Utilizing Advanced Analytic Phases to Improve Education and Outcomes for CE Focused on Opioid Induced Constipation

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### Educational Design

This case-based, two-part online CE/CNE curriculum focused on the diagnosis and management of opioid-induced constipation (OIC). The program utilized a phased outcomes study design, where the Phase 2 activity was informed by advanced analytics performed on the Phase 1 activity.

### Phased Outcomes Study Design

Phase 1 included full outcomes analyses and predictive modeling approximately 90-days post-activity launch to identify persistent gaps. Phase 2 content and instructional design addressed the Phase 1 findings. A final outcomes analysis was performed (following the completion of Phase 2) including: (1) resolution of the original predictive model, (2) final domain and item-level assessment and retention analysis, and (3) a final, phase inclusive, predictive model providing applications for future educational initiatives.

### Outcomes Hypothesis

A phased approach to outcomes assessment, paired with advanced analytics (predictive modeling) and benchmarking, leads to targeted sustainable improvement in learners’ practice behaviors.

### SUMMARY OF OUTCOMES FINDINGS

Statistically significant gains were measured from Pre-Test in all learning domains and learning objectives (Moore’s levels 3-5). Domain gains ranged from 67% to 82%; these gains were primarily sustained by the eight-week follow-up.

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<thead>
<tr>
<th>Pre-Test Average</th>
<th>Post-Test Average</th>
<th>Change</th>
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<td>58.44%</td>
<td>73.95%</td>
<td>15.51%</td>
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### CLINICAL IMPACT: PREDICTIVE MODELING (PHASE 1)

Learners were challenged by knowledge and competency around treatment protocol for OIC. Results of the Phase 1 predictive model identified four-drivers influencing the gap. The Phase 2 activity focused (in content and design) on these drivers and the identified gap, and particular cohort groups that demonstrated deficits. At the conclusion of the program, the Phase 1 model was resolved. Results indicated that improvements on the identified gap and associated drivers showed a 20% improvement, within 5% of the predicted magnitude of change (25%).

### MODEL 1 (PHASE 1/PHASE 2)

**Phase 1 Results: Drivers**

- High Confidence (-)
- Region (-)
- Communication (+)
- Practice Strategy (+)

**Phase 2 Resolution: Drivers**

- High Confidence 3% ▼
- Region 3% ▼
- Communication 10% ▲
- Practice Strategy 11% ▲

**Knowledge**

- Prophylaxis 69%

**Competency**

- Differential diagnosis/protocol 77%

**Performance**

- Communication and tx protocol 72%

**Predicted Magnitude of Change**

- 25%

**ACTUAL Magnitude of Change**

- 20%

### CONCLUSIONS

This program successfully improved learner proficiency concerning the diagnosis and treatment of OIC, by utilizing an advanced analytic technique to address learning gaps through the identification of important demographic and clinical drivers of change. This, combined with the use of peer-benchmarking, introduces a powerful methodology to both drive and validate learner improvement over time.

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