

Resident Self-Assessment and Learning Goal Development: Evaluation of Resident-Reported Competence and Future Goals

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The authors declare that they have no conflict of interest.

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ABSTRACT

OBJECTIVE: To determine incidence of learning goals by competency area and to assess which goals fall into competency areas with lower self-assessment scores.

METHODS: Cross-sectional analysis of existing deidentified American Academy of Pediatrics' PediaLink individualized learning plan data for the academic year 2009–2010. Residents self-assessed competencies in the 6 Accreditation Council for Graduate Medical Education (ACGME) competency areas and wrote learning goals. Textual responses for goals were mapped to 6 ACGME competency areas, future practice, or personal attributes. Adjusted mean differences and associations were estimated using multiple linear and logistic regression.

RESULTS: A total of 2254 residents reported 6078 goals. Residents self-assessed their systems-based practice (51.8) and medical knowledge (53.0) competencies lowest and professionalism (68.9) and interpersonal and communication skills (62.2) highest. Residents were most likely to identify goals involving medical knowledge (70.5%) and patient care (50.5%) and least likely to write goals on systems-based practice (11.0%) and

professionalism (6.9%). In logistic regression analysis adjusting for postgraduate year (PGY), gender, and degree type (MD/DO), resident-reported goal area showed no association with the learner's relative self-assessment score for that competency area. In the conditional logistic regression analysis, with each learner serving as his or her own control, senior residents (PGY2/3+) who rated themselves relatively lower in a competency area were more likely to write a learning goal in that area than were PGY1s.

CONCLUSIONS: Senior residents appear to develop better skills and/or motivation to explicitly turn self-assessed learning gaps into learning goals, suggesting that individualized learning plans may help improve self-regulated learning during residency.

KEYWORDS: learning goal; medical education; resident; self-assessment

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WHAT'S NEW

Senior residents were more likely to set goals related to self-identified deficits than were interns. This suggests that individualized learning plans may help residents develop self-regulated learning skills.

DEVELOPMENT OF SELF-REGULATED learning skills is essential to lifelong learning and a critical step toward becoming an effective physician.^{1–4} Documentation of lifelong learning and self-assessment is required by the Accreditation Council for Graduate Medical Education (ACGME)⁵ and the American Board of Medical Subspecialties⁶ for residency training, board certification, and maintenance of certification. All residents must “continuously improve patient care based on constant self-evaluation and life-long learning,” including being

able to “identify strengths, deficiencies and limits in one's knowledge and expertise,” “set learning and improvement goals,” and “identify and perform appropriate learning activities.”⁵ In pediatrics, every training program must use individualized learning plans (ILPs) to document resident self-assessment and self-regulated learning annually.⁷ Self-regulated learning involves an iterative cycle of reflection, setting learning goals, and developing and monitoring plans for achieving those goals.^{3,4} However, learners may not feel equally competent with all aspects of the self-regulated learning cycle.

Previous studies showed that residents felt comfortable assessing their strengths and weaknesses but felt less comfortable developing learning goals and plans for achieving those goals.^{8,9} Although previous research has found that physicians are poor self-assessors,^{10,11} self-assessment can improve with feedback,^{12–14} and

self-assessment has been described as the main influence on appropriate learning goal formation.¹⁵ Because learning goal development is an important step in self-regulated learning, we were interested in exploring how a self-assessment process informed learning goal formation. Our prior work found that residents selected subcompetencies on which to focus their learning that correlated with those where they rated their abilities lower.¹⁶ However, we did not know whether residents actually wrote learning goals to improve those areas of weakness.

In this study, we used the American Academy of Pediatrics' (AAP) PediaLink database to examine residents' written learning goals. PediaLink is an online platform where residents can build and document their ILPs. Using the 2009–2010 PediaLink ILP data, we categorized learning goals by ACGME category and examined whether residents chose to work on learning goals in areas where they identified themselves as weaker.

METHODS

We received institutional review board exemption from the University of California Davis and expedited review approval from the AAP for this study protocol.

