Background

Conventional multiple choice examinations fail to assess important aspects of clinical behavior. Increasing emphasis is being placed on competency-based assessments in geriatric medicine. Competency-based structured clinical examinations assessing applied knowledge in the inpatient geriatric setting are needed.

Hypothesis

1. Competency-based examination will distinguish clinical skills based on level of experience and training.
2. Performance on competency-based examination should improve after a dedicated educational experience designed to teach these clinical skills.

Objective

Derivation and validation of a novel examination designed to evaluate application of medical knowledge to clinical care in the inpatient setting using Core Competencies from Geriatric and Hospital Medicine.

Methods

1. Case Development and Derivation of Scoring
   The case was designed to cover 10 inpatient geriatrics competencies. Trainees asked to write admission orders. Test reviewed by 20 expert educators in geriatrics and hospital medicine at 6 academic medical centers. The scoring system applied relative weighting for the importance of action on each competency using average judgment of the experts standardized to a 100 point scale.

2. Cohorts
   Construct validity examined in a cohort of 10 third year medical students (MSIII), 10 interns (R1) without prior inpatient geriatrics training, and 6 experienced third year residents (R3-post) who had completed an ACE rotation. The second hypothesis was tested in an independent cohort of 11 second year residents both before (R2-pre) and after (R2-post) a dedicated inpatient ACE rotation.

Case Description

An elderly woman who began to have increased falls and functional limitation after toe amputation and new initiation of amitriptyline one month before admission. The acute trigger for hospitalization was increased weakness induced by systemic infection (MRSA abscess/cellulitis) beginning approximately 3 days prior to admission. Decreased oral intake caused acute on chronic renal failure. Impaired clearance of digoxin led to toxicity manifesting as nausea and visual changes. The final event bringing her to medical attention was inability to rise after a fall.

Results-

<table>
<thead>
<tr>
<th>Level of Training</th>
<th>Average Score</th>
<th>IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSIII</td>
<td>49%</td>
<td>34%-63%</td>
</tr>
<tr>
<td>R1</td>
<td>62%</td>
<td>56%-68%</td>
</tr>
<tr>
<td>R2-pre</td>
<td>70%</td>
<td>65%-76%</td>
</tr>
<tr>
<td>R2-post</td>
<td>91%</td>
<td>87%-100%</td>
</tr>
<tr>
<td>R3-post</td>
<td>86%</td>
<td>80%-88%</td>
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</tbody>
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MSIII = Third year medical student, R1 = first year resident, R2=2nd year resident, R3= 3rd year resident

Competencies

1) Empiric Antibiotic Selection: Initiate empiric treatment of cellulitis based on host exposures, predisposing underlying systemic illness, history and physical examination, presumptive bacterial pathogens, and evidence based recommendations.
2) Prescribing in renal insufficiency: Prescribe appropriate drugs and dosages considering age related changes in renal function.
3) Diabetes Management: Develop individualized diabetic regimen to optimize glycemic control and prevent the development of complications from diabetes.
4) Consider Adverse Drug Events (ADE's): ADE's considered in the differential diagnosis of new symptoms or geriatric syndromes.
5) Prevent Venous thromboembolic disease (VTE): Perform VTE risk assessment and initiate prophylaxis measures including pharmacologic agents, mechanical devices, and/or ambulation to reduce the likelihood of venous thromboembolism.
6) Foley Catheter Management: Discontinue or document indication for Foley catheter.
7) Fall Risk Assessment: Evaluate for fall risk and immobility; institute appropriate measures.
8) Medication management: Evaluate for inappropriate medication prescribing; institute appropriate changes.
9) Bowel and bladder dysfunction: Detect, evaluate and initiate management of bowel and bladder dysfunction.
10) Prescribing high risk drugs: Discuss and document the rationale for their use, alternatives, and ways to decrease side effects.

Summary

Significant relationship between level of trainee and score on the pre-tests (p<0.001).
Significant difference between the R2 scores pre and post exposure to inpatient geriatric rotations (p<0.001).
No significant difference was seen between R2 and R3 scores after the inpatient geriatric rotation.

Conclusions

The competency-based admission order practical exam is a new tool to evaluate application of clinical knowledge across a range of learner experience. It distinguishes superior clinical management based on level of training. (Hypothesis 1)
Proficiency on this competency based-examination can be accelerated through dedicated curriculum combined with a focused inpatient geriatric rotation. (Hypothesis 2)
Methodology used in the development of this examination can be applied to the creation of other competency-based practical examinations.

References


Examination and Scoring System at: http://www.pogoe.org/node/2455