Effectiveness of Problem-Based Online CME in Improving the Diagnosis and Management of Lennox-Gastaut Syndrome

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OBJECTIVE

The diagnosis and treatment of adults with Lennox-Gastaut Syndrome (LGS) challenges neurologists in their knowledge of intellectual and developmental disabilities. Competency in management requires knowledge about LGS and its treatment, the adverse effects of polytherapy, consideration of behavioral changes, the risk of injury from tonic seizures, and other factors. Problem-based case studies may be a suitable method to educate and measure processes of care for these patients. A study was conducted to determine if an interactive test- and case-based online continuing medical education (CME) activity could improve neurologists’ knowledge and competence in the management of adults with LGS.

METHODS

The effectiveness of an online educational intervention focusing on the diagnosis and management of LGS was analyzed using a pre-assessment/ post-assessment study design.

Instructional Method:

- The instruction format for the CME activity comprised 2 patient scenarios with interactive knowledge questions and clinical decision questions, and included branching capability and consequence-based learning (Figure 1). 
- An incorrectly answered Clinical Decision Question resulted in feedback on why the choice was suboptimal and the resulting consequences to the patient. Learners were given 1 chance to make a more informed decision.
- For the knowledge questions, learners were provided with the correct answer, a short explanation, and information on how their peers answered the question.
- The activity was available on the Medscape Mobile application, ensuring real-time access by the many clinicians who rely on mobile devices for education.

Data Collection: The educational intervention launched online on June 10, 2014, and data were collected through August 4, 2014.

Assessment Method:

- To determine measurable improvements in knowledge/competence, first- and second-attempt answer choices were evaluated for the clinical decision questions, and pre-assessment and post-assessment answer choices were compared for the knowledge assessment questions.
- For the clinical decision questions, an overall effect size was calculated to show the magnitude and strength of the consequence-based feedback learning method, along with a percent improvement that measures the percentage of successes with the consequence-based feedback method in place.
- For the knowledge assessment questions, a paired 2-tailed t-test was used to assess whether the pre-assessment score was different from the mean post-assessment score. A Pearson’s r-statistic was used to measure changes in responses to individual questions. Probability values (P-values) were also calculated to determine significance level (α); a P-value < .05 indicates statistical significance.

RESULTS

- Evaluation of neurologist responses (n=362) to clinical decision questions indicates that between 43% and 86% of learners understood the concept addressed by the questions, while between 8% and 35% improved their understanding of the concept after receiving tailored feedback, yielding an overall large effect size (d=1.584) (Figure 2).
- They also showed significant improvements in knowledge questions (P<.05): correct responses on post-assessment questions (compared with the pre-assessment responses) were between 19% and 46% higher after CME completion, resulting in an overall large effect size (d=0.881) (Figure 3).

CONCLUSIONS

Problem-based education incorporating clinical decisions and targeted guidance was successful in improving knowledge and performance of neurologists on effective management of LGS, its clinical features, risks, and benefits of available treatment options, and strategies for managing refractory seizures. The need for further education was seen in such areas as the role of dietary strategies for managing LGS; surgical interventions; combination drug therapy; and modification of treatment to increase efficacy or minimize adverse events.

REFERENCES


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