

Piloting a New Subspecialty: A Novel, Cross-Disciplinary Clinical Fellowship to Care for Children with Medical Complexity

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Title: Piloting a New Subspecialty: A Novel, Cross-Disciplinary Clinical Fellowship to Care for Children with Medical Complexity

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Related Publications: The Entrustable Professional Activities framework was described in the article cited below:

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Huth, K., Henry, D., Cribb Fabersunne, C., Coleman, C., Frank, B., Schumacher, D., Shah, N. Family-Educator Partnership in the Development of Entrustable Professional Activities in Complex Care. *Academic Medicine*. doi: 10.1097/ACM.0000000000005095

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What's New? (40/40 words)

A fellowship in pediatric complex care (PCC) was piloted utilizing a novel competency framework. The educational approach, curriculum design, and feasibility of the fellowship are described, including the experiential training components, outcomes, and recommendations for future subspecialty fellowships in PCC.

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Background

Pediatric complex care (PCC) is an evolving field aiming to improve care and outcomes for children with medical complexity (CMC)¹⁻⁴. While many academic medical centers have complex care programs, there is limited description of the training needed to care for CMC. Pediatric residents report significant gaps in the skillset needed to care for CMC.⁵ While a few clinical fellowships exist (e.g. Boston Children's, Sick Kids), their process, structure, and outcomes have not yet been described. Newly created Entrustable Professional Activities (EPAs) have clarified the knowledge, skills and attitudes necessary to care for CMC.⁶ However, current educational experiences in general and subspecialty training may not provide comprehensive exposure to all aspects of care for CMC. To augment the training of pediatricians pursuing careers involving care of CMC across multiple contexts, we developed and piloted a one-year fellowship using an EPA-based competency framework in academic year 2020-2021.

Educational Approach and Innovation: using novel EPAs for CMC

We created the fellowship using concepts from Situated Learning Theory⁷ to create opportunities for legitimate peripheral participation (apprenticeship) within existing communities of practice dedicated to the care of CMC. We utilized the eleven complex-care EPAs as our competency and assessment framework.⁶ In practice, this structure affords the fellow opportunities to embed themselves within existing interprofessional (i.e. case management, social work) complex care teams across multiple clinical models, progressively assume care responsibilities, and focus on developing content mastery and autonomous practice in activities specific to the care of CMC.

Programmatic logistics

The program director (DH) and Associate Program Director (JT) conducted an internal search for board eligible/certified pediatricians with interest in PCC. The selected fellow was appointed as a clinical instructor. The divisions of critical care (which houses UCSF's PCC service⁸), general pediatrics, and hospital medicine jointly funded the position. Divisions contributed differential support with costs offset by direct billing for clinical care by the fellow. Existing institutional infrastructure was leveraged for onboarding, scheduling, and evaluations. The fellow (CCF) enrolled in pre-existing Graduate Medical Education programming to support her academic interests⁹. No Scholarly Oversight Committee was created, however scholarly work was a stated expectation of the fellowship. The fellow participated in relevant, existing didactics and a newly created PCC journal club reviewing articles foundational to PCC EPAs.

Curriculum Design

We designed curricular experiences and mapped them to EPAs to ensure comprehensive exposure to expected competencies, opportunities for recurrent assessment, and progressively independent practice. Experiences (Table) were either longitudinal (throughout the entire fellowship) or immersive (intensive, 2–4-week experiences with subspecialty providers). Longitudinal experiences allowed the fellow to function as a primary care provider for CMC and as a consultative complex care pediatrician, providing continuity of care for her patients while they were hospitalized. Experiences were sequenced to allow flexibility (e.g. ability to add or subtract additional clinical time in key experiences) to accommodate time-variable achievement of competency within specific EPAs.

EPA-Based Assessments

We designed workplace-based, EPA-focused assessments for each complex care EPA. The fellow requested EPA-specific assessments from faculty and interprofessional collaborators targeted to the observable activities within each experience. Assessments were solicited during or upon completion of immersive experiences and quarterly for longitudinal activities. We used a single form with logic that allowed evaluators to provide summative feedback organized by EPA, in a format familiar to them from resident evaluations. The form incorporated opportunities for faculty to provide a supervision rating (e.g. full supervision vs. as-needed review), observations that provided justification for the rating, and suggested actions to achieve more independent practice. The fellow was tasked with requesting sufficient evaluations to build a portfolio in support of advancement to independent practice within individual EPAs. The fellow and program leadership used assessments to identify and schedule additional experiences to

ensure adequate exposure to achieve competency in each EPA. The PD and APD comprised the Clinical Competency Committee who reviewed all aggregated assessments, feedback from interprofessional colleagues, and care metrics to ensure that the fellow was competent to practice independently across all EPAs by completion of the fellowship.

Scholarly Work

The fellow participated in an existing Health Professions Education Pathway and designed didactic lectures for a combined Pediatric Emergency Medicine and Hospital Medicine series. Additionally, the fellow co-led a quality improvement project creating care coordination plans for CMC which resulted in implementation of annual care plan reviews incorporating interprofessional and interdisciplinary team meetings. She also applied for expansion of funding for UCSF's complex care program⁸ through a Title V state agency. Lastly, she completed educational scholarship related to EPA development and family partnership, which was published and presented at regional and national conferences.^{6,10}

Clinical Output and Patient Care

The fellow participated in 54 clinical sessions (Table), performed 30 inpatient consultations, rotated through 12 subspecialty and multidisciplinary clinics, and 3 inpatient consultative services. The fellow attended for 8 weeks on inpatient services. The fellowship increased the capacity of UCSF's Complex Care Program, outpatient visits by 50% and inpatient consultations by 75% compared to the previous year.

