

**Key Factors for Recommending Whether Residents May Serve as Supervisors: A
National Study of Clinical Competency Committee Members**

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APPD CCC Study Group

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Abstract

Background: Entrustment has become a popular assessment framework in recent years. Most research in this area has focused on how frontline assessors determine if and when a trainee can be entrusted. However, less focus has been placed on how committees charged with summative assessment tasks make entrustment decisions. This qualitative study seeks to understand the key factors that drive supervision level assignments recommended by pediatric residency clinical competency committee members.

Methods: CCC members at 14 pediatric residency programs were asked to place residents into one of five possible levels based on which supervisory role they believed the resident could serve in (ranging from not being able to serve as a supervisory resident in any setting to being able to serve as a supervisor in all settings). Participants were then asked to respond to a free text prompt asking them to describe the key factors that led them to recommend their chosen supervision level. These responses were analyzed using thematic analysis.

Results: 84/155 CCC members completed 770 resident supervision level assignments. Four themes emerged from the analysis of key factors driving these decisions: 1) trusting to supervise follows from trustworthiness; 2) demonstrated performance matters, but so does experience; 3) ability to lead a team is considered; and 4) contextual considerations beyond the resident are at play.

Conclusion: Factors internal and external to residents served as key factors in making a summative entrustment decisions in this study. This should be considered in future optimization and study of CCC processes.

Beginning with the description of entrustable professional activities (EPAs) in the Netherlands and extending to the delineation of EPAs for entire specialties and phases of training, the entrustment framework has become a prevailing approach to competency-based medical education in recent years.¹⁻⁵ Most research in this area has focused on how frontline assessors determine when a trainee can be entrusted fully, partially, or not at all.⁶⁻¹⁰ However, contemporary assessment practice are placing greater responsibility for summative assessment decisions on clinical competency committees (CCCs) and “entrustment committees,” which are removed from the clinical learning environment.^{11,12} These committees are tasked with reviewing assessment data and making comprehensive decisions, often including which activities trainees are allowed to perform without supervision. With these committees in place or in the works, ongoing entrustment research must focus on how these groups arrive at assessment decisions.

To further understand this area, this multi-site study seeks to understand the key factors that pediatric residency program CCC members consider when assigning residents they review to a recommended supervision level.

Methods

Study Setting

Fourteen pediatric residency programs (Figure 1), representing a range of size and geographical location, in the Association of Pediatric Program Directors (APPD) Longitudinal Educational Assessment Research Network (LEARN) participated in this study during the 2015-2016 academic year.

Data Collection

All CCC members at participating sites were eligible to participate, and site leads recruited from this convenience sample. Eligible residents were considered to be all categorical pediatric residents at each site. As part of their biannual review and milestone assignment process during the 2015-2016 academic year, participating CCC members were asked to recommend residents they reviewed for one of five supervision levels, as shown in Figure 2. They indicated their recommendations via an online survey.

Participants were asked to respond to a free text prompt to describe the key factors that led them to recommend that supervision level (questions shown in Appendix 1). Prior to survey administration, all questions were reviewed and edited by a group of 12 residency and medical education research leaders.

Data Analysis

The authors inductively analyzed response data using thematic analysis.¹³ Dedoose (version 7.5.15, SocioCultural Research Consultants, Manhattan Beach, CA) was used to facilitate organization and coding of data.

Three authors (DJS, AP, and CM) first independently read and reread all collected responses to become familiar with the data. They next independently coded data for each supervision level, developing a unique codebook for each. The five supervision levels were coded separately to allow for analyzing trends in key factors across supervision levels. The coding team named codes across levels consistently whenever possible to

facilitate this ultimate goal. Following independent coding, the primary coders iteratively reconciled disagreements and agreed upon a final codebook for each supervision level.

Two secondary coders (KWB and BK) then independently coded data from the first 100 responses in the “all settings” supervision level and half of the responses from the other four levels, using the codebooks developed by the primary coders. The secondary coders found a few instances where a code present for one supervision level could replace a separate code in another level, thus reducing the total number of codes. They also suggested combining similar codes within levels in a few instances, simplifying the codebooks further.

