Using Visual Radar Graph Representation of Learner Achievement to Complement the RIME Framework

Juan Cendán, MD; associate professor of surgery and assistant dean for simulation; Caridad Hernández, MD; associate professor of medicine; and Analia Castiglioni, MD; associate professor of medicine, University of Central Florida, College of Medicine

- The RIME (Reporter, Interpreter, Manager, Educator) evaluation framework developed by Pangaro1 can be used to yield insight into a trainee’s development.
- A previous AM Last Page2 presented a tabular map of the RIME framework as it relates to the Accreditation Council for Graduate Medical Education (ACGME) competencies.3
- Keister and colleagues4 have validated the use of radar graphs as promising tools for feedback and assessment of trainees.
- Achievement of milestones and progression along the RIME axes can be visually represented for formative or summative evaluation.
- Modification to Pangaro’s developmental markers (Introduced, Repeated practice, Proficiency, Mastery) with a minor mathematical manipulation allows representation as a visual radar graph for the RIME framework.
  - The mathematical conversion is necessary to give relative value to each step in the progress.
  - The conversion scale can be developed locally by programs to highlight the relative value given to these constructs at individual training programs.

<table>
<thead>
<tr>
<th>Stage in progress achieved by learner</th>
<th>Code abbreviation</th>
<th>Value attached to stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduced</td>
<td>I</td>
<td>10</td>
</tr>
<tr>
<td>Repeated practice</td>
<td>R</td>
<td>20</td>
</tr>
<tr>
<td>Proficiency sufficient for next level of competence</td>
<td>P</td>
<td>30</td>
</tr>
<tr>
<td>Mastery in sophisticated complex situations or procedures</td>
<td>M</td>
<td>40</td>
</tr>
</tbody>
</table>

* M is equivalent to P² from Rodriguez and Pangaro’s AM Last Page.2

The Process of Converting Developmental Markers to a Radar Graph Value

In this radar graph we see the typical performance of a post-graduate year (PGY) 1 resident at this institution on the Reporter framework axes. The resident “x” has been scored by faculty using the value system described above. On inspection, the resident is at/near peer performance levels on four ACGME/IU subcompetencies but below par on three others.

Stages in progress are I = Introduced to, R = Repeated practice, P = Proficiency, and M = Mastery.

Roles for the Visualizations
- The learners being evaluated can see their individual graphics represented against the progress of their peer groups.
- The program leaders or administrators can investigate curricular goal delivery with metrics regarding individuals as well as the aggregate of learners.

Implications
Through a simple mathematical conversion, learner performance along ACGME competencies can be charted to a radar graph. Inspection of the graphs can yield insight into the progression of a learner’s development and whether he or she is underperforming with respect to RIME levels. Visual representation complements the RIME framework by providing evaluation and feedback data to the learner and teacher on both an individual and program basis.

References:

First published online July 8, 2014

Academic Medicine, Vol. 90, No. 10 / October 2015