

Background

- Total knee arthroplasty (TKA) is becoming increasingly common and more efficient with advances in surgical technology
- Post-operative complications still create limitations for patients:
 - Pain, nausea and vomiting, venous thromboembolism, infection, lengthy hospital stays, and increased opioid use¹
- Corticosteroids have shown to decrease nausea, inflammation, and pain, decreasing the need for opioids that can contribute to nausea
- A recent meta-analysis¹ of intravenous corticosteroids in total hip and knee arthroplasties found:
 - Decreased nausea and vomiting
 - Decreased pain during the first 24 hours
 - Decreased opioid consumption
 - Decreased interleukin-6 levels
 - Higher average blood glucose levels
 - No significant difference in the incidence of deep infections, pruritus, and venous thromboembolism
- Orthopedic surgeons at CoxHealth Meyer Orthopedic and Rehabilitation Hospital have recently begun administering post-operative IV corticosteroids in patients undergoing TKA to improve outcomes

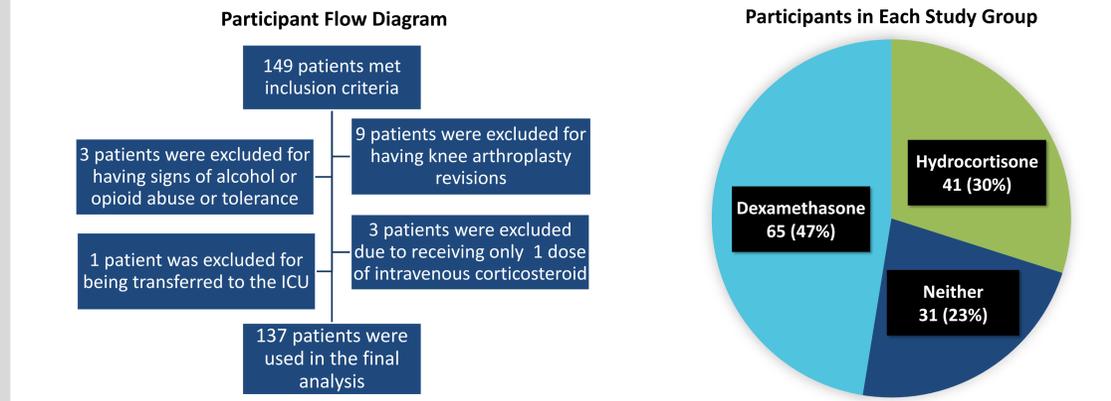
Purpose

To determine if the post-operative administration of intravenous hydrocortisone or dexamethasone improves outcomes in patients undergoing a total knee arthroplasty in a community orthopedic and rehabilitation hospital