Before proceeding with higher-level analysis, similar codes existing in more than one supervision level were grouped together, with notation of which supervision level they came from. The five coders then worked iteratively to group codes into categories and coalesce categories into themes. Categories were developed by grouping codes that were similar. Themes were developed by grouping categories that represented key patterns in the factors CCC members used to select supervision categories.¹³

To ensure credibility, the analysis plan allowed for triangulation between independent coding by select authors. We sought to ensure transferability (e.g., generalizability) through obtaining data from multiple CCC members at several residency programs, with a goal of achieving a representative case sampling. Finally, we sought to promote confirmability in the structure of the coding team. Two members of this team (AP and

BK) were not site investigators, not physicians, and had no previous experience serving on a CCC. These coders helped to ensure that other members of the coding team, all physicians with residency leadership experience, did not impose undue personal bias during the coding process, as we believed knowledge of CCC processes offered both a potential strength for trustworthiness of our findings but also a potential concern for confirmability if reflexivity was not attended to.

The Institutional Review Board at Cincinnati Children's Hospital Medical Center (lead site) granted exempt status to this study. The IRB at each participating program also reviewed and approved this study.

Results

Across 14 participating programs, 84/155 CCC members completed 770 resident forms over two CCC review cycles. The majority of forms categorized residents as being able to supervise in all settings (level 5; n=512), with the remaining forms having the following distribution among the supervision levels: all settings but borderline (level 4; n=56), some settings (level 3; n=47), some settings but borderline (level 2; n=80), not able to serve as a supervisor (level 1; n=67), and unable to assign a level (n=8).

Four themes emerged from our analysis of how CCC members categorize residents into supervision levels. These themes were: 1) trusting to supervise follows from trustworthiness; 2) demonstrated performance matters, but so does experience; 3) ability

to lead a team is considered; and 4) contextual considerations beyond the resident are at play. These themes and representative quotations are described in detail below.

Overall, there were no appreciable differences in the key factors used to place residents in borderline levels compared to non-borderline ones. However, participants offered several key factors that were unique to the “able to supervise in all settings” and “not able to serve as a supervisor” levels (i.e., the entrustment extremes of levels 5 and 1, respectively), and we highlight and expand on these below.

Theme #1: Trusting to Supervise Follows from Trustworthiness

Participants noted trustworthiness as a key factor influencing the placement of residents into all of the supervision levels. Sometimes they explicitly referenced “trust” (CCC Member Participant #59, Supervision Level 2) or made a more global reference to how much a resident was trusted:

"Faculty felt comfortable with her in charge of patients when they were at home"
(CCC Member Participant #13, Supervision Level 5)

"Could practice independently...even without 6 months more training"
(Participant #84, Level 5)

In other instances, CCC members described characteristics germane to determining trustworthiness. These included the ability, or lack thereof, to provide safe care and do

what was right, with explicit references to safe care emerging only in the two extreme supervision levels.

"Error frequency" (Participant #34, Level 5)

"Prioritiz[es] responsibilities to provide patient care that is safe, effective and efficient" (Participant #56, Level 5)

Clinical characteristics important to trustworthiness were also mentioned, including dependability, clinical judgment, and confidence in decision-making:

"Unable to complete basic tasks reliably" (Participant #84, Level 1)

"Good knowledge base, which she is able to apply in common sense fashion"
(Participant #51, Level 5)

"Not paralyzed with indecision" (Participant #64, Level 5)

"Decisive personality" (Participant #51, Level 5)

Finally, CCC members described components essential to trustworthiness that focused on residents' willingness to stop in the face of uncertainty, seek help when needed, and demonstrate commitment to improvement. While these characteristics were described in

all supervision levels, specific concerns about trainees' reticence to ask questions or proceed without understanding were called out in the lowest level.

"Appears to carry out the plan but not understand why" (Participant #37, Level 1)

"Good at asking questions of things she doesn't know, rather than just winging it"
(Participant #32, Level 4)

One participant even noted knowing one's limitations and appropriate help seeking as justification for overlooking more global weaknesses:

"The most important aspect is that while she is one of our weaker residents, she very much knows her limits and when/how to ask for help" (Participant #32, Level 4)

Theme #2: Demonstrated Performance Matters, but so Does Experience

CCC members felt that both clinical performance and clinical experience across settings, such as critical care and general pediatrics, were important for determining residents' supervision categories.

"...even with all of that, I would only propose that she supervise students in settings to which she has already been exposed" (Participant #28, Level 2)

"Demonstrated success in the inpatient pediatric ward" (Participant #75, Level 3)

"[Had] exposure to various rotations" (Participant #11, Level 5)

Experience was noted as a key factor across all supervision levels, with critical care experience being noted as a consideration only when placing residents at the highest level. Additionally, *performance* on a critical care rotation was only noted for the highest two supervision levels.