We performed a cross-sectional analysis of the deidentified AAP PediaLink ILP database for the 2009–2010 academic year (July 1, 2009, to June 30, 2010). As part of their ILPs, residents completed a self-assessment (rating of subcompetencies), noted which subcompetencies they wanted to work to improve, and then wrote specific learning goals and strategies to achieve their goals.

Residents self-assessed their competence in each of the 6 ACGME core competencies: patient care (PC), medical knowledge (MK), interpersonal and communication skills (ICS), professionalism (Prof), practice-based learning and improvement (PBLI), and systems-based practice (SBP). Each core competency was divided into subcompetency areas, defined according to the original ACGME pediatric residency requirements.¹⁷ Residents completed self-assessments on 7 PC, 2 MK, 5 PBLI, 5 ICS, 5 Prof, and 5 SBP subcompetencies. By default, competency assessments are scored as 0 in the PediaLink data set. Therefore, in order to exclude those who did not complete their competency assessments, computed mean core competency scores were only computed when at least 1 nonzero item score was recorded among the final set of items within a domain.¹⁶ The core competency score was calculated as the mean of the subcompetency scores within each core competency. The overall competency score was calculated as the mean of all core competency scores. The mean difference score was calculated as the difference between each core competency score and the overall competency score.

Residents were asked to “review the 6 core competency areas and select at least 1 element for improvement.” Residents were then instructed to “develop SMART (Specific, Measurable, Achievable, Realistic, Time-bound) objectives to help you achieve your goals and improve in the areas you have selected in this learning plan.” They were not required to link their written goal to their weakest

competency areas. Residents could also view sample learning goals. During the academic year, residents were permitted to complete more than one version of their ILP.

We partitioned learning goals into 9 categories: PC, MK, PBLI, ICS, Prof, SBP, future plans (FP), personal attributes (PA), and other. A codebook was developed by one investigator (STL) using examples from the first 29 learning goals to illustrate each of the categories. The coders (STL, AEB, AG, SG, RFT, JDM) utilized the codebook to classify the next 497 learning goals. Disagreements were settled by consensus discussion and reference to ACGME pediatric competencies, and the codebook was revised on the basis of the discussion with additional clarifying examples. The remaining learning goals were assessed by 2 different randomly assigned coders selected from the coding team. Each coder reviewed and classified approximately one-third of all learning goals.

Results from coding classifications were compared, and disagreements were settled by team consensus. Learning goals in each category were reviewed a final time by all coders to evaluate the fit between the goal and its categorization. Learning goals could be classified into multiple categories. Goals not considered true learning goals (eg, responses such as “test”) were not classified or included in the iterative analysis. Learning goals with missing resident demographic information or those written by residents who graduated before 2010 were also excluded.

We created a data set with 1 record per learner with indicator variables summarizing all the ILPs from that learner. For each learning goal category, the dependent variable was coded as 1 if any of the ILPs from that learner had at least 1 written goal that fit that category and 0 otherwise. We used univariate and bivariate statistics to describe the relationship between the types of learning goals residents wrote and their personal attributes. We used mean differences and Wald confidence limits to compare the differences between the percentages of postgraduate year (PGY) 1s and PGY3s who wrote learning goals on each specific competency for all ILPs written. We used multiple linear and logistic regression to explore the relationship between categories of learning goals described and gender, level of training, and degree (MD/DO) status.

We performed a conditional logistic regression analysis, with each resident serving as his or her own control, and adjusted for type of learning goal written, competency ratings, level of training (PGY1s compared to PGY2/3 + s), and the interactions between level of learner and both the type of learning goal and the competency rating. For the conditional logistic regression analysis, we constructed a data set with 1 record per learner for each of the 6 competencies.

Level of training was determined by year of graduation. Residents graduating at the end of the year of assessment (2010) were designated PGY3s and above. Those graduating in 2011 were designated PGY2s, and those graduating in 2012 and beyond were designated PGY1s. Residents who indicated that they had a doctor of medicine (MD) or bachelor of medicine/bachelor of science (MBBS, given outside the United States) degree were collapsed into

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