Vitamin D Testing and Prescribing Practices in DFM residency clinics

Sarina Schrager, MD, MS
Erin Reddy, BS
Background

• Vitamin D has been linked to many medical conditions

• No evidence based guidelines on testing or supplementation are available

• Aim of this study was to describe a population of patients who had a vitamin D level drawn
Methods

• Electronic chart review of 365 randomly selected patients who had a 25 OH vitamin D drawn between 1/09-1/10

• Exclusion Criteria:
  • Hypopituitarism
  • Previous test within 12 months prior to study

  • 57 charts excluded for a total of 308 charts included in study
Methods

- Extracted Demographics, Test Level, Treatment, and Follow up Information
- Data was compared to a population that had a clinic visit at one of the UW Family Medicine Clinics in the past 3 years
Results

• Patient Demographics:
  • Mean Age 52 years
  • 80.68% Female
  • Race:

- 78% White
- 11% Hispanic/Latino
- 3% African American
- 2% Asian
- 2% Alaska Native or American Indian
- Unknown
Results

- Study population vs clinic population:
  - Significantly older ($p < 0.001$)
  - Significantly more female ($p < 0.001$)
  - Have a slightly different racial distribution ($p = 0.049$)
Results: Clinician demographics

- Sex: 67.9% Female
- Degree:
## Results: Value of test

<table>
<thead>
<tr>
<th>Test Value</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;=20 ng/ml</td>
<td>107 (34.7%)</td>
</tr>
<tr>
<td>21-30 ng/ml</td>
<td>92 (29.8%)</td>
</tr>
<tr>
<td>31-50 ng/ml</td>
<td>87 (28.2%)</td>
</tr>
<tr>
<td>&gt;50 ng/ml</td>
<td>10 (3.2%)</td>
</tr>
</tbody>
</table>

< 20ng/ml = frank deficiency  
20-29ng/ml = insufficiency  
30-80ng/ml = normal

64.5% under 30 ng/ml
Results: Season of test

<table>
<thead>
<tr>
<th>Test Range</th>
<th>Dec-Feb</th>
<th>Mar-May</th>
<th>June-Aug</th>
<th>Sep-Nov</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;30 ng/ml</td>
<td>53</td>
<td>56</td>
<td>40</td>
<td>43</td>
</tr>
<tr>
<td>30-49 ng/ml</td>
<td>30</td>
<td>22</td>
<td>30</td>
<td>23</td>
</tr>
<tr>
<td>&gt; 50 ng/ml</td>
<td>7</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Using chi squared analysis we determined that there is not a statistically significant difference in Vitamin D levels based on the season in which the test is performed (p=0.084)
## Results: Supplementation Recommendations

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Number of Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td>None/ Dose Unknown</td>
<td>109 (35.4%)</td>
</tr>
<tr>
<td>400-1200 IU daily</td>
<td>76 (24.7%)</td>
</tr>
<tr>
<td>2000-5000 IU daily</td>
<td>32 (10.9%)</td>
</tr>
<tr>
<td>50,000 IU monthly-weekly</td>
<td>59 (19.2%)</td>
</tr>
<tr>
<td>50,000 IU more than weekly</td>
<td>31 (10.9%)</td>
</tr>
</tbody>
</table>

Over 35 different recommendations
Results: Test values vs. supplementation recs

1: None/Dose Unknown
2: 400-1200 IU daily
3: 2000-5000 IU daily
4: 50,000 IU monthly-weekly
5: 50,000 IU > monthly
6: Sun exposure

\[ y = -0.067x + 4.2116 \]
\[ R^2 = 0.3536 \]

p < 0.001
Results: Follow up testing

- 101 pts had a follow up test (90 were deficient at 1st value)
  - 37 (36.3%) patients had a level <30
    - 33 were deficient at the first test
  - 51 (50%) patients had a level of 30-50
  - 12 (11%) patients had a level of 50-80
  - 1 (0.9%) patient had a level >80
Results

• 1st Follow up test Recommended Supplementation:

<table>
<thead>
<tr>
<th>Supplement</th>
<th>Number of Patients Recommended</th>
</tr>
</thead>
<tbody>
<tr>
<td>None/Dose Unknown</td>
<td>40 (39.6%)</td>
</tr>
<tr>
<td>400-1200 IU daily</td>
<td>15 (14.9%)</td>
</tr>
<tr>
<td>2000-5000 IU daily</td>
<td>15 (14.9%)</td>
</tr>
<tr>
<td>50,000 IU monthly-weekly</td>
<td>22 (21.8%)</td>
</tr>
<tr>
<td>50,000 IU more than once weekly</td>
<td>8 (7.9%)</td>
</tr>
</tbody>
</table>

12 (11.8%) of patients were told to continue the dose recommended following initial testing.
Results: follow up testing vs. vit D level

1: None/Dose
2: 400-1200 IU daily
3: 2000-5000 IU daily
4: 50,000 IU monthly-weekly
5: 50,000 IU > monthly
6: Sun exposure

\[ y = -0.0077x + 2.6815 \]
\[ R^2 = 0.0069 \]
\[ P = 0.41 \]
Results: prevalence of medical conditions vs. general clinic population

- Osteoporosis ($p < 0.001$)
- Hypertension ($p < 0.001$)
- Hypothyroidism ($p < 0.001$)
- Diabetes Mellitus Type 2 ($p < 0.001$)
**Results: Vit D test value vs. medical dx**

<table>
<thead>
<tr>
<th>Test Value</th>
<th>Overall</th>
<th>Subjects with Osteoporosis</th>
<th>Subjects with Hypothyroidism</th>
<th>Subjects with Hypertension</th>
<th>Subjects with DM2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Value &lt; 30</td>
<td>192</td>
<td>15</td>
<td>22</td>
<td>61</td>
<td>33</td>
</tr>
<tr>
<td>Test Value 30-50</td>
<td>105</td>
<td>15</td>
<td>10</td>
<td>33</td>
<td>10</td>
</tr>
<tr>
<td>Test Value &gt;50</td>
<td>11</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>308</td>
<td>30</td>
<td>34</td>
<td>102</td>
<td>44</td>
</tr>
<tr>
<td>p- value</td>
<td>0.185</td>
<td>0.787</td>
<td>0.922</td>
<td>0.102</td>
<td></td>
</tr>
</tbody>
</table>


Discussion- Limitations

• Observational study, limited information.

• Study demographics differ from clinic population (older, more female, fewer minorities)

• Did not compare to clinic population who did not have a 25 OH vit D test
Discussion

• 68% of ordering providers were women. Consistent with literature.\(^3\)

• 65.5% of those tested had insufficient Vitamin D level
  • NHANES (2001-2004)- 77\%^2

• No significant difference found in the season of the test
  • Contrary to what other studies have shown\(^1,6\)
Discussion

• Supplementation recommendations vary widely. No evidence-based guidelines.

• Recommendation levels correlate with serum levels at first testing, but not at follow up testing

• Possibility of continuing dose affecting recommendation
References


