Evaluation of opportunities for pharmacist-driven renal dose adjustments in a community teaching hospital

Nicole Hennessy, PharmD; Ashmi A. Philips, PharmD, AAHIVP;
Michael S. Casias, PharmD, BCIDP, AAHIVP; Andy Chang, PharmD; Mini Varghese, PharmD, BCPS
Hunterdon Medical Center, Flemington, New Jersey
Department of Pharmaceutical Services

INTRODUCTION

- Renal dose adjustment is integral in the dynamic management of a patient's medication regimen in order to minimize toxicity.
  - As kidney function fluctuates during hospitalization, additional adjustments may be needed.
- The purpose of this study was to investigate the opportunities for pharmacist-driven renal dose adjustments of select medications.

METHODS

STUDY DESIGN

- Retrospective, non-randomized study conducted over the first two weeks of July 2019
- Product usage reports were generated using the electronic health record (EHR) for: famotidine, enoxaparin, and metoclopramide

PRIMARY OUTCOME

- Number of renal dose adjustment opportunities with new orders

SECONDARY OUTCOMES

- Number of renal dose adjustment opportunities during hospital length of stay (LOS)
- Number of missed opportunities for intervention during hospital LOS
- Time spent on renal dose evaluation

INCLUSION CRITERIA	EXCLUSION CRITERIA
▪ 18 years of age or older ▪ Admitted to an inpatient unit ▪ Received enoxaparin, famotidine, or metoclopramide for more than 24 hours	▪ Missing serum creatinine at time of initial order

RENAL DOSE ADJUSTMENTS

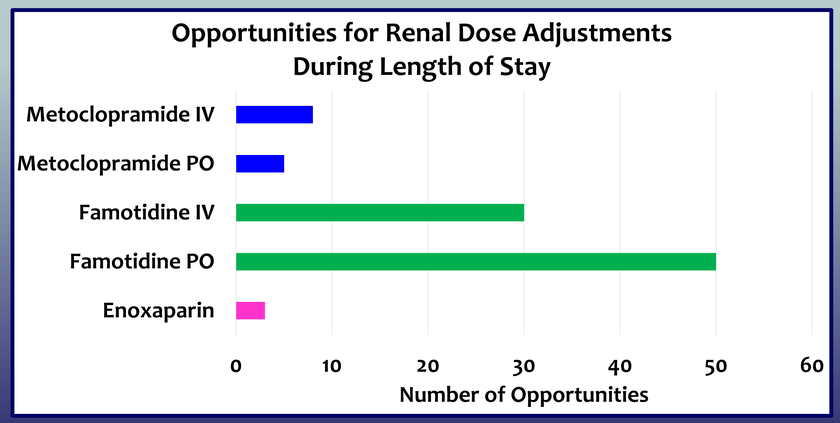
- Patients to receive further renal dose evaluation:
  - Admitted to an inpatient unit with a decentralized pharmacist
- Determination of renal dose adjustment:
  - Dose adjustments made based on manufacturer package inserts
  - Creatinine clearance calculated via Cockcroft-Gault equation
  - Serum creatinine rounded up to 0.8 mg/dL in patients 65 years of age or older if measured serum creatinine was 0.45-0.79 mg/dL
  - Adjusted body weight used if actual body weight was 120% of ideal body weight

RESULTS

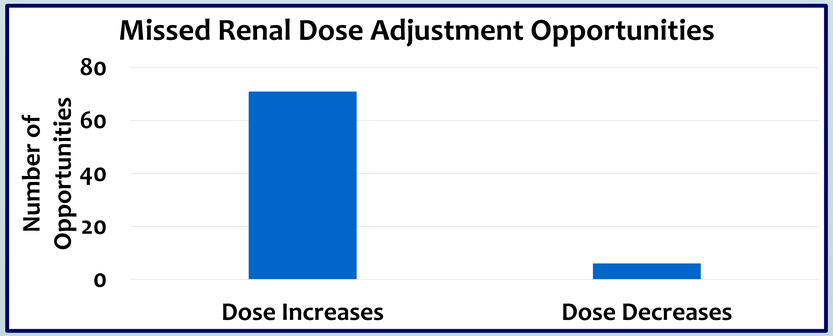
BASELINE DEMOGRAPHICS (n = 108 orders)		
Characteristics		Results
Mean Age (years)		62.4
Gender	Female	56 (51.9%)
	Male	52 (48.1%)
Orders continued on an inpatient unit with a de-centralized pharmacist		95 (88.0%)
Drug Distribution ▪ Enoxaparin ▪ Famotidine (PO) ▪ Famotidine (IV) ▪ Metoclopramide (PO) ▪ Metoclopramide (IV)		 18 (17%) 42 (39%) 36 (33%) 3 (3%) 9 (8%)

PRIMARY OUTCOME	RESULTS
Number of renal dose adjustment opportunities with new orders	1

SECONDARY OUTCOMES	RESULTS
Number of dose adjustment opportunities during hospital LOS	96
Number of missed dose adjustment opportunities during hospital LOS	77 (80.2%)
Time spent per renal dose evaluation	2.14 minutes



RESULTS *cont.*



DISCUSSION

- While prescribers often renally adjusted medications for the initial order, opportunities exist for pharmacists to intervene during the course of hospital stay.
  - In many instances, changes were not made to reflect fluctuations in kidney function.
  - In other situations, inappropriate adjustments were made by the prescriber resulting in under-dosing.
- Limitations of the study include retrospective design, short study duration, and small sample size.

NEXT STEPS

- Implement a pharmacist-driven renal dose adjustment protocol for agents evaluated in this study.
  - Incorporate daily follow-up of renal function and medication doses into decentralized pharmacists' work flow through a dedicated procedure.
  - Create clinical queue and documentation template in electronic health record

CONCLUSION

- Opportunities exist for a pharmacist-driven renal dose adjustment protocol at our institution for medication optimization and safety.

DISCLOSURE
Authors of this presentation have the following to disclose concerning possible financial or personal relationships with commercial entities that may have a direct or indirect interest in the subject matter of this presentation: Nicole Hennessy, Ashmi A. Philips, Michael S. Casias, Andy Chang, Mini Varghese: Nothing to disclose.