Prevalence of Chronic Kidney Disease (CKD): Comparison of Real-World Data (RWD) Sources to the USA National Health and Nutrition Examination Survey (NHANES)

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1. Introduction/Background
- Estimates of the prevalence and incidence of chronic kidney disease (CKD) are essential to identify population demographics and guide public health strategies.
- CKD prevalence is projected to increase globally primarily due to diabetes, obesity, and hypertension.
- Nevertheless, most patients even at advanced CKD stages are unaware of their disease and its complications implying substantial underreporting.
- Limitations of reported CKD prevalence estimates include varied methodologies related to source populations, timeframes, and CKD measurements and definitions.

2. Goal
To assess prevalence and incidence estimates for CKD stages 3-5 from a Real World Data (RWD) source population in contrast to the National Health and Nutrition Examination Survey (NHANES).

3. Methods
- RWD was extracted from HealthVerity PrivateSource 20 (PS20) closed claims and linked to Veradigm Health Insights EHR.
- Adults ≥20 years old, continuously enrolled in care in health systems.
- The prevalence of CKD stages 3-5 were projected to the United States (US) population (standardized age, gender, and geographic region with census data).

4. RESULTS
- Proportional CKD prevalence estimates in RWD were lower than those reported in NHANES (Table 3).
- There were approximately 22.5 million individuals estimated with any stage CKD from NHANES (2015-2018) and 5.2 million from RWD (2018; Figure 2).

5. Summary
- These RWD estimates for CKD prevalence and incidence in the US were considerably lower than NHANES.
- CKD prevalence and incidence estimates from RWD is composed primarily of those with commercial health insurance who received care in health systems.
- NHANES sampled a community-based population including the under- and uninsured and people outside of health systems.
- These RWD were limited by large attrition across inclusion requirements, a single year of observation, inconsistent eGFR sampling, selection bias for resources and access to care in health systems.

6. Conclusions
- More complete ascertainment, longitudinal assessment over relevant time periods, and less biased population sources are needed for reliable CKD prevalence and incidence estimates.
- These RWD analysis reinforce the need for focus on CKD identification in US health systems.

References

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Table 3: Projected US Prevalence and Incidence Estimates for CKD

<table>
<thead>
<tr>
<th>CKD Stage</th>
<th>Prevalence 2018</th>
<th>Incidence 2018</th>
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<tbody>
<tr>
<td>3a</td>
<td>3,556,438</td>
<td>2,854,996</td>
</tr>
<tr>
<td>3b</td>
<td>1,262,080</td>
<td>528,039</td>
</tr>
<tr>
<td>4</td>
<td>381,119</td>
<td>65,625</td>
</tr>
<tr>
<td>5</td>
<td>130,277</td>
<td>37,510</td>
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</tbody>
</table>

*Asterisk indicates a statistically significant difference p< 0.05

Figure 2: Prevalence in NHANES and Diagnosed Prevalence in RWD

Figure 1: Attrition Figure

Total patients in PS20 (n=116,830,400)
≥365d of cont. enrollment prior to index (n=54,645,470)
≥365d of cont. enrollment post- index (n=43,104,671)
≥1 record of EHR activity in 365d prior to index (n=1,634,488)
≥1 record of activity in EHR post-index (n=1,468,222)
Age >20 years old (n=1,344,634)
Final Population (n=1,344,634)

Table 3

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<tr>
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NHANES RWD

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