When considering demonstrated performance, participants made reference to specific areas of clinical performance, including medical knowledge, ability to discern nuances and subtleties in clinical care, communication skills, organization and prioritization, and systems-based practice. With the exception of systems-based practice, participants discussed these areas as key factors for assigning residents to all five supervision levels. Systems-based practice was noted as a key factor for all supervision levels except "some settings but borderline for that role" (level 2). Illustrative responses referencing these areas of performance include:

"Has not yet mastered skills of an intern (organization, communication, prioritization of care)" (Participant #27, Level 1)

"Needs to become more familiar with the system before he would be capable to supervise others" (Participant #57, Level 1)

"Intimate knowledge of hospital system" (Participant #24, Level 5)

"Able to understand nuances of patient diagnoses" (Participant #5, Level 5)

"Excellent medical knowledge with above average ability to synthesize, analyze data and develop management plans incorporating recent literature" (Participant #73, Level 5)

When placing residents at the highest supervision level, participants also made references to extremes of performance demands. These included being "very calm under pressure" (Participant #32, Level 5) and managing complexity well. Participants also noted care coordination and "accept[ing]...ambiguity at an appropriate level" (Participant #64, Level 5) when placing residents in the highest supervision level.

Participants noted professionalism in general as well as a few specific areas of professionalism (patient commitment and advocacy as well as professional identity) that served as key factors for assigning residents to all but the lowest supervision level.

"Heavily invested in care, learners, and teams" (Participant #28, Level 3)

"Very strong professionalism allowing for full follow-through on all aspects of residency" (Participant #17, Level 5)

"Professionalism with strong understanding of role of physician" (Participant #44, Level 5)

"Sense of duty and commitment to her patients" (Participant #39, Level 5)

A final area of performance that CCC member participants discussed was the degree to which residents demonstrated characteristics of being self-directed learners.

"Demonstrated excellent self-directed, internally motivated learning, utilizing self-assessment skills and external feedback to continue to improve her performance and strengthen areas of practice" (Participant #73, Level 5)

Participants also noted several factors driving their supervision categorizations that cut across specific areas of performance, including developmental progression, comparison to peers and expectations, undergoing remediation, resident reputation, and personal experience working with that resident.

"Intern is currently undergoing remediation and we would not allow someone to supervise while that is happening" (Participant #84, Level 1)

"Lower than class average milestone scores in most areas" (Participant #27, Level 1)

"A number of people have expressed concern about her performance, and we have discussed her in the CCC many times thus far this year. Even some residents have expressed concern about her, which was a major concern to me" (Participant #21, Level 1)

"Improvement seen over time" (Participant #22, Level 2)

"Adequate growth in milestones" (Participant #82, Level 4)

"I have worked with the resident quite a bit over the course of her training, which helped me to feel comfortable with my decision" (Participant #21, Level 5)

Theme #3: Ability to Lead a Team is Considered

Participants noted various characteristics important in leading a team as key factors driving their supervision level categorizations. These had a valence for the highest level but were discussed to some degree in all levels. The first such area was simply possessing or lacking team leadership skills.

"Intern is still developing their leadership skills...a solid performer who is where she is supposed to be for a mid-year intern, but not ready to lead a team"
(Participant #22, Level 1)

"Multiple faculty members commented on her ability to run a service"

(Participant #13, Level 5)

They also noted characteristics of being a strong leader, such as "maturity" (CCC Participant #79, Level 2) and possessing a "calm...demeanor" (Participant #78, Level 5) as well as being an effective teacher and "provid[ing] good instruction to med students/interns." (Participant #78, Level 5)

Finally, participants took note of demonstrated abilities when in the role of supervisor previously:

"This resident has had multiple opportunities to supervise both on call and in settings in which other learners require supervision. Evaluations support this has been consistently done. In addition, peer evaluations support that peers value this individual as a supervising resident" (Participant #75, Level 5)

"Diligent in patient care/supervision" (Participant #78, Level 5)

Theme #4: Contextual Considerations Beyond the Resident are at Play

Factors related to the clinical learning environment and structure of the residency program served as notable considerations for some CCC member participants as they sought to determine their supervision categorizations for residents.

Volume and acuity considerations were used to both advance as well as hold residents back from certain supervisory roles. These factors had polarity for the extremes, as both were discussed only when placing residents in the lowest two supervision levels or the highest level.

