Rates, reasons, and timing for treatment discontinuation in patients prescribed denosumab

W. Taylor Gregory¹; Hannah M. Gipson¹; Anwesa Chakrabarti, PharmD²; Megan Peter, PhD²
¹College of Pharmacy, University of Tennessee Health Science Center; ²Specialty Pharmacy, Vanderbilt University Medical Center

BACKGROUND
- Denosumab is a clinic-administered subcutaneous injection given every six months to treat osteoporosis.¹,²
- Denosumab increases bone density and decreases fracture risk, but patients who discontinue without transitioning to an alternative therapy have increased fracture risk.³
- Understanding when and why patients discontinue denosumab might prepare clinicians to address common barriers to treatment adherence and persistence.

OBJECTIVES
To assess:
1. Rates and reasons for discontinuation
2. Proportion of patients who transition to alternative therapy after discontinuation
3. The frequency and timing of fractures relative to discontinuation

METHODS
Design: Retrospective cohort study
Setting: Academic health center in Southeast United States
Sample: Adult patients who received 2+ doses of denosumab from 2010 to 2018
Measures:
- Demographics
- Treatment date(s)
- Fracture date(s)
- Treatment discontinuation (yes/no).
  If yes:
  • Date and reason(s) for discontinuing
  • Whether patient transitioned to alternative therapy

RESULTS
Figure 1. Rate, Timing, and Outcomes of Treatment Discontinuation
534 patients included in study
- 30% (n=16) experienced fracture
  - 2 before d/c
  - 14 after d/c
- 10% (n=53) discontinued denosumab
  - Patients discontinued after an average of 3.5 doses
  - Patients discontinued for 60 total reasons (Figure 2)
- 30% (n=16) transitioned to alternative therapy
  - 6 zoledronic acid
  - 5 alendronate
  - 5 other

Figure 2. Reasons for Discontinuation
- Adverse effects (n=37)
  • Cost or insurance problems (n=5)
  • Patient decision or preference (n=5)
  • Transportation or scheduling problems (n=2)
  • Other or unknown (n=11)

Table 1. Sample Demographics
<table>
<thead>
<tr>
<th>Characteristic</th>
<th>All patients (n=534)</th>
<th>Patients who discontinued (n=53)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, years</td>
<td>69 (62-77)</td>
<td>71 (65-79)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>461 (86%)</td>
<td>49 (92%)</td>
</tr>
<tr>
<td>Male</td>
<td>73 (14%)</td>
<td>4 (8%)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>506 (95%)</td>
<td>51 (96%)</td>
</tr>
<tr>
<td>Black</td>
<td>18 (3%)</td>
<td>1 (2%)</td>
</tr>
<tr>
<td>Other</td>
<td>10 (2%)</td>
<td>1 (2%)</td>
</tr>
</tbody>
</table>

Adverse Effects (n=37)
- Musculoskeletal pain
- Dermatologic problems
- Dental problems
- Infection
- Gastrointestinal problems
- Other adverse effects

CONCLUSIONS
Key Findings
- Denosumab discontinuation was most often due to adverse effects.
- Cost and logistic factors were also common reasons.
- Most patients did not transition to alternative therapy after discontinuing.

Pharmacist Role
- Pharmacists can positively impact patient outcomes by educating patients on the importance of medication adherence and helping patients mitigate adverse effects.
- When therapy must be modified because of low tolerability, pharmacists can recommend alternative therapy options to patients and prescribers.

Future Directions
- Additional research is needed to design and test pharmacist interventions that promote high patient adherence and persistence to osteoporosis treatment.

REFERENCES