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Mayo Clinic Hematology Fellowship for Advanced Practice Providers

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Abstract

Advanced practice providers (APPs), including nurse practitioners (NPs) and physician assistants (PAs), are part of a growing cancer care workforce. Current hematology-specific education provided by most graduate NP and PA school educations is limited. Mayo Clinic School of Health Sciences launched a hematology-specific fellowship in 2018 to provide APPs with the skills and knowledge required to deliver high-quality specialty care in hematology and blood and marrow transplant (BMT). The fellowship curriculum was developed based on a needs-based assessment study as well as the qualitative reported experiences of current hematology-specific APPs. The curriculum contains didactic in-class education, research opportunities, and mentored clinical rotations in both inpatient and outpatient practice in hematology and BMT. This 12-month fellowship, one of the only postgraduate training programs dedicated to benign and malignant hematology practice, provides structured training for highly qualified graduate APPs interested in developing a rewarding career in hematology.

The American population is growing, aging, and living longer. A shortage of hematologists/oncologists has been projected due to increased numbers of patients with new cancer diagnoses, those undergoing treatment, and long-term cancer survivors (American Society of Clinical Oncology, 2017; Yang et al., 2014). Despite the growing demand, the workforce of current hematologists and oncologists is also aging, with approximately 1 in 5 cancer specialists nearing retirement age (ASCO, 2017). All these factors contribute to the physician shortage.

In order to comply with workforce demand, advanced practice providers (APPs), a group of healthcare providers composed of nurse practitioners (NPs) and physician assistants (PAs), have increasingly become integral team members in hematology/oncology practice. According to the data from the American Society of Clinical Oncology's (ASCO) annual practice census, employment of APPs in oncology practices in the US has increased to

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81% in 2017 (ASCO, 2017; Bruinooge et al., 2018). Based on the data from membership and claims, there are approximately 5,350 to 7,000 APPs in oncology practice (Bruinooge et al., 2018). To date, 22 states and the District of Columbia allow NPs to practice with full autonomy, and legislative efforts are ongoing to prompt more states to participate (American Association of Nurse Practitioners, 2018).

Although the workforce of APPs is rapidly growing, current graduate education for NPs and PAs has limited curricular focus on hematology and oncology. Most APPs learn to practice from on-the-job training or by independent study (Hollis & McMenamin, 2014). Over 70% hematology/oncology NPs reported that they were unprepared for chemotherapy and biotherapy competencies and felt unready to provide care in oncologic emergencies (Rosenzweig et al., 2012).

Hematology is an extremely complex field to practice, taking a physician 3 years of residency training and 3 years of subspecialty fellowship training. Similar to hematologists, the clinical expectations for APPs in hematology are to provide safe, high-quality, and compassionate patient care. The traditional orientation of 3 to 6 months of on-the-job training by assigned preceptors is insufficient for APPs in such a highly subspecialized practice (Mackey, Noonan, Kennedy Sheldon, Singer, & Turner, 2018).

In an effort to fill the gaps in knowledge and help APPs successfully transition from students to practicing clinicians in the real world, we launched a 12-month postgraduate hematology APP fellowship at Mayo Clinic in 2018. This is one of the first fellowship programs providing APPs with comprehensive subspecialty training in both malignant and nonmalignant hematologic disorders.

NEEDS-BASED ASSESSMENT

To get the program started, a needs-based assessment was conducted to better understand the workforce and the educational needs of the current APPs in hematology and blood and marrow transplant (BMT) at Mayo Clinic. The project included a retrospective review of the 5-year APP workforce data and a prospective web-based survey of current APP employees in hematology and BMT at three Mayo Clinic sites (Rochester, Minnesota; Scottsdale, Arizona; and Jacksonville, Florida).

Data provided by human resources revealed a job turnover rate of near 30% among APPs hired to hematology and BMT between 2012 and 2017. 80% of those left within the first 2 years, with a median time from employment to job termination of 17 months (Hwa et al., 2019). Almost all those APPs transitioned to primary care, family practice, and other nonhematologic specialties. Our findings of high employee turnover, especially during the first 2 years of employment, were consistent with the published data from other institutions nationwide (Brom, Melnyk, Szalacha, & Graham, 2016; De Milt, Fitzpatrick, & Sister Rita, 2011; Faris, Douglas, Maples, Berg, & Thrailkill, 2010). APP turnover is costly and a waste of educational resources to the institution. APPs reported that job satisfaction was heavily related to the ability to practice in their roles (Brom et al., 2016); therefore, we feel that developing this fellowship is necessary in our institution and anticipate it as a cost-effective strategy to reduce APP job turnover in hematology.