"Not yet at the level to supervise in high acuity/high volume settings" (Participant #64, Level 1)

"Able to manage high volume, high acuity situations" (Participant #67, Level 5)

"Successful and thrived in a high volume and high acuity environment like the [neonatal intensive care unit]...[and] on a challenging inpatient subspecialty service with difficult patients and multiple attendings" (Participant #18, Level 5)

Supports that may or may not be available for residents were also important when choosing supervision levels.

"I don't know that the resident was so much ready as that there is additional supervision by seniors and attendings in place while allowing this intern to work on supervisory skills with med students" (Participant #58, Level 2)

The availability of back-up supervisors for a resident serving in a supervisory role was explicitly noted as a key factor only when placing residents in one of the borderline

levels, either “able to serve as a supervisor in all settings but borderline for this role” or “able to serve as a supervisor in some settings but borderline.” Some participants were even willing to advance residents to a higher supervisory level with the caveat of recommending adjustments to schedules that would postpone supervisory rotations until later in the year

"Schedule changes made supervisory role later in second year of training"

(Participant #78, Level 4)

Finally, training level rules set by the program served to hold some residents back who might have otherwise been deemed fit for a higher supervision category.

"Individual is an intern, but will be able to supervise once they get to junior year in 6 months" (Participant #1, Level 1)

Discussion

This study found four themes that describe the key factors CCC members use when recommending residents they review for one of five levels of supervisory ability. This categorization represents a summative entrustment decision. Recently, Olle ten Cate has advocated four factors that drive entrustment decisions: perceived trustworthiness, risks, benefits, and the trust propensity of the “trustor.”¹⁴ All of these factors are represented in the themes identified in this study. However, our study continues to place particular focus on the trustworthiness construct that has been described in recent years.^{8,14,15}

Trustworthiness

In recent years, various components of trustworthiness, or characteristics that individuals demonstrate which lead others to place trust in them, have been described.^{8,14,15} In a model arising from medicine, Kennedy and colleagues describe four components of trustworthiness: knowledge and skill, discernment (i.e., knowing limits and seeking help appropriately), conscientiousness (i.e., reliability and follow through), and truthfulness.⁸ Participants in our study noted the first three components served as key factors in the supervision levels they recommended for the residents they reviewed. Our findings add further validity evidence to Kennedy's construct. Perhaps equally important, our findings offer additional support for using the trustworthiness framework for the purposes of assessment.

While trustworthiness was important for all entrustment decisions, explicit references to residents' abilities to provide safe care were only noted for the highest and lowest supervision levels. While almost certainly important for any summative assessment or advancement decision in medicine, perhaps safe care is most considered when deciding to fully trust someone or to not trust someone at all.

Experience and Performance

Participants noted that experience was important when placing residents in each of the supervision levels. However, critical care experience was noted as a key factor only when placing residents in the highest level (ability to serve as a supervisory resident in all

settings). When choosing one of the “some settings” levels, participants often noted either outpatient or inpatient general pediatric contexts as the settings in which they imagined the resident could serve as a supervisor. Thus, perhaps expectedly, CCC members seemed to use critical care experience as a driver of being able to serve as a supervisor in all settings, but did not seem to consider critical care as a place that residents had the ability to supervise in when not choosing this level.

Performance at the extremes of demands, care coordination, and ability to manage ambiguity were all noted to be key factors in choosing the highest supervision level. These factors likely reflect higher order abilities that participants use to discern placement at the highest level. This finding underscores the importance of collecting assessment data in these areas for residents that are further along in their development. Data in these areas are likely to be of benefit in making continued advancement and summative assessment decisions, and also to provide learners with the most meaningful data to take the next steps in their development.^{16,17}

A final interesting revelation is that professionalism does not serve as a key factor for placing residents in the lowest supervision category (may not serve as a supervisory resident in any setting). Perhaps professionalism is not even considered when there is a lack of achievement in the fundamentals.

Ability to Lead a Team

Ability to lead teams as a key factor in supervisory entrustment was an important finding of this study, although it was striking that a number of responses included here reflected characteristics of individuals, such as maturity and composure, which are likely not frequently or explicitly included in residency curricula or assessment structures. This raises the question of whether programs should be carefully considering these characteristics at selection, whether their early presence predicts entrustment trajectories, and how we can foster these characteristics over time.

