# Applying Self-Determination Theory to Redesign an Inpatient Care Team

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## WHAT'S NEW?

We describe a redesign of a pediatric rotation in an intermediate care unit that effectively utilized self-determination theory to improve the supervisory residents' educational experience.

ONE CHALLENGE INHERENT to medical education is balancing learners' desire for autonomy with the need for supervision to ensure safe, high-quality care while facilitating trainee well-being.[1−3] The construct of self-determination theory (SDT) offers a framework for navigating this conflict[4] by recognizing that motivation enhances learning by satisfying an individual's innate psychological needs in 3 domains: 1) autonomy, defined as the drive to be the originator of one's behavior with the ability to exercise free will in choosing goals; 2) competence, defined as the need to feel efficacious in one's actions; and 3) relatedness, defined as the need to feel connected with others and valued by one's community. Prior studies have documented that educational interventions and curriculum designed by applying SDT can improve the learning climate and decrease resident burnout.[3,5−8]

Pediatric critical care medicine is one setting in which support for autonomy, competence, and relatedness can be particularly challenging.[9] Residents' experience caring for high-acuity patients may be facilitated in pediatric intermediate care units (IMCUs), where patients have lower acuity than in a pediatric ICU but still have high illness severity and/or technology dependence. Many academic hospitals with pediatric residencies have such units, with broad variation in residents' roles and staffing.[10] At our freestanding, tertiary children's hospital, pediatric residents rotate through our 12-bed IMCU, also staffed by an in-house attending, a 1:2 nursing ratio, and 2 weekday nurse practitioners. Although, historically, residents rated the rotation highly, feedback identified shortcomings in their ability to exercise independence in clinical practice and in feeling like integral members of the interprofessional team.

## EDUCATIONAL APPROACH AND INNOVATION

### INNOVATION

The pediatric residency and IMCU leadership partnered to redesign the staffing model for the IMCU based on the tenets of SDT beginning July 2017. Redesign elements as identified in the Figure included scheduling changes aimed at increasing continuity among the providers and the addition of a supervisory resident to allow for 2 intern-resident pairs who rounded in parallel, with the attending alternating between the pairs depending on patient needs and acuity. This redesign intentionally targeted SDT via the mechanisms listed in the Figure.

### ANALYSIS

We created a survey to assess the effectiveness of the rotation redesign based on impact on the constructs of SDT. Our survey targeted postgraduate year 2 (PGY2) and PGY3 residents who had supervised in the IMCU. Residents who rotated in 2016−2017 prior to the redesign served as a comparison group, and residents who rotated in 2017−2018 after the redesign served as the intervention group. Both groups received identical electronic anonymous surveys about their IMCU experience as it related to the domains of SDT. The survey asked the residents to rate their agreement with the statement, "My experience in the IMCU fostered my sense of 1) autonomy, 2) competence, and 3) relatedness," on a 5-point Likert scale (strongly disagree to strongly agree) and included definitions of the SDT components from the sentinel article in the literature.[1] Cognitive interviewing was performed with 3 recent residency graduates and piloted

| ORIGINAL STRUCTURE | REDESIGN COMPONENT | SDT DOMAIN EFFECTED | RATIONALE |
|---|---|---|---|
| TEAM STRUCTURE<br>• One supervising resident, PGY2+<br>• Two interns<br>• Team covers 12 patients on 2 floors | TEAM Structure<br>• Two supervising residents, PGY3+<br>• Each supervising resident is paired with single intern<br>• Paired team covers 6 patients, all on one floor | Competence | • PGY3+ residents have prior critical care experience and knowledge |
| | | Relatedness | • Intern and senior pairs can develop close bonds<br>• Stationing resident teams geographically near patients and nurses reinforces residents as integral primary responders |
| CALL SCHEDULE<br>• Supervising residents on q4 call<br>• Interns on day/night coverage<br>• Cross-covering supervisors for 50% of calls | CALL SCHEDULE<br>• Supervising residents and interns on day/night coverage<br>• Cross-coverage limited to one day/week | Relatedness | • Shared schedule facilitates intern-senior pair bonding<br>• Consistency of team increases trust placed in residents by patients and the IMCU staff |
| ROTATION LENGTH<br>• 2 week rotations | ROTATION LENGTH<br>• 4 week rotations | Autonomy | • Increases faculty and nursing familiarity with supervising residents, engendering trust |
| | | Competence | • Allows time for residents to build clinical skills regarding the most common diagnoses on the IMCU |
| | | Relatedness | • Longer rotation facilitates rapport among intern-senior pairings, residents and patients, and residents and IMCU staff |
| ROUNDING STRUCTURE<br>• Single resident team rounds with attending on all patients | ROUNDING STRUCTURE<br>• Two resident teams round in parallel with attending rotating between teams (attending choses patients to round on with each team based on acuity and family needs)<br>• Residents independently round when attending is with other team | Autonomy | • Opportunity for resident team to round autonomously without an attending on a subset of patients |
| | | Competence | • Supervising residents practice independent clinical decision-making to impact patient care |

**Figure.** *Components of redesign and corresponding target domain of self-determination theory.*

by 2 faculty members, leading to minor word adjustments. Surveys were distributed electronically in the month prior to graduation. Fisher's exact tests were used to compare top-box responses (strongly agree) for each item. Top-box responses were intentionally chosen as the rotation was already highly rated and the redesign sought further optimization. The hospital institutional review board determined the protocol to be exempt.