The longitudinal care experience allowed the fellow to understand patient perspectives. For example, by following patients across settings, the fellow identified structural barriers,

including lack of access to community therapeutic resources (particularly during the COVID-19 pandemic), the impact of gaining/losing public health insurance, changes in families' employment or address, and eligibility gaps for undocumented family members that prohibited public supports.

Discussion and Next Steps

We describe the successful creation of a novel complex care fellowship utilizing newly developed EPAs as its competency and assessment framework. Unique to its design was a focus on an apprenticeship model of learning within existing communities of practice comprising different care models for CMC. In addition, it enhanced and expanded care delivery for CMC, supported successful scholarship for the fellow, and did so in a relatively cost-neutral manner.

We identified several limitations in our one-year experience. It was challenging to balance the diversity of clinical experiences required to achieve competency and ensure continuity of care for CMC. The COVID-19 pandemic greatly restricted planned community- and home-based activities. Finally, funding relied on divisional collaboration and the ability for the fellow to generate revenue. Accordingly, protected time for scholarly work was limited. A longer two-year fellowship duration may improve feasibility of academic productivity and provide more formal quality improvement or research training.

We believe advanced training via fellowship is well suited to provide meaningful, contextualized, and mentored learning for trainees planning to care for CMC. Future innovation should focus on iterative improvement of our instructional models, evaluation of its impact on patient and trainee outcomes, as well as consideration of accreditation as a subspecialty of pediatrics to advance the care of CMC.

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Table: Description of pediatric complex care fellowship foundational experiences and the corresponding EPAs.

Pediatric Complex Care Fellowship Activities			
Title of Fellowship Activity	Description (Longitudinal vs. Immersive)	Activity description	EPAs Aligned with this Activity
Primary Medical Home for CMC	Longitudinal	Provided primary care for two patient panels of children with medical complexity, one at the primary care clinic affiliated with the academic medical center and another at a federally qualified health center. In addition to direct clinical care, activities included panel management, communication with families, coordinating care with subspecialists, ordering durable medical equipment, reviewing orders for home care nursing and insurance justification and appeals.	1,3,4,5,6,7,8,10,11
Ambulatory Consultation for CMC	Longitudinal	Provided initial consultation and follow-up care via telehealth for patients seen in UCSF's Family Integrated Healthcare Transitions (FLIGHT) Program ¹⁰ (referred to in this paper as the UCSF Complex Care Program), a consultative ambulatory/telehealth clinic for medically and technologically complex patients (~40% of patients are tracheostomy/ventilator dependent) many with primary care pediatricians in rural community settings.	4,5,6,9,11
Inpatient Consultation for CMC	Longitudinal	Provided hospital consultations through the UCSF Complex Care Program ¹⁰ consult service to assist inpatient teams with complex discharge planning, coordinating team meetings with subspecialists to	4,5,7,8,9,10

		discuss changes in care plans or trajectories, identifying safe discharge practices, counseling families in the care of medically complex children, and assuring warm handoff between inpatient and outpatient environments.	
Inpatient Direct Care	Immersive	Directly managed the care of CMC on two inpatient services with high census (but not exclusively) for medically complex and technology dependent children. The fellow provided continuity of care for patients in both her primary care panels and the UCSF Complex Care Program while they were admitted (e.g. would round on her primary care patients while they were hospitalized, or provide inpatient consultation to patients during an index hospitalization who were then later followed by the Complex Care program).	1,2,3,5,6,7,8,9,10
Specialty Rotations	Immersive	Participated in individualized mentored learning from inpatient subspecialists, including pediatric surgical, pain and palliative care, and physical medicine and rehabilitation clinicians in 2-4 week long experiences. Also participated in longitudinal experiences in select pediatric subspecialty and multidisciplinary clinics (e.g. Congenital Diaphragmatic Hernia and Spina Bifida clinics) that provided opportunities for continuity of care.	1,2,3,5,6,7,8,9,10
Community-based Practice Activities	Immersive	Arranged observational experiences with community organizations including home visits, hospices, long term care facilities, durable medical equipment providers and home care nursing agencies. Due to COVID-19 pandemic regulations, many of these were unable to be attended or were held virtually.	11

EPAs in the care of children with medical complexity (Adapted from *Huth et al, Academic Pediatrics, 2021*)

EPA Number	Title of EPA
1	Evaluate and manage feeding difficulties and nutritional concerns for CMC
2	Evaluate and manage pain and irritability in CMC
3	Provide routine care for CMC with feeding tubes and trouble-shoot common issues
4	Design and implement a developmentally appropriate transition process to adult care for CMC
5	Facilitate goals of care discussions and introduce concepts of palliative and hospice care for CMC
6	Facilitate team-based care coordination for CMC
7	Manage motility disorders in CMC
8	Evaluate and manage aspiration in CMC
9	Develop and implement safety and emergency plans for CMC
10	Evaluate and manage common neuromuscular and skeletal issues for CMC
11	Advocate for CMC and their families in the community setting