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PROFESSION

Primary care time squeeze explains errors in diagnosis

■ Although the rate of misdiagnosis is low, doctors are advised how to minimize the impact of briefer patient visits to boost quality of care.

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Innovative research on diagnostic mistakes suggests that most misdiagnoses that occur in primary care practice are related to basic elements of the office visit. A new study illustrates how time constraints make it harder for physicians to solve the medical mysteries that confront them.

There was no single cause of diagnostic errors found in the primary care clinics examined, said the study published online Feb. 25 in *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*. Rather, many of the missed diagnoses involved several contributing factors.

Eight in 10 misdiagnoses were due, in part, to problems in the patient encounter, such as errors during the physical exam or medical history-taking. One in five mistakes was related to referrals, such as a decision not to consult an appropriate expert. Sixteen percent of the misdiagnoses involved patient-related factors, such as patients' failure to provide accurate medical histories, or miscommunication between the patient and health professional.

Poor test result follow-up and tracking contributed to 15% of missed diagnoses, and 14% of the mistakes involved other testing mix-ups such as misinterpretations, or the mistaken belief that the result was not serious enough to warrant hospital admission.

That so many diagnostic mistakes involved the bread-and-butter of the office visit — how patients and physicians communicate, how doctors conduct exams and take histories — shows how the time squeeze takes its toll on ordinary practice, said Hardeep Singh, MD, MPH, lead author of the study.

"This is where the doctor-patient dialogue is so important, and that dialogue is getting shorter and shorter over time as we spend more time with the computer and more time doing administrative tasks. In general, we're talking less to patients, and those skill sets and techniques of getting the history and the examination of the patient are going a bit downward," said Dr. Singh, assistant professor of medicine at the Michael E. DeBakey Veterans Affairs Medical Center and Baylor College of Medicine, both in Houston.

David Newman-Toker, MD, PhD, agreed that shorter, less focused office visits are allowing missed diagnoses.

"The real time with the patient has shrunk, and that definitely contributes to error. There's no question that the visit is so truncated that you couldn't hope to get the right diagnosis all the time just based on the patient's appearance and chief complaint. The patient who presents with a headache, you say it's a migraine and you're right about 98% of the time. The other 2% of the time, it's a stroke," said Dr. Newman-Toker, a neurologist at Johns Hopkins Hospital in Baltimore. He wrote an invited commentary for *JAMA Internal Medicine* on Dr. Singh's study.

How misdiagnoses were found

Dr. Singh and his colleagues examined the electronic records for 212,165 patient visits to 69 physicians and other health professionals during one year at a Veterans Affairs primary care facility and four other clinics that were part of a private, integrated health system. Researchers looked for primary care visits that were followed within two weeks

by an unplanned hospitalization or visit to an emergency department, urgent care center or primary care clinic. Reviewers then examined these patients' records to see if the professionals involved could have diagnosed the condition that sent patients for follow-up care based on the information that was available to them at the time.

The researchers identified 190 cases of diagnostic mistakes involving 68 different missed conditions that fit those parameters, a small but telling error rate well below 1%. The study was not intended to establish how frequently diagnostic errors happen in primary care but to better understand why they occur, Dr. Singh said.

Previous research on diagnostic errors has relied on medical liability claims that often involve the worst cases, such as cancer, and thus yields limited insight on what happens in routine clinical practice, experts said. If the pattern of missed diagnoses found at the five primary clinics studied for the *JAMA Internal Medicine* article can be extrapolated nationwide, Dr. Newman-Toker estimated that it would equate to 50,000 diagnostic errors a year.

"This is just one piece of the diagnostic error puzzle. We all still know it's just the tip of the iceberg," said Gordon D. Schiff, MD, associate director of the Center for Patient Safety Research and Practice at Brigham and Women's Hospital in Boston. Dr. Schiff has written widely about diagnostic mistakes but was not involved with the new research.

DID YOU KNOW: Pneumonia, congestive heart failure, acute renal failure, cancer and UTI are the most commonly missed diagnoses.

Pneumonia, decompensated congestive heart failure, acute renal failure, cancer and urinary tract infection were the most commonly missed diagnoses, although each consisted of less than 10% of the errors. Fourteen percent of the mistakes had the potential to result in immediate death, 73% posed considerable or serious harm, and 13% of cases involved minor or no harm.

