Preventing NSAID-Associated Postpartum Acute Kidney Injury Through Improved Prescription Clarity

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INTRODUCTION

- Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly prescribed medications for pain management following cesarean section and are generally safe when used appropriately.
- Acute kidney injury is a well-recognized complication of NSAID overuse that results from inhibition of renal prostaglandin synthesis, leading to decreased renal perfusion and glomerular filtration rate.[1]
- NSAIDs may be prescribed with directions to take "as needed" or "PRN." However, these instructions may be misinterpreted and result in unintentional overuse.
- This case highlights the consequences of unclear medication instructions and underscores the need for more explicit prescribing language.

CASE PRESENTATION

- 34-year-old woman.
- Obstetric history: Gravida 3, para 3, with 3 term deliveries, 0 preterm deliveries, 0 abortions, and 3 living children.
- Past medical history: Recent uncomplicated cesarean section with bilateral salpingectomy.
- Presentation: 6 days postpartum with abdominal pain, generalized edema, and difficulty walking. She denied vomiting, diarrhea, decreased fluid intake, or excessive bleeding.
- Labs: The patient was found to be in acute renal failure with a blood urea nitrogen of 39 mg/dL, creatinine of 3.46 mg/dL, estimated glomerular filtration rate of 17 mL/min/1.73 m², and a fractional excretion of sodium of 12%.
- The acute renal failure was suspected to be secondary to acute tubular necrosis in the setting of NSAID use. A renal biopsy was not performed as the patient's renal function began improving.
- Discharge Instructions: The patient was prescribed 600 mg of ibuprofen to take every 6 hours as needed. Although prescribed PRN, the patient took ibuprofen every six hours regardless of pain because she interpreted it as a scheduled medication, resulting in acute kidney injury.

HOSPITAL COURSE

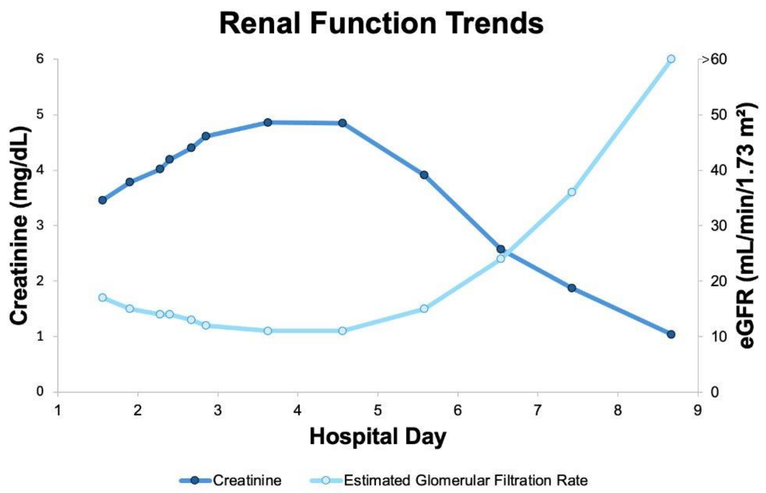


Figure 1. Renal Function Trends. *Serum creatinine levels measured 3.46 mg/dL on admission, peaked at 4.86 mg/dL on hospital day 3, and decreased to 1.04 mg/dL at discharge. Estimated glomerular filtration rate measured 17 mL/min/1.73 m² on admission, decreased to 11 mL/min/1.73 m² on hospital day 3, and increased to >60 mL/min/1.73 m² at discharge.*

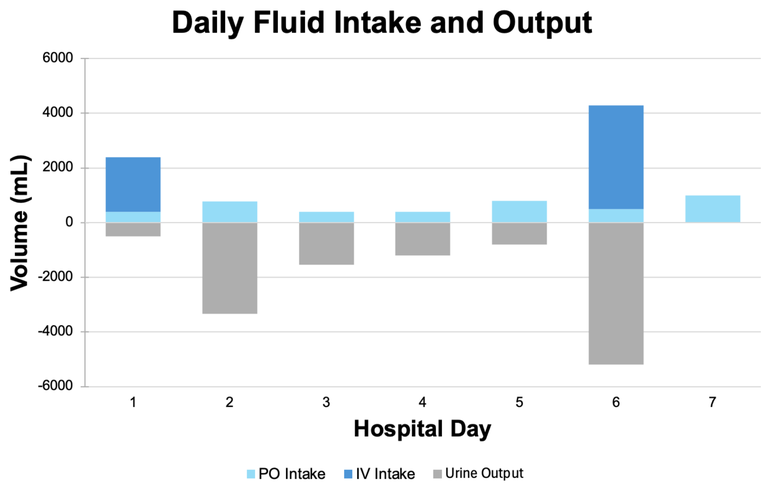


Figure 2. Daily Fluid Intake and Output. *2000 mL and 3801 mL of IV fluids were given on hospital days 1 and 6, respectively. PO fluid intake ranged from 240 mL to 525 mL per day. Urine output ranged from 0 mL to 4100 mL per day.*

DISCUSSION

- Overuse of NSAIDs is a common, preventable cause of acute kidney injury.
- Proper patient education and clear prescription instructions may be useful in preventing this complication, particularly during the postpartum period when patients receive multiple discharge instructions and medications.
- 46.3% of patients were reported to misunderstand one or more prescription label instructions in a study including patients from primary care clinics in Michigan, Illinois, and Louisiana.[2]
- A study assessing reading difficulty level showed instructions for ibuprofen as the most difficult out of four medications at a mean grade level of 7.9.[3]
- Providing clear, simple language on prescriptions may allow patients to more safely take their medications and avoid adverse events.

CONCLUSION

- This case illustrates how technically correct prescription instructions may still be misunderstood by patients, leading to serious complications.
- The common auxiliary instruction phrasing of taking ibuprofen "as needed" or "PRN" along with the dose can be misinterpreted by patients, especially those with poor health literacy.
- Incorporating explicit language such as "take only if needed for pain" and reinforcing PRN dosing during discharge counseling may reduce preventable medication-related adverse events.

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