In the prospective needs assessment, a web-based survey was sent to all 68 APPs currently employed in hematology and BMT at Mayo Clinic to assess the effect of educational background, readiness to practice, and perceptions of structured hematology training on job satisfaction and career commitment. 57% of the 49 respondents were new graduates and 35% had no prior work experience in hematology/BMT. 80% of APPs reported less than 5% of their APP school curriculum was hematology focused. The majority (> 90%) of APPs reported that the limited hematology education from graduate schools did not prepare them with the confidence to practice in hematology; structured subspecialty training could help them become more competent providers; and being confident and knowledgeable in their practice positively impacted job satisfaction. Most APPs (84%) felt structured fellowship training would make it more likely for them to stay in hematology (Figure 1; Hwa et al., 2019).

Current APP employees were asked to identify the clinical focus in which they would like to receive formal training to benefit their practice, as

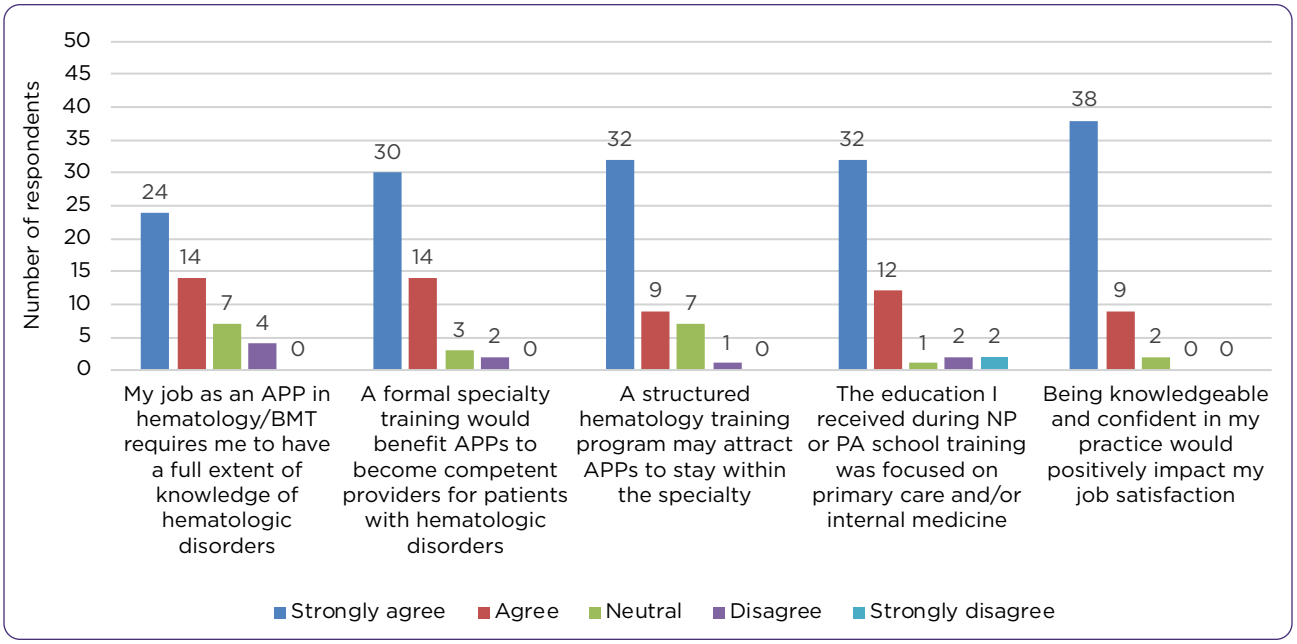

Figure 1. Survey responses of APPs currently working in hematology and bone marrow transplant (N = 49). Reproduced from Hwa et al. (2019).

well as their preferred learning strategies. Using an evidence-based approach, the fellowship curriculum was developed according to disease categories, clinical focuses, and training methods that were important to current APP employees. The strength of this needs-based assessment approach is to meet the learning requirements for future trainees by building upon the experiences within the current group of APPs in hematology.

FELLOWSHIP CURRICULUM

The educational topics reported by current APP employees that were important in hematology practice included a variety of malignant and benign hematologic disorders, hematopathology, BMT, palliative care, transfusion medicine, infectious disease, and pharmacology related to the specialty practice. APPs reported active learning from direct patient care, case-based teaching, and experiential learning during hospital rounds as the most effective training strategies (Figure 2; Hwa et al., 2019). The fellowship curriculum, using an evidence-based approach, was developed in accordance with the results of the needs-based assessment project.

