hierarchy or other variables.

IML: Was there a pattern in the lists of tests chosen by pairs vs. individuals? Also, was there a pattern in the order in which they recommended that these be done?

Kämmer: The pairs were slightly more similar to experts’ decisions in the tests that they chose. Moreover, the tests ordered by pairs would have taken less time to complete in a real clinical situation. However, no difference was found between pairs and individuals in the number of tests ordered. Also, we did not observe any pattern across participants in terms of the order in which tests were chosen; choices seemed to be idiosyncratic (and they are so even among experts).

IML: Do you think that adding a third, or even fourth, person would have increased the strength of the results?
Kämmer: We assume that there is an optimal team size, after which the benefits of working in teams are counteracted by the costs of coordinating larger teams. We would assume that the optimal number is around two or three for diagnostic tasks, but currently, we cannot tell.

IML: Where do you think further research (on collaboration in making a diagnosis) might most usefully be focused?

Kämmer: As pointed out above, team size and team diversity might be two interesting areas to look at. Specifically, looking at team members with different levels of expertise may provide some important results, because this combination would be rather common in actual practice. Also, it would be interesting to investigate whether the observed difference in the impact of level of confidence between team members could be deliberatively used by members, as an indicator of incorrect diagnoses, to further reduce diagnostic error.