Reducing race-based disparities in inpatient access to subspecialty pulmonary care: A retrospective cohort study

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Background
• Health equity is an essential domain of healthcare quality
• Structural racism is associated with access to cardiology services and worse quality of patient care
• Patients with pulmonary diseases and specialized care needs may be subject to similar structural racism in specialty access

Objectives
1) Assess the association of race with admission to pulmonary vs general medicine services
2) Assess the association of race and admission to pulmonary service with patient-centered outcomes

Methods
• Retrospective cohort study of patients admitted with pulmonary diagnosis-related groups (DRGs) to pulmonary vs general medicine services at a quaternary academic hospital 4/2017-2/2020
• Exposures
  1) Race (Black vs white)
  2) Race, pulmonary service admission, interaction between race and pulmonary service admission
• Outcomes
  1) Pulmonary service admission
  2) Discharge destination, pulmonary clinic follow-up, hospital readmissions
• Analysis
  1) Logistic regression
  2) Logistic and multinomial regression
• Covariates
  1) Age, gender, language, year, quarter, DRG
  2) Same as Aim 1, plus insurance type, Elixhauser comorbidity index, predicted mortality, median income by zip code, established with health system outpatient pulmonary clinic, weekend admission, ICU stay

Results & Root cause
Black race was associated with a 65% decreased rate of pulmonary service admission.
A major driver of admission to pulmonary service was prior establishment with an affiliated outpatient pulmonologist, despite the absence of a policy to this effect for this specialty.

Table 1. Adjusted associations of race with pulmonary service admission

<table>
<thead>
<tr>
<th>Variable</th>
<th>All patients</th>
<th>Patients without outpatient pulmonologist</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RR (95% CI)</td>
<td>p-value</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
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<tr>
<td>White (reference)</td>
<td>---</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Black</td>
<td>0.35 (0.29-0.42)</td>
<td>&lt;0.001</td>
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Table 1. Adjusted associations of race with pulmonary service admission

Initiative: revise admission guidelines

Current State
- Outpatient pulmonologist: Yes
- Pulmonary Care needs: Complex
- Admission criteria: Diagnosis-based

Revised State
- Outpatient pulmonologist: No
- Pulmonary Care needs: Straightforward
- Admission criteria: Diagnosis-based

Impact
Preliminary data demonstrate a 34% absolute increase and >300% relative increase in percentage of patients admitted to pulmonary service without an established with an outpatient pulmonologist.

Results
• 2,406 patients admitted with pulmonary DRGs
• 42% admitted to pulmonary service

Disparities in admissions and outcomes
• 34% Black patients admitted to pulmonary service vs 58% to general medicine services
• More pre-established outpatient pulmonologists for those admitted to pulmonary service (84% vs 0.8%)
• Black race associated with decreased rate of pulmonary service admission (RR 0.35, 95% CI 0.29-0.42, p<0.001)
• Pulmonary service admission associated with increased rates of 1- and 3-month pulmonary clinic follow-up

Root cause analysis
• Prior establishment with an affiliated pulmonologist was a major driver of admission to the pulmonary service, despite the absence of a policy to this effect

Intervention
• Implemented changes to admitting policy documents, including clarification of criteria for pulmonary service admission
• Preliminary data demonstrate a 34% absolute increase and >300% relative increase in percentage of patients admitted to pulmonary service without an established with an outpatient pulmonologist

Discussion
• Black race associated with decreased likelihood of pulmonary service admission, despite associations with improved clinical outcomes
• Inequitable access to outpatient pulmonary care may be propagated, therefore creating hospitalization inequities
• Future work needed to understand root cause of disparities to promote health equity, re-evaluate these analyses after intervention implementation, and evaluate disparities among other service lines and across hospitals and health systems

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