**INTRODUCTION**

Hypoparathyroidism is a rare disease characterized by hypocalcemia and low or absent parathyroid hormone (PTH), and presents a considerable therapeutic challenge for physicians. Until recently, no evidence-based clinical practice guidelines had been established. In addition, despite standardization of daily treatment with calcium and vitamin D supplementation, a majority of patients with hypoparathyroidism continue to experience potentially debilitating symptoms that can have a profound and sustained impact on activities of daily living and quality of life.

While endocrinologists are primary providers of care for patients with hypoparathyroidism, surgeons and primary care physicians (PCPs) also have a role. We sought to determine if participation in a continuing medical education (CME) activity about the diagnosis and management of hypoparathyroidism improved knowledge and clinical decision-making of these physicians.

**METHODS**

**Institutional Design**

An online educational activity was presented in the form of discussions among hypoparathyroidism experts from multiple disciplines. The format used to deliver the education included a video-based roundtable panel discussion, supported by synchronized slides, and built-in assessment questions and postoperative discharge instructions. For learners wishing to view the program offline, a transcript and slides were made available for downloading/printing. In addition, the activity was available on the Medscape Mobile application. The activity launched online on March 16, 2015, and data were collected through May 10, 2015.

**Assessment Method**

**Linked Learning Assessment (LLA)**

An LLA compares individual participants’ paired responses to questions before exposure to educational content (pre-assessment questions) with responses to the same questions after participation in the educational activity (post-assessment questions). The LLA shows the overall effect of the educational activity. With this method of analysis, participants serve as their own controls. Only participants who answered both assessment questions are included in this analysis. Each question in the LLA is directly related to the learning objectives of the educational activity.

**Statistical Analysis**

For all questions combined, the effect size was calculated by comparing pre-assessment means and post-assessment means of linked learners to show the size of the effect of the educational intervention. Effect sizes were calculated using Cohen’s d (<0.50 no effect, 0.50-0.80 small effect, >0.80-1.30 medium effect, >1.30 large effect). A paired two-tailed t-test was used to assess whether the mean pre-assessment score differed from the mean post-assessment score. A Pearson’s χ² test was used to determine significance. P-values less than 0.05 indicate a statistically significant result.

**RESULTS**

Improved knowledge and competence were observed in both specialty groups:

- Endocrinologists: n=179, P=0.05, moderate effect size of 0.648
- Surgeons: n=169, P=0.05, moderate effect size of 0.657

Clinical decision-making data were collected for PCPs (n=51), but effect size and P-values (see below) were not calculated.

<table>
<thead>
<tr>
<th>Improvements include:</th>
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<tr>
<td>25% increase by endocrinologists, 19% increase by surgeons and 15% increase by PCPs in identifying appropriate postoperative discharge instructions for a patient with hypocalcemia following a total thyroidectomy (Questions 42 and 44).</td>
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**forall questions combined**

<table>
<thead>
<tr>
<th>Endocrinologists</th>
<th>Surgeons</th>
<th>Physicians</th>
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<tbody>
<tr>
<td>Pre and Post</td>
<td>Pre and Post</td>
<td>Pre and Post</td>
</tr>
<tr>
<td>Pre %</td>
<td>Post %</td>
<td>Pre %</td>
</tr>
<tr>
<td>0%</td>
<td>16%</td>
<td>8%</td>
</tr>
<tr>
<td>4%</td>
<td>69%</td>
<td>11%</td>
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While improvements were seen, no evidence-based clinical practice guidelines had been established.

**CONCLUSION**

This study demonstrates the success of a targeted online educational intervention that included a multidisciplinary panel on improving knowledge and clinical decision-making in the management of hypoparathyroidism, specifically related to recognizing clinical effects of PTH, appropriate postoperative discharge instructions, and individualized treatment plans. While improvements were seen, endocrinologists, surgeons, and PCPs both demonstrated a need for further education related to improving discharge instructions and individualized treatment plans for patients with hypoparathyroidism.

**Source of Support**

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**REFERENCES**