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Increased Patient Travel Distance for Revision TKA is Associated with Higher Re-revision Rates

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Disclosures

- I have no financial conflicts of interest to disclose

Purpose

Study Aim:

- Analyze the influence of travel distance on complication rates, mortality rates, and patient reported outcomes (PROs) following revision total knee arthroplasty (TKA)

Hypothesis:

- Greater travel distances are associated with higher complication rates and inferior PROs

Methods

- Retrospective review (custom data and analytics platform)

- **Inclusion criteria**:
    - Underwent revision TKA at UPMC, 2015-2024
- **Exclusion criteria:**
    - Unavailable patient home zip code data
    - Unavailable postoperative outcome data

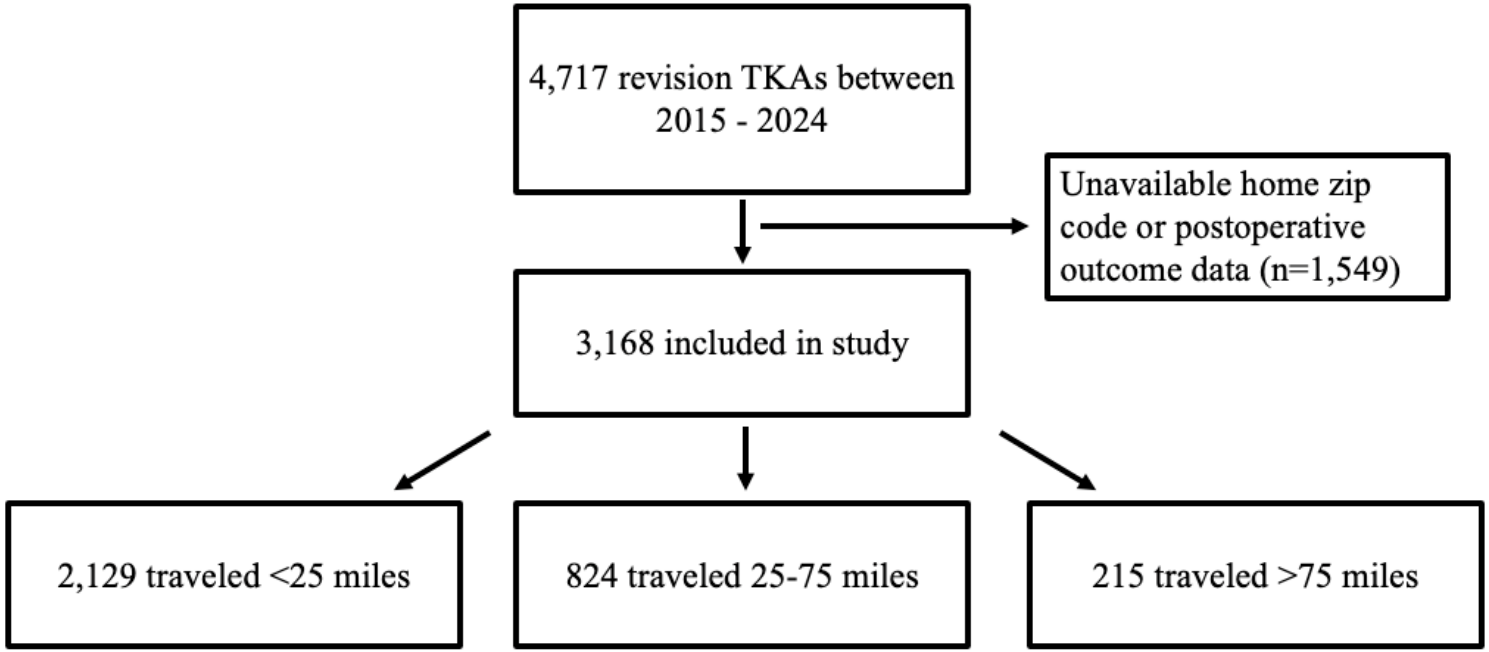
- Vincenty formula to calculate distance between patient home zip code and coordinates of hospital

Methods - Outcomes

- Complication rates: subsequent re-revision, death, mechanical, pulmonary embolism, sepsis, wound infection, surgical site infection

- PROs: Knee injury and osteoarthritis outcome score (KOOS), Patient-reported outcome measurement information system (PROMIS10)
    - Preoperative, 3-mo, 6-mo, 1-year follow-up

Results – Study Population



Results – Demographics

	< 25 miles (n=2129)	25-75 miles (n=824)	> 75 miles (n=215)	P value
Demographics				
Age at time of revision TKA (years)	67.1 ± 10.0	66.7 ± 9.7	65.8 ± 10.3	0.23
Female sex, n (%)	1258 (59)	437 (53)	112 (52)	**<0.01***
BMI (kg/m^2) (n=3087)	33.4 ± 9.5	34.5 ± 17.4	32.7 ± 6.6	0.41
Travel distance in miles	8.1 ± 7.9	44.4 ± 14.4	111.3 ± 105.7	**<0.01***
Elixhauser score (n=2756)	3.0 ± 1.9	2.8 ± 1.9	2.5 ± 1.8	**<0.01***

Results – Complication Rates

	< 25 miles (n=2129)	25-75 miles (n=824)	> 75 miles (n=215)	P value
Complications, n (%)				
Any Complication	270 (13)	92 (11)	22 (10)	0.36
Subsequent re-revision	274 (13)	116 (14)	41 (19)	**0.04***
Death	11 (1)	2 (0)	2 (1)	0.28
Mechanical	93 (4)	37 (5)	11 (5)	0.88
Pulmonary embolism	26 (1)	8 (1)	2 (1)	0.81
Sepsis	81 (4)	30 (4)	5 (2)	0.55
Wound infection	82 (4)	25 (3)	7 (3)	0.54
Surgical site infection	38 (2)	10 (1)	1 (1)	0.22
Mortality rates, n (%)				
1-year mortality	49 (2)	13 (2)	7 (3)	0.26
Readmit rates, n (%)				
90-day readmit	301 (14)	110 (13)	31 (14)	0.84

Results – Odds Ratio

Table 2. Predictor of a subsequent re-revision

	Odds ratio	Confidence interval	P value
Travel distance	1.002	1.000-1.004	0.07

Conclusion

- Increased travel distance associated with higher rates of subsequent re-revision
    - Odds ratio was not significant (clinical risk)
- Similar PROs, readmission rates, mortality rates
- Re-revision TKAs are common, technically demanding
    - Higher complication rates and less favorable outcomes

- Impact of travel distance and potentially access to care

- **Establishment of regional "Centers of Excellence"** for revision TKA is feasible

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Thank you!

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