Rapid response inpatient education boosts use of needed blood-thinning drugs

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Thisis Dr. Elliott Haut and team. Credit: Johns Hopkins Medicine

A new study designed to reach hospitalized patients at risk shows that a "real-time" educational conversation, video or leaflet can lower the missed dose rates of drugs that can prevent potentially lethal blood clots in their veins.

The study, by Johns Hopkins Medicine patient safety experts, used data from 19,000 patient stays at The Johns Hopkins Hospital, and is described in a report published Nov. 16 in *JAMA Network Open*.

"Our study demonstrates that educating patients quickly, as soon as we learn about a missed dose, is not only possible to implement at a large hospital, but is effective in ensuring that patients take the drugs that can save their lives," says lead author Elliott Haut, M.D., Ph.D., associate professor and vice chair of quality, safety and service in the Department of Surgery at the Johns Hopkins University School of Medicine.

For the study, the Johns Hopkins investigators focused on the use of blood thinning drugs such as heparin to prevent venous thromboembolism (VTE) blood clots that arise in a vein (usually the legs), most commonly in hospitalized patients. In the United States an estimated 350,000 to 600,000 people experience VTEs annually and more than 100,000 die—more than the number who die from breast cancer, AIDS and motor vehicle collisions combined.

Drugs that thin the blood reduce the risk of fatal clots by at least 50 percent, experts estimate, and the more patients adhere to their prescribed medication regimen, chances for complications decrease. But previous research, Haut says, shows that one in eight doses are not given by health care providers and 40 percent of inpatients miss one or more of their prescribed doses, largely due to patient refusal.

In a previous study, the Johns Hopkins Medicine team showed that educational interventions designed to train nurses about the need for timely delivery of the drugs reduced nonadministration rates at The Johns Hopkins Hospital by more than 10 percent.

For the new study, the research team was interested in if, and by how much, education designed for patients, developed in collaboration with

patients, would further reduce nonadministration rates.

To find out, they examined medical records and compared nonadministration rates of VTE-preventing drugs on 16 inpatient floors at The Johns Hopkins Hospital between April 1, 2015, and Dec. 31, 2015. The team provided the rapid response educational bundle on four of these floors, which had 5,333 patients, and left the 12 remaining floors with 14,319 patients as control floors, no educational bundles given, for comparison. During the study period, each time a patient did not get or take the prescribed dose of blood clot-preventing medication, a real-time alert built into the hospital's electronic medication administration record system paged a health educator, who would then speak to the nurse to find out why the dose was not given. If medication was not given due to patient refusal, the health educator delivered a patient education bundle. If the medications weren't given for some other reason, the health educator would coach the nurse who did not give the medication on the importance of giving the prescribed dose in a timely manner.

On the four intervention floors, patients who refused a dose could choose one or more parts of the following educational bundle: 1) one-on-one, face-to-face educational discussion with a health educator; 2) a two-page, paper patient education brochure available in eight languages, and/or 3) a 10-minute patient education video shown on a handheld tablet. The materials provided statistics on the prevalence, signs and causes of VTEs, and preventive measures.

The JHM investigators then compared effects of the patient education intervention with data on VTE-preventing medications prescribed and given between Oct. 1, 2014, and Dec. 31, 2015. The team analyzed data from a total of 19,652 patient visits across the 16 floors where at least one dose of blood clot-preventing medication was prescribed.

Compared with the earlier time period, the researchers said the chance of not administering prescribed blood clot-preventing medications declined by 43 percent on intervention floors (from 9.1 percent to 5.6 percent), with no change observed on the control floors.

The nonadministration rate due to patient refusal, moreover, decreased by 47 percent on intervention floors (from 5.9 percent to 3.4 percent), with no change on control floors.

"In health care we collect an enormous amount of data, and it's important that we use it to identify which patients are most at risk of experiencing harm and who can benefit most from real-time interventions, be it an educational intervention like this, or a surgical or medical one," says Brandyn Lau, M.P.H., C.P.H., assistant professor of radiology and radiological science at the Johns Hopkins University School of Medicine and the study's senior author.

The researchers acknowledge that the study was limited by its focus on just one hospital, but say the educational bundle is available without charge so that such interventions can be tested and measured elsewhere. The research team has received a dissemination and implementation contract from the Patient Centered Outcomes Research Institute (PCORI), which funded this study and now is supporting the evaluation of a larger scale implementation of the intervention across the Johns Hopkins Health System hospitals.

"The educational bundles we created are effective and optimize busy clinicians' already packed schedules. At the end of the day, we're here to deliver high quality care and keep patients safe, and this is one method of achieving that mission," says Lau.

Provided by Johns Hopkins University School of Medicine