

# Investigating the Relationship Between Preoperative Laboratory Values and Unplanned Reoperation in Nephrectomy Patients

Grenz, Sage; Fink, Benjamin; O'Pry, Emiley; Son, Young; Mueller, Thomas

## INTRODUCTION

- Cancer involving the kidney and/or renal pelvis has an incidence of over 10 in 100,000 in the U.S.<sup>2</sup>
- Most common intervention: Nephrectomy → 2 types
  - Partial: reserved for smaller tumors
  - Radical: reserved for larger tumors
- Preoperatively an abundance of parameters are used to assess a patient's overall health, one of which being standard laboratory values<sup>4</sup>
- The R.E.N.A.L scoring system, used in perioperative outcome prediction, currently does not include preoperative laboratory values<sup>1</sup>
- Previous studies have shown that factors such as hypercalcemia may be potential predictors of adverse outcomes, but data surrounding this relationship is limited<sup>4</sup>

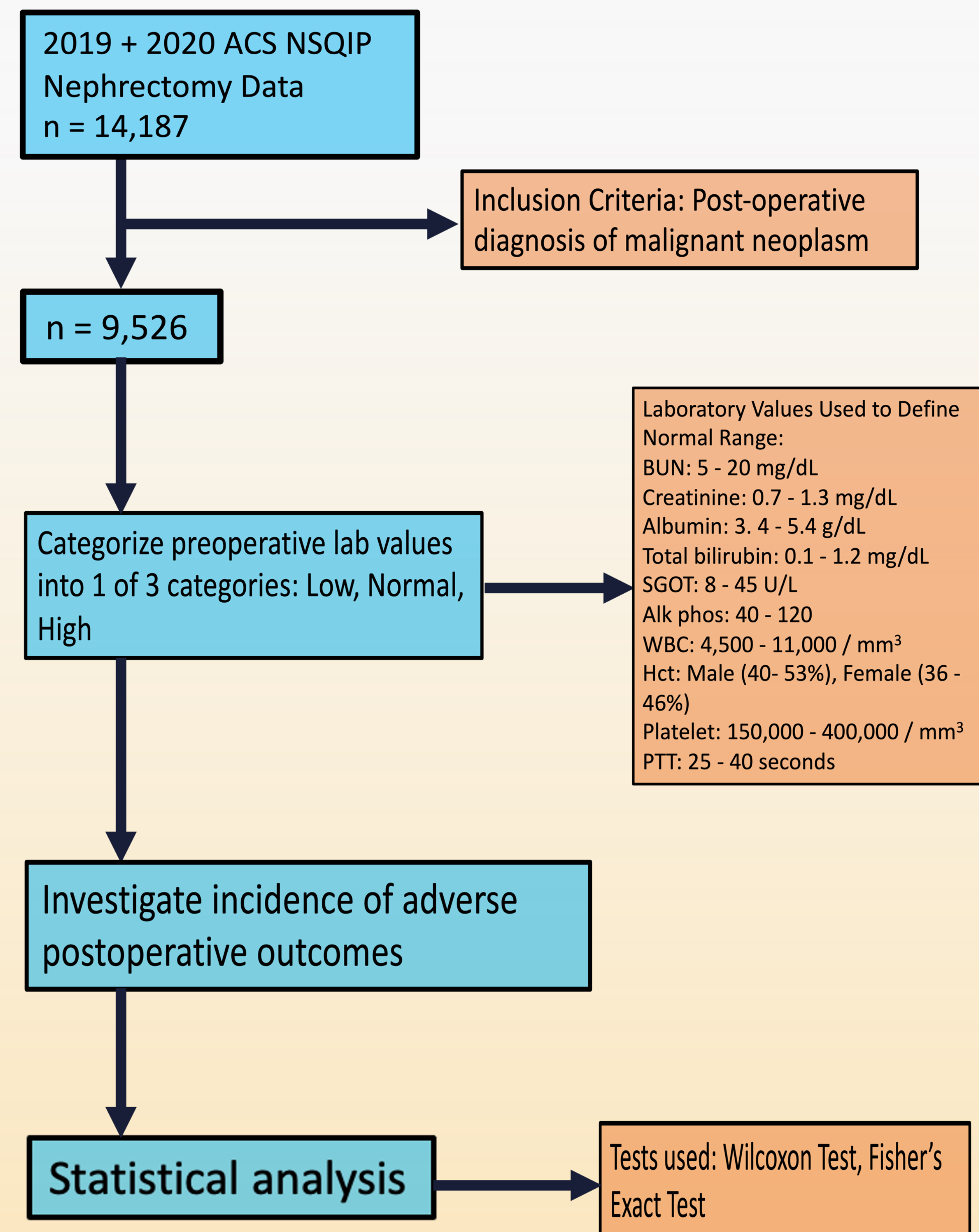
## OBJECTIVE

- Use data from the 2019 and 2020 ACS NSQIP database to attempt to identify any associations between adverse postoperative outcomes and preoperative laboratory values
- Preoperative values considered: serum sodium, B.U.N., creatinine, serum albumin, total bilirubin, SGOT, alkaline phosphatase, white blood cell count, platelet count, hematocrit, and partial thromboplastin time

## REFERENCES

1. Basu S, Khan IA, Das RK, Dey RK, Khan D, Agarwal V. RENAL nephrometry score: Predicting perioperative outcomes following open partial nephrectomy. *Urology Annals*. 2019;11(2):187-192. doi:10.4103/UA.UA\_93\_18
2. Capitanio U, Bensalah K, Bex A, et al. Epidemiology of Renal Cell Carcinoma. *European Urology*. 2019;75(1):74-84. doi:10.1016/j.eururo.2018.08.036
3. Chung, JW., Park, D.J., Chun, S.Y. *et al*. The prognostic role of preoperative serum albumin/globulin ratio in patients with non-metastatic renal cell carcinoma undergoing partial or radical nephrectomy. *Sci Rep* 10, 11999 (2020). <https://doi.org/10.1038/s41598-020-68975-3>
4. O'Donnell, Frederick T. "Preoperative Evaluation of the Surgical Patient." *Missouri medicine* vol. 113,3 (2016): 196-201.

## METHODS



## RESULTS

- Unplanned reoperation occurrence for patients with normal laboratory values vs high laboratory values:

Preoperative Lab	Normal Levels Group	High Levels Group	P Value
Sodium	1.92%	4%	0.393
Blood Urea Nitrogen (B.U.N.)	1.77%	3.95%	0.001
Creatinine	1.94%	3.54%	0.012
Hematocrit	1.82%	2.76%	0.335

- Unplanned reoperation occurrence for patients with normal laboratory values vs low laboratory values:

Preoperative Lab	Normal Levels Group	Low Levels Group	P Value
Sodium	1.92%	4.39%	0.002
Blood Urea Nitrogen (B.U.N.)	1.77%	2.33%	0.356
Creatinine	1.94%	1.75%	1
Hematocrit	1.82%	3.51%	0.0038

## DISCUSSION

- A significant difference in unplanned reoperation rates was found between patients with normal vs elevated B.U.N. and creatinine levels
- A significant difference was also found between patients with normal vs low levels of sodium and hematocrit
- Limitations:
  - Both radical and partial nephrectomy included
  - Statistics
  - Undefined confounding factors

## CONCLUSION

- Patients with abnormal preoperative laboratory values and normal values were found to have a significant difference in occurrence of unplanned reoperation
- More research is needed to specify the relationship between preoperative laboratory values and adverse post-operative outcomes
- Through gaining insight on this relationship clinical decision-making on when or when not to perform nephrectomy will be further guided and adverse postoperative outcomes may be more readily avoided