Using PCORnet to Understand Diabetes Medicine Prescribed to Patients

Principal investigator
Russell Rothman, MD, MPP

Organization
Mid-South CDRN

PCORI funded the development of PCORnet®, the National Patient-Centered Clinical Research Network, to make research faster, easier, and less costly to conduct. PCORnet is made up of Partner Networks of healthcare systems, patients and communities, and health plans that harness the power of large amounts of health data.

PCORI supports brief, descriptive projects to assess the feasibility of conducting research using data gathered and shared securely through PCORnet. This project is one of several designed to test the network while addressing priorities identified by PCORI and its stakeholders.

What was the project about?
Patients with type 2 diabetes need medicine to control their blood sugar levels. Many types, or classes, of medicines are used to treat type 2 diabetes. Doctors may prescribe one or more classes of medicine for patients.

PCORnet created a shared database system that includes information about patients and the medicine they take to treat type 2 diabetes. The database uses information from patients’ electronic health records, or EHRs. The project team looked at the database to answer four questions:

1. Can researchers identify patients with type 2 diabetes using information from EHRs?
2. Can researchers use the database to see how often patients are prescribed different medicine classes for type 2 diabetes?
3. How much data are missing from the database?
4. Can researchers use the database to look for differences in which patients are prescribed which medicine classes?

What were the results?
Can researchers identify patients with type 2 diabetes using information from EHRs? The team found that the new method identified patients with type 2 diabetes 96 percent of the time. The team compared the information in the PCORnet shared database to reviewing patient EHRs by hand at four different medical centers.

Can researchers use the database to see how often patients are prescribed different medicine classes? The team was able to identify more than 613,000 patients with type 2 diabetes and see how many classes of medicine each patient was prescribed, and which combinations of medicine were most common when patients had several prescriptions.

How much data are missing from the database? Some types of data were missing in the database more often than others. For example, 85 percent of patient records had data on blood pressure, but only 40 percent had data on cholesterol levels.

Can researchers use the database to look for differences in which patients are prescribed which medicine classes? The team was able to identify differences among patients who received different types of medicine. For example, patients prescribed metformin were younger on average than patients who received other types of medicine to treat diabetes.
**Who was in the project?**
The project included data from the PCORnet shared database from 613,203 patients with type 2 diabetes from 2012 through 2017. All patients had a diagnosis of type 2 diabetes or a blood test that showed type 2 diabetes or were taking medicine used to treat type 2 diabetes. Of these patients, 65% were white, 20% were black, 11% were another race, 5% were missing race, and 9% were Hispanic or Latino. The average age was 64 and 50% were female.

**What did the project team do?**
The project team used database information about type 2 diabetes diagnoses, blood sugar levels, and prescriptions to identify people with type 2 diabetes. The team also looked for patterns in patient and prescription data.

**What were the limits of the project?**
The database only includes information on medicines that are prescribed. Patients’ actual use of the medicines may differ.

Future projects can see how well prescribing data predicts whether patients actually fill a prescription.

**How can people use the results?**
Research teams can use the methods in this study to plan future studies using the PCORnet database.

To learn more about this project, visit www.pcori.org/RI-Rothman032.