

# UAB doctor's study links steroids, infection

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Pediatric rheumatologist  
Dr. Tim Beukelman in his  
office at UAB. (The  
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BIRMINGHAM, Alabama -- Medical "detective" Dr. Tim Beukelman has again sifted through billions of Medicaid billing records to learn how to deliver better care to children with the disease juvenile idiopathic arthritis.

In research published this week, Beukelman discovered that high doses of oral steroids, when compared with other possible treatments, appear to increase a child's risk of going into the hospital with serious bacterial infections like sinusitis, pneumonia and bloodstream infections.

Beukelman, a rheumatologist at the University of Alabama at Birmingham, treats children with arthritis. But he brings an additional skill to his field -- using huge databases of medical records to ask and answer questions about the effects of drugs in large populations. He uses this approach, called pharmacoepidemiology, to look at the interactions of various drug treatments with juvenile arthritis, an illness that causes painful swelling of the joints and may affect 300,000 children in the United States.

Earlier this year, Beukelman's UAB team published a paper showing that one effective drug for treating the childhood arthritis -- TNF-inhibitors -- did not increase a child's risk of cancer, as had been feared by the U.S. Food and Drug Administration. An editorial about the paper hailed the study as a Herculean task because of the low rates of both juvenile arthritis and cancer in children.

Now Beukelman has published another report in the journal *Arthritis & Rheumatism*, this time using the huge database to look at risk factors that could make children with arthritis more prone to serious bacterial infections -- especially looking at the impact of the three important medications given to the children: methotrexate, TNF-inhibitors and high-dose steroids.

The Medicaid database Beukelman used has been collected and standardized by the federal government, using billing data from every state Medicaid agency. A new Medicaid record is produced each time a child goes to the doctor, has to visit the emergency room, stays in the hospital or gets a drug prescription at the pharmacy.

Hidden somewhere in those billions of records were the answers that Beukelman sought. His team winnowed the data down to 8,479 children with juvenile arthritis and a comparison group of 360,489 children with attention deficit hyperactivity disorder. Looking at drug prescriptions and hospital discharge diagnoses, the UAB team found two things:

- First, children with juvenile arthritis have higher rates of bacterial infections when compared with the ADHD control group, regardless of the medication they are given.
- Second, the type of medication that the juvenile arthritis patients take affects their infection rates. Methotrexate and TNF-inhibitors did not increase the infection rate, but children treated with high-dose glucocorticoid steroids, such as more than 10 milligrams of prednisone each day, had a significantly higher risk of serious infections.

There have been no studies to guide the appropriate use of oral steroids for children with juvenile arthritis, Beukelman said, and their use varies from physician to physician. But his team's finding this week "strongly indicates that a treatment strategy that limits steroid use may reduce the risk of serious infection."