JOURNAL CLUB

Preventing Bounce-Backs: More Filled Meds, Less Hurting Heads

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DO YOUR PATIENTS FILL YOUR PRESCRIPTIONS? DOES IT MATTER?

We all want to reduce readmissions. Children hospitalized with asthma account for a significant proportion of hospitalizations and, thus, readmissions. Do our patients take their medications as often as we think? Do they even fill the prescriptions? By increasing prescription fill rate, can we reduce hospital readmissions?

The study

This retrospective cohort analysis of Medicaid claims data included >30 000 children from 12 states who were hospitalized for asthma from 2005 to 2007. The study linked hospitalization for asthma and readmission for asthma with β-agonist medication fill rate, oral steroid fill rate, and inhaled steroid fill rate. Readmission was defined as hospitalization with a primary or secondary diagnosis of asthma within 90 days of discharge. Prescription filling included pharmacy claims 1 day before discharge to 3 days after discharge. The authors hypothesized that filling of β-agonists and oral steroids would be associated with reduction in short-term readmission (≤14 days) and that filling inhaled steroids would reduce readmission at later intervals.

The key findings

Of the >30 000 children hospitalized for asthma, 55% filled a prescribed β-agonist, 57% filled an oral steroid, and 37% filed an inhaled steroid. Readmission occurred for 1.3% of children by 14 days and 6.3% by 90 days. After adjusting for patient and billing factors, filled prescriptions for β-agonists (hazard ratio 0.67, 95% confidence ration [CI] 0.51–0.87) and inhaled steroids (hazard ratio 0.59, 95% CI 0.42–0.85) were associated with reduced rates of readmission within 14 days. A hazard ratio is similar to a relative risk but takes into account an event occurring over time. The hazard ratio of 0.67 for β-agonist fill rate means that those who filled the β-agonist prescription were 33% less likely to be readmitted within 14 days. Filling prescriptions for inhaled steroids (hazard ratio 0.87, 95% CI 0.77–0.98) was associated with decreased readmission between 15 and 90 days. Patients who filled all 3 medication types had the lowest rate of readmissions.

WHY DO WE CARE?

It is probably not surprising to state that if we can get the medications into the home and into the child, we can decrease likelihood of readmission for asthma. This is easier said than done. If we can improve our disappointing medication fill rates, we may be able to improve our readmission rates. Some hospitals ensure prescriptions are filled before discharge (although by the authors' calculations, this was rare in the hospitals represented here). Others have studied the impact of follow-up phone calls after discharge. We need to share best

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practices and generate novel ideas to improve prescription fill rates and medication compliance. The reward for these efforts may be preventing (preventable) bounce-backs.

Straight from the author …

Next steps: "Given restrictions from our inpatient pharmacy dispensing outpatient medications, our group is working on making our in-hospital outpatient pharmacy the default … so patients leave with medications in hand. We have tried to incorporate this [early on in the hospitalization]. We have not seen increases in length of stay thus far."

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DOES NEEDLE TYPE AFFECT THE INCIDENCE AND DURATION OF POSTDURAL PUNCTURE HEADACHE?

Many children suffer from post-dural puncture headaches (PDPH) that are thought to be secondary to ongoing cerebrospinal fluid leak. Some children require substantial treatment including medications, readmission, and blood patches after diagnostic lumbar puncture (LP). Prevention of cerebrospinal fluid (CSF) leak after LP could decrease the incidence of headache and the costs associated with treatment including admission. Several small studies have suggested that using smaller, noncutting needles may reduce CSF leak and PDPH.

The study

This prospective trial was performed in a Danish neurology clinic in 2 consecutive 7-month phases from 2012 to 2013. All patients presenting for diagnostic LP were considered for enrollment. Patients were excluded if under 15 years of age or if presenting with ongoing acute or chronic headache. LP was performed using a traditional 22-gauge cutting spinal needle in phase 1 and a 25-gauge noncutting needle in phase 2. Patient demographics, quantity of CSF obtained, number of attempts required to obtain CSF, PDPH incidence and severity, and follow-up sequelae were recorded and analyzed by appropriate statistical methods.

The key findings

Of 651 patients presenting for diagnostic LP in the study period, 501 met inclusion criteria, with 96 lost to follow-up, leaving 199 and 206 patients in phases 1 and 2, respectively. The groups did not have any statistically significant differences in age, gender, previous PDPH, anesthetic use, or CSF collected ($P > .05$ for all comparisons). Fifty patients developed PDPH after lumbar puncture with the cutting 22-gauge needle, versus 21 with the noncutting 25-gauge needle (25% vs 10%, $P < .001$). In a multivariate regression analysis adjusting for age, gender, and BMI, this corresponded to a 50% risk reduction when using the smaller, noncutting needle (relative risk 0.50, 95% CI 0.32–0.76, $P = .001$). The total number of days spent bedridden was higher during phase 1 than phase 2 (217 vs 102, $P < .001$). Patients requiring hospitalization (17 vs 2, $P < .001$) and blood patch (10 vs 2, $P = .019$) were also significantly higher during phase 1. The mean cost per patient for LP kit plus treatment of sequelae was $187 in phase 1 compared with $45 in phase 2.

Why do we care?

This study supports other smaller studies in suggesting that a simple change in practice could significantly decrease pain, disability, and costs. Although useful as a validation of nontraumatic needle use in diagnostic LPs, the study also represents an effective quality improvement intervention. Hospitalists should feel empowered to adopt this practice and to use our frequent positions as quality champions to share it with our emergency medicine and neurology colleagues.

Straight from the author …

"The entire neurology department is very satisfied with the change. Almost immediately after the switch, the nurses particularly noticed the steep drop in severe PDPH cases. I believe I've now heard just about every excuse in the book for not changing the needle(in other settings). I think it is paramount that you get support from your management and actually change clinical guidelines at your setting for any change to work."

Citation: Engedal TS, Ørding H, Vilholm OJ. Changing the needle for lumbar punctures: results from a prospective study. *Clin Neurol Neurosurg*. 2015;130:74–79