Improving the bone health screening process for patients with cystic fibrosis

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Background

• Bone disease is a common complication of Cystic Fibrosis (CF) which begins early in life and progresses with aging
• CF patients with bone disease have low bone mineral density and increased rates of low-trauma fractures
• Prior to this project, UCM’s CF center was not strictly implementing the guidelines for completion of this test unless there were obvious signs of low bone density

CF DEXA Screening Protocol

- At ≥ 8 y/o or < 90% IBW, FEV1 ≤ 50% predicted, glucocorticoids ≥ 5 mg/d for ≥ 90 d/yr, delayed puberty, kyphosis, fractures → Baseline DEXA
- T/Z score ≤ -2.0 → Annual DEXA
- T/Z score > -2.0 → Repeat DEXA every 5 years
- T/Z score > -1.0 → Repeat DEXA 2-4 years
- T/Z score ≥ -1.0 → DEXA scan was ordered to be completed.

Aims

We sought to increase the percentage of pediatric and adult CF patients at UCM who meet the national CF guidelines for screening for bone disease from the year 2011 to the year 2012.

The Intervention

- Chart (paper and electronic) reviews were performed in 2011 and 2012 for all UCM CF patients over 8 years of age to determine if a bone mineral density exam (BMD) was completed in an appropriate time frame based on the protocol outlined in the Consensus Statement: Guide to Bone Health and Disease in Cystic Fibrosis, 2005.
- During weekly pre-clinic meetings, each patient’s status of bone density monitoring was discussed, and if not meeting guidelines, and DEXA scan was ordered to be completed. The adult team did not have weekly pre-clinic meetings at the time of this study. Therefore, there was no organized intervention on behalf of the adult team.
- Charts were also reviewed to determine if 25-OH vitamin D was checked, and whether it was normal. Lung transplant patients and patients not seen in either 2011 or 2012 were excluded.
- The data for the pediatric and adult groups were analyzed separately as seen in the table to the right.
- The percentage of patients who had a DEXA completed in the correct time frame was calculated in each year.

Results

• This initiative led to an increase in the percentage of pediatric patients screened for bone density in the time frame suggested by the CF care guidelines for bone health.
• The adult data does not reflect this, but the adult team now has bi-weekly pre-clinic meetings and has made a concerted effort to focus on assuring that adult CF patients are tested per national guidelines.

Bone Health Data Collection

<table>
<thead>
<tr>
<th>Year</th>
<th>Pediatrics 2011</th>
<th>Pediatrics 2012</th>
<th>Adults 2011</th>
<th>Adults 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Patients</td>
<td>40</td>
<td>45</td>
<td>52</td>
<td>58</td>
</tr>
<tr>
<td>≥ 8 y/o # (%): Patients with DEXA at appropriate time</td>
<td>27 (68%)</td>
<td>28 (62%)</td>
<td>52 (50%)</td>
<td>58 (50%)</td>
</tr>
<tr>
<td># (%): Patients With DEXA z/score &gt; -1.0</td>
<td>7 (26%)</td>
<td>20 (71%)</td>
<td>30 (58%)</td>
<td>33 (57%)</td>
</tr>
<tr>
<td># (%): Patients With 25-OH in respective year</td>
<td>7 (100%)</td>
<td>13 (65%)</td>
<td>19 (63%)</td>
<td>24 (73%)</td>
</tr>
<tr>
<td># (%): Patients With 25-OH ≥ 30 ng/mL</td>
<td>39 (98%)</td>
<td>34 (76%)</td>
<td>46 (88%)</td>
<td>39 (67%)</td>
</tr>
</tbody>
</table>

Next Steps

• Patient/parental knowledge should be studied to assess understanding of tests, therapies and procedures.
• Investigate other reasons why tests are not completed when they are ordered.

Lessons Learned

• A large portion of success in meeting guidelines for adult CF patients is likely related to patient compliance as a result of adequate education about the importance of meeting these guidelines.
• Patients/parents should be thoroughly educated on the reasons for their tests and procedures, and how the results can affect their health.

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