

Methods for Improving Confounding Control in Comparative Effectiveness Research Using Electronic Healthcare Databases

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What was the research about?

Comparative effectiveness research compares two or more treatments to see which one works better for which patients. Electronic healthcare data are useful for this type of research. These data come from medical records and insurance claims. The data include information about how well patients respond to treatments. But many things—not just treatments—affect whether a patient's health improves.

How well a patient responds to a treatment may depend on the patient's age or what medicines the patient takes. It could also depend on what other health problems a patient has and how severe those problems are. Or a doctor may suggest one treatment instead of another because of a patient's personal situation and health. Researchers need ways to determine whether changes in a patient's health result from a certain treatment or something else.

Different statistical methods help researchers account for the various things that can affect treatment results. But researchers don't know which methods work best. This study compared several methods. The team looked at how well the methods worked to predict patients' responses to treatment, taking into account their personal situations and health. The team then created a computer program to help researchers use the methods.

What were the results?

No statistical method worked best in all cases to predict how well patients responded to treatment, taking into account their personal situations and health. Each method had pros and cons. But the research team found that one combination of two methods worked well in many cases.

What did the research team do?

The team used electronic healthcare data from three studies. The researchers first used the data from the studies to test several statistical methods. Then, they made more data sets based on the real data to test the methods further. The team created a computer program to help researchers use the methods.

During the study, patients gave input to the research team about key problems they have had in getting health care and what questions they see as most important for research to answer.

What were the limits of the study?

The research team could not say for sure which method will work best in specific cases to account for the things that could affect treatment results. Future research could continue to look at which methods might work best when doing a study using electronic healthcare data.

How can people use the results?

Researchers can use the results to understand which statistical methods might be useful when doing a study using electronic healthcare data. The software

that the team developed can help researchers use the statistical methods in their research.

To learn more about this project, visit www.pcori.org/Schneeweiss110.