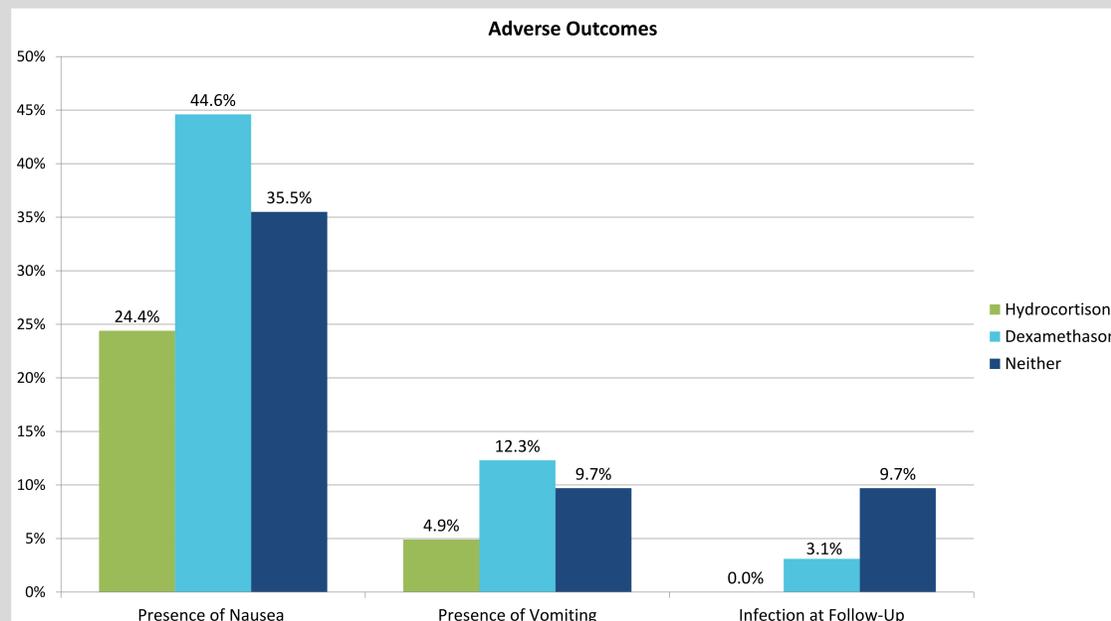
Methods

- Retrospective chart review
- Inclusion Criteria**
 - Patients undergoing total knee arthroplasty at CoxHealth Meyer Orthopedic and Rehabilitation Hospital between August 2018 and August 2019
- Exclusion Criteria**
 - Patients undergoing total knee arthroplasty revision surgery
 - Patients having to be transferred to CoxHealth South Hospital for more acute complications
 - Patients experiencing signs and symptoms of substance abuse or withdrawal during their hospital stay
 - Patients only receiving one dose of post-operative IV hydrocortisone or dexamethasone
- Data gathered included:
 - Age and gender
 - Length of hospital stay
 - Pre-operative medications
 - Doses of any intravenous dexamethasone or hydrocortisone administered after surgery
 - Doses of opioid pain medications administered after surgery
 - Other pain medications administered after surgery
 - Presence of nausea and vomiting
 - Average pain score <24 hours and 24-48 hours after surgery
 - Riker sedation-agitation scores <24 hours and 24-48 hours after surgery
 - Blood glucose levels <24 hours after surgery
 - Presence of infection upon follow-up

Results



Baseline Characteristics and Results			
	Hydrocortisone	Dexamethasone	Neither
Mean Age (years)	67.0	69.6	68.7
Male Patients (%)	46.3%	29.2%	45.2%
Female Patients (%)	53.7%	70.8%	54.8%
Mean Morphine Milligram Equivalents Per Day	79.8	74.7	69.5
Mean Length of Stay (days)	2.5	2.5	2.4
Mean Pain Score < 24 hours	4.2	3.7	3.9
Mean Pain Score 24-48 hours	4.1	4.0	4.5
Mean Riker Score <24 hours	4.1	4.0	3.8
Mean Riker Score 24-48 hours	3.8	3.9	4.0
Mean Blood Glucose <24 hours	155.2	155.1	149.6



Discussion

- Incidence of nausea and vomiting differed, with the dexamethasone group having the highest incidence, followed by the no steroid group, then the hydrocortisone group
- Rate of infection also differed between the groups. The highest rate of infection was found in the no steroid group, followed by dexamethasone and hydrocortisone
- Length of hospital stay, pain scores, Riker sedation-agitation scores, daily morphine milligram equivalents, and glucose readings were similar amongst the groups
- Study limitations:
 - The study was small and retrospective
 - The study groups were not similar in size
 - The total amount of corticosteroids given post-operatively varied among patients
 - Some patients were given pre-operative doses of corticosteroids and anti-emetics
 - Dexamethasone group had a larger percentage of females compared to the other two groups
 - Female gender is a risk factor for post-operative nausea and vomiting.² In a secondary analysis, females had a higher incidence of nausea and vomiting

Conclusion

- There were less infections in the groups receiving corticosteroids
 - Infection is a major cause of surgery failure and can lead to hospital readmission, increased costs, and complications
- Those receiving hydrocortisone had fewer episodes of nausea and vomiting compared to the other groups
 - Nausea and vomiting are the second leading complaint post-surgery and can lead to readmissions and delayed recovery
- Pain scores, length of hospital stay, or the use of opioid medications did not differ among the groups

References

- Li D, Wang C, Yang Z, Kang P. Effect of Intravenous Corticosteroids on Pain Management and Early Rehabilitation in Patients Undergoing Total Knee or Hip Arthroplasty: A Meta-Analysis of Randomized Controlled Trials. *Pain Practice*. 2017;18(4):487-499. doi:10.1111/papr.12637.
- Pierre S, Whelan R. Nausea and vomiting after surgery. *British Journal of Anaesthesia*. 2013;34.

Author Disclosures

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:

- Jaimyn Prost: nothing to disclose
- Sarah Stone: nothing to disclose
- Christina Stafford: nothing to disclose

Special Acknowledgements

The authors would like to thank the following for their contributions:

- Pierre Clothiaux, MD
- Chelsea Landgraf, PharmD, BCPS, BCACP
- Karrie Derenski, PharmD, BCNSP, BCCCP, CNSC