Contextual Considerations

When placing residents in one of the borderline levels, the availability of other supervisors as back-up was a key factor noted by participants. Advancing these residents to a borderline level with support available rather than keeping them at the next lowest level seems critical, not only for ensuring safe care, but also for placing residents at the leading edge of their development with just enough scaffolding to support them and develop their capabilities into their next level of competence.^{18,19}

Some participants noted a willingness to advance residents to a higher supervisory level with adjustments made to their schedule, such as supervisory rotations coming later in the year to allow more growth in the interim. Although a practical solution, this raises questions about the integrity of decisions made prematurely that depend on an expected trajectory and the need for more dynamic assessment structures that can reassess these decisions over time.

Participants discussed volume and acuity as key factors only when placing a resident into a supervisory level at one of the extremes. On the lower extreme, concerns about the ability to manage higher volume and acuity were a key factor in holding a resident back from a higher level. On the upper extreme, CCC members used the ability to manage higher volume and acuity as a key factor for advancing a resident to that level. Both volume and acuity impact workload, and residents who are early in training have noted the cognitive burden that each new patient adds for them, reporting that they feel they learn best with no new admissions on an inpatient service.²⁰ It seems that learners and CCC members alike recognize the implications of even small increases in volume or acuity and how these can impact performance. Attending to these factors in assessment is likely important not only for making advancement decisions, but also for designing systems in which resident staffing is safe and beneficial for both residents and patients.

Limitations

This study has limitations. First, it was conducted in a single specialty, and the findings may not fully transfer to other specialties. Second, our study design did not allow for follow-up questions to clarify participants' responses or further elaborate upon them. This said, we had 84 CCC member participants who provided information on the key factors they considered in making over 750 decisions about what supervisory level they would recommend for residents. In completing this task, many participants offered multiple clear key factors that drive their decision-making. Third, three members of the coding team have experience as residency program leaders and with leading CCC efforts, presenting the potential for bias in their coding. We believe ensuring two other coders

without personal experiences in program leadership or CCC membership provided balance to this potential bias. Finally, all data was self-reported by CCC members without objective data concerning their review process.

Conclusions

Our study found that CCC members consider trustworthiness, demonstrated performance, and leadership skills when determining the supervisory role in which residents can serve. These factors all focus on residents' abilities. However, experience and contextual considerations beyond the resident also serve as key factors in these decisions. The interplay of factors internal and external to residents in CCC decision-making is important to consider as CCC processes are optimized and studied further.

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Disclaimers: None

Previous Presentations: Data from this study has been previously presented in oral form at the 2017 International Conference on Residency Education in Quebec, Canada on October 20, 2017.

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Figure 1: APPD LEARN CCC Study Programs

Program	Boston Combined Residency Program in Pediatrics (Boston Children's Hospital/Boston Medical Center)	Cincinnati Children's Hospital Medical Center	Duke University	Icahn School of Medicine at Mount Sinai	Massachusetts General Hospital	Naval Medical Center San Diego	Phoenix Children's Hospital/Maricopa Medical Center Pediatric Residency Program	St. Christopher's Hospital for Children	University of Arizona	University of California Davis	University of Illinois at Chicago	University of Rochester
Program Type	Free standing children's hospital with about one-third of time spent at urban safety net hospital with pediatric units within an adult hospital	Free standing children's hospital	Children's hospital within a hospital	Children's hospital within a hospital	Children's hospital within a hospital	Pediatric program in military hospital	Free standing children's hospital	Free standing children's hospital	Children's hospital connected to adult hospital	Children's hospital within a hospital	Children's hospital within a hospital	Free-standing children's hospital about one-third of time at a community hospital (pediatric floor/unit) within an adult hospital
Program Size	117 residents	120 residents	45 residents	60 residents	42 residents	22 residents	96 residents	76 residents	48 residents	39 residents	38 residents	44 residents
CCC Size	20 members	35 members	12 members	7 members	17 members	9 members	6 members	20 members	5 members	14 members	12 members	10 members

Figure 2: Supervision Levels

Level 1: May not serve as a supervisory resident

Level 2: May serve as a supervisory resident in some settings, but is just above the borderline/marginal mark for serving in this role

Level 3: May serve as a supervisory resident in some settings

Level 4: May serve as a supervisory resident in all settings, but is just above the borderline/marginal mark for serving in this role

Level 5: May serve as a supervisory resident in all settings

Appendix 1

Key Factors Questions Posed to Participants

If may supervise in all or some settings was chosen:

“What were the key factors that made you feel this resident was ready to serve in a supervisory role?”

If a borderline option was chosen: “What were the key factors that made you feel this resident was borderline?”

If may not supervise was chosen: “What were the key factors that made you feel this resident may not serve in a supervisory role?”