## Results

Survey completion rates were 53% (17/32 residents) in 2017 and 62% (16/26 residents) in 2018. Intervention residents strongly agreed that their experience in the IMCU fostered their sense of relatedness more frequently than comparison residents (37.5% vs 0%; $P$ value = .007). Intervention residents also strongly agreed that their experience in the IMCU fostered their sense of autonomy more frequently than comparison residents, but this did not reach statistical significance (37.5% vs 11.6%; $P$ value = .118). There was no difference in ratings of self-reported competence (25% vs 11.8%; $P$ value = .398).

## Discussion and Next Steps

Our redesign of a pediatric resident rotation in an IMCU using the framework of SDT demonstrates that it is possible to improve the educational experience of learners even in more acute clinical settings through attention to structures that enhance autonomy, competence, and relatedness. We saw the largest impact on relatedness.

We hypothesize that our redesign was effective because it addressed previously identified barriers to successful implementation of SDT, specifically frequent changes in residents' assignments, numerous cross-covering residents, and the tendency toward permitting less autonomy for residents in the care of higher acuity patients.[2,9]

Improving the domains of autonomy, competence, and relatedness has also been shown to be an important driver of resident well-being.[3] With burnout rising among medical trainees, attention to mental health has become an important focus of the Accreditation Council for Graduate Medical Education. We believe interventions such as this redesign that enhance principles of SDT offer a means of supporting resident well-being.

Limitations of this study include the inability to assess perceptions of non-respondents and faculty, the use of self-reported outcomes, and the use of a historical rather than concurrent comparison group. We collected survey responses anonymously to avoid coercion, limiting our ability to compare resident respondents and non-respondents. Given the low response rate, it is possible that the study was underpowered to detect subtler differences between the two groups. Although IMCU faculty, nurse practitioners, and nurses received targeted staff development to orient them to the new structure and to identify and address challenges, we did not collect data from these parties. Self-reported outcomes may be particularly problematic for competence, which is often confused with confidence, although the two are frequently disparate. Finally, the redesign was made possible by the addition of one resident full-time equivalent, which may not be possible in many programs.

Next steps include performing qualitative analysis of resident experiences and assessing the impact of this intervention on patient safety outcomes, on other members of the care team (eg, attending faculty, nurses), and on resident burnout. We hope other rotations and clinical units both within our institution and elsewhere will consider using similar strategies to promote resident motivation and education through SDT.

## REFERENCES


1. Hoffman BD. Using self-determination theory to improve residency training: learning to make omelets without breaking eggs. *Acad Med*. 2015;90:408–410.
2. Biondi EA, Varade WS, Garfunkel LC, et al. Discordance between resident and faculty perceptions of resident autonomy: can self-determination theory help interpret differences and guide strategies for bridging the divide. *Acad Med.* 2015;90:462–471.
3. Raj KS. Well-being in residency: a systematic review. *J Grad Med Educ*. 2016;8:674–684.
4. Ryan RM, Deci EL. Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *Am Psychol.* 2000;55:68–78.
5. Williams GC, Deci EL. The importance of supporting autonomy in medical education. *Ann Intern Med*. 1998;129:303–308.
6. Baldwin CD, Shone L, Harris JP, et al. Development of a novel curriculum to enhance the autonomy and motivation of residents. *Pediatrics*. 2011;128:633–636.
7. Ten Cate TJ, Kusurkar RA, Williams GC. How self-determination theory can assist our understanding of the teaching and learning processes in medical education. AMEE guide No. 59. *Med Teach*. 2011;33:961–973.
8. Kusurkar RA, Croiset G, Ten Cate TJ. Twelve tips to stimulate intrinsic motivation in students through autonomy-supportive classroom teaching derived from self-determination theory. *Med Teach.* 2011;33:978–982.
9. Cullen EJ, Lawless ST, Nadkarni VM, et al. Evaluation of a pediatric intensive care residency curriculum. *Crit Care Med*. 1997;25:1898–1903.
10. Lawless S, Zaritsky A, Phipps J, et al. Characteristics of pediatric intermediate care units in pediatric training programs. *Crit Care Med*. 1991;19:1004–1007.