Further evidence of how the hectic pace of primary care may be compromising quality comes from separate research conducted by Dr. Singh and his colleagues, published online March 4, also in *JAMA Internal Medicine*. The survey of 2,590 primary care practitioners working in the Dept. of Veterans Affairs system found that 30% reported having missed test result alerts in the last year. Those missed alerts led to delays in care, although the study did not examine the effect on patient outcomes. Fifty-five percent of respondents said the notification system makes it possible for doctors to miss test results. Primary care practitioners in the VA get an average of 56 alerts a day, the study said.

What doctors can do

Experts in the field said there are some steps physicians should take to reduce their risk of missing diagnoses because of a time crunch. Most important, Dr. Schiff said, physicians should have "situational awareness" about their potential for diagnostic mistakes. Dr. Newman-Toker suggested that physicians seek systematic information about patient outcomes as a way to measure their diagnostic acumen.

"Every physician knows of a diagnostic error that somebody else made, but they can't seem to think of one of their own. But everybody's done it, and everybody knows it's a problem," said Dr. Newman-Toker, a board member of the recently formed Society to Improve Diagnosis in Medicine. The organization is co-sponsoring the sixth annual Diagnostic Error in Medicine conference, scheduled for Sept. 22-25 in Chicago.

Doctors also should work with patients to help prevent delayed diagnoses by asking them to fully communicate their problems and medical histories, and report when their conditions are not improving as expected, experts said. By making the diagnostic process a shared responsibility, patients are likelier to fill in missing pieces of the puzzle, they added. If more time is needed to get the right answer, doctors can ask patients to come in for a follow-up visit within a few days. Physicians also ought to take advantage of health information technology functionalities such as clinical decision support, problem lists and diagnosis checklists.

Finally, a disease-by-disease approach is unlikely to prevent all diagnostic errors, because such a wide variety of medical problems are misdiagnosed. However, experts advise doctors to make the most of their limited time by prioritizing conditions such as heart attack, stroke and cancer that are likeliest to do severe harm to patients.

"Focus on the things that matter," Dr. Newman-Toker said. "Create for yourself a short list of things for a given list of complaints that are problems that you cannot, for the patient's sake, ignore. Go through that list at the encounter with a patient, or if the problem is not responding to treatment the way you thought it should."

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ADDITIONAL INFORMATION

Top 10 reasons why diagnoses are missed in primary care

A *JAMA Internal Medicine* study looked at diagnostic mistakes that occurred at five primary care clinics during the course of a year that resulted in hospitalizations or follow-up visits to an emergency department, urgent care center or primary care doctor within 14 days. Many cases involved several contributing factors, so the percentages do not add up to 100%.

Factor	Cases
Problems ordering diagnostic tests for further workup	57.4%
Error related to medical history	56.3%
Error related to physical examination performance	47.4%
Failure to review previous documentation	15.3%
Appropriate expert was not contacted	10.0%
Failure of patient to provide accurate medical history	7.4%
Considered condition as nonserious	7.4%
Did not believe referral was required	6.3%
Suboptimal weighing of critical piece of history data	5.3%
Erroneous clinician interpretation of test and its need for follow-up	4.7%

"Types and Origins of Diagnostic Errors in Primary Care Settings," *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*, published online Feb. 25 (link)

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EXTERNAL LINKS

"Information Overload and Missed Test Results in Electronic Health Record–Based Settings," *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*, published online March 4 (**link: http://archinte.jamanetwork.com/article.aspx?doi=10.1001/2013.jamainternmed.61**)

"Measuring Diagnostic Errors in Primary Care: Comment on 'Types and Origins of Diagnostic Errors in Primary Care Settings,' " *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*, published online Feb. 25 (**link: http://archinte.jamanetwork.com/article.aspx?doi=10.1001/jamainternmed.2013.225**)

"Commentary: how can we make diagnosis safer?" *Academic Medicine*, February 2012 (**link: http://www.ncbi.nlm.nih.gov/pubmed/22273611**)

Society to Improve Diagnosis in Medicine, Diagnostic Error in Medicine 2013 meeting (**link: http://www.improvediagnosis.org/dem2013/**)

"Diagnostic Error in Internal Medicine," *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*, July 11, 2005 (**link: http://archinte.jamanetwork.com/article.aspx?doi=10.1001/archinte.165.13.1493**)

"Types and Origins of Diagnostic Errors in Primary Care Settings," *JAMA Internal Medicine*, formerly *Archives of Internal Medicine*, published online Feb. 25 (**link: http://archinte.jamanetwork.com/article.aspx?doi=10.1001/jamainternmed.2013.2777**)

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