Our objective was to determine factors associated with PTX. Secondary hyperparathyroidism (SHPT) occurs in more than half of patients on hemodialysis (HD). KDIGO guidelines state that dialysis patients with severe SHPT who fail to respond to medical therapy should undergo a parathyroidectomy (PTX). While there is a paucity of data describing the clinical consequences in the year following PTX, we have recently described such outcomes in a large cohort of Medicare dialysis patients. However, differences between patients who do and do not undergo PTX have never been rigorously examined. Our objective was to determine factors associated with PTX.

Methods
- United States Renal Data System (USRDS) data was used to create a cohort of prevalent adult HD patients from 2007-09.
- Patients were required to have Medicare as primary payer for both Parts A and Part B, and to have been receiving HD >1 year.
- PTX was identified from Medicare inpatient claims using ICD-9-CM procedure codes 06.8x and 06.95 (International Classification of Diseases, Ninth Revision, Clinical Modification). The index date was defined as the PTX date for PTX patients, and as January 1 for the non-PTX patients.
- Comorbid conditions, assessed in the year prior to index date, were defined by previously established USRDS methods.
- Characteristics of the patients who did and did not undergo PTX were assessed. Models were adjusted for demographics, cause of end stage renal disease (ESRD), body mass index, dialysis vintage, comorbidities, and ESRD Network.
- Odds ratios (ORs) for PTX were calculated using logistic regression.

Results
- As shown in Figure 1, after adjustment, younger age (19-44 yrs, versus 45-64), female sex, black (versus white) race, BMI ≥ 30 kg/m², diabetes as the cause of ESRD or as a comorbidity, and history of a stroke or TIA were significantly associated with increased OR for PTX. Age ≥ 65, diabetes as the cause of ESRD or as a comorbidity, and history of a stroke or TIA were significantly associated with decreased OR for PTX. There was a 1.95-fold difference in OR for PTX between the most- and least-frequently performing PTX-performing regions.
- Geography is also associated with PTX, with a nearly 2-fold variation in OR for PTX among the least- and most-frequently performing networks.
- Our study has important limitations. For example, we lacked information on laboratory values and medication use, both of which would be expected to influence likelihood of PTX. Other patient-level characteristics which likely influenced bedside decisions to undertake PTX were also unobservable to us.

Discussion
- In this large study, we have identified several factors associated with use of PTX.
- Patients receiving a PTX have factors that are traditionally associated with more severe SHPT, including black race, younger age, and longer dialysis vintage.
- Greater BMI and presence of cardiovascular disease is also associated with PTX.
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References
1. Denerv AD et al, Arbor Research Collaborative for Health: Dialysis Outcomes Practice Patterns Study (DOPPS) Practice Monitor, 2013
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