The curriculum includes didactic coursework and mentored clinical rotations. In addition, the fellowship curriculum offers 100 hours of dedicated research time to provide APP fellows with opportunities to participate in a clinical research project and authorship for publication. Didactic education consists of 5-week hematology lectures (attended along with the medical students at Mayo Clinic Alix School of Medicine) and pharmacology lectures taught by pharmacists specialized in hematology and BMT. The learning activities include required readings, online learning modules, grand rounds, journal clubs, and presentations. The fellowship offers opportunities for the fellows to attend a regional or national educational conference related to hematology and BMT practice during the fellowship training. APP fellows are required to complete core rotations among all disease-focused outpatient clinics and inpatient practice settings in hematology and BMT as well as additional rotations in other subspecialties that are closely related to hematology practice. The last 2 months of the fellowship are elective; fellows may choose to receive additional training in their preferred practice settings among the core rotations to best meet their learning needs. The fellowship curriculum includes the following clinical experiences:

Core rotations (1 month per inpatient service or disease-oriented clinic):

- All hematology inpatient services

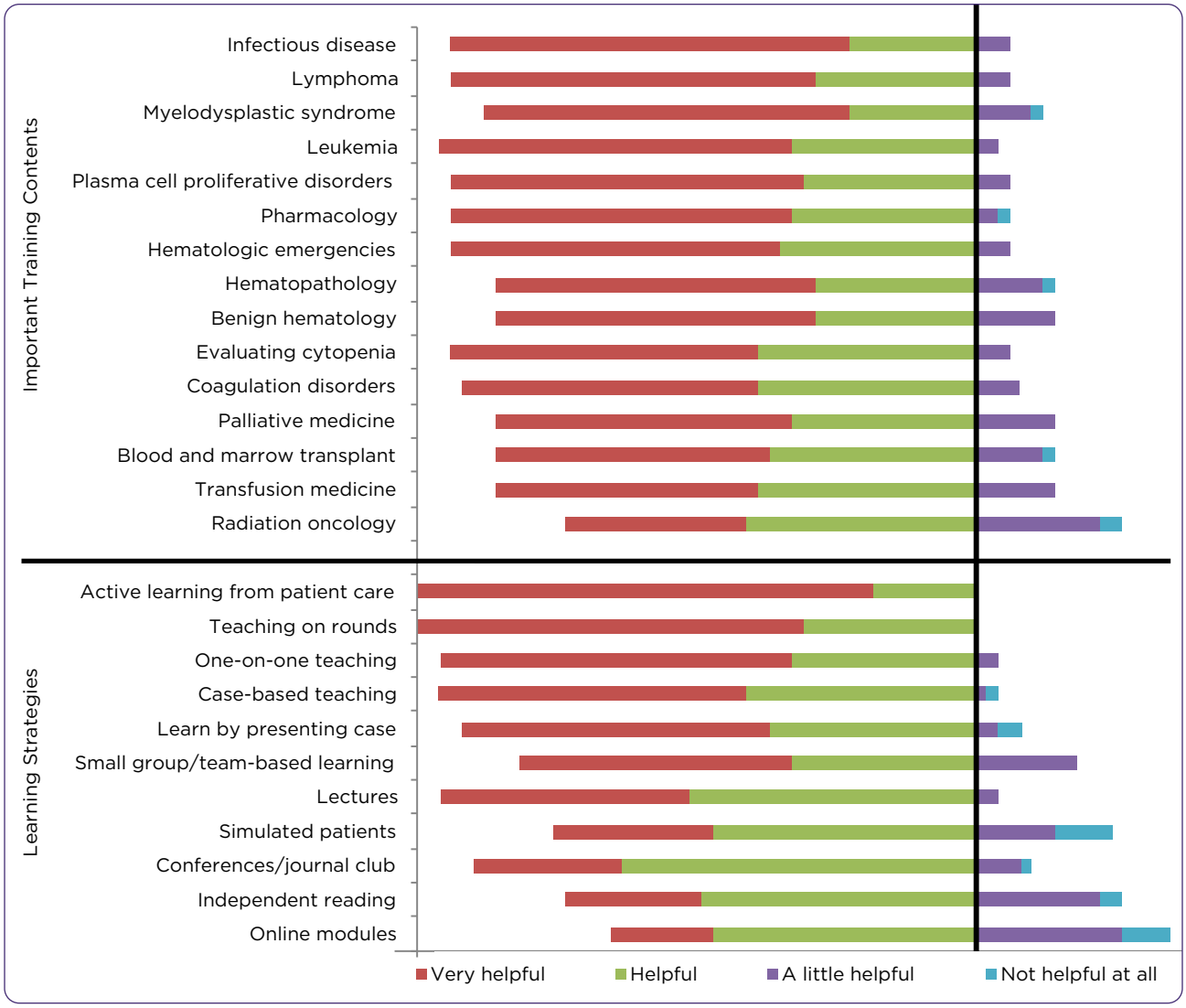

Figure 2. Areas of clinical focus in which APPs would like formal training and effective training strategies (N = 49). Reproduced from Hwa et al. (2019).

- Hematology hospital-based outpatient service
- Hematology diagnostic clinic
- Leukemia and myelodysplastic syndrome clinic
- Lymphoma clinic
- Multiple myeloma and amyloidosis clinic
- Benign hematology and coagulation clinic
- Blood and marrow transplant service

Additional required rotations in other related specialties (1–2 weeks per specialty):

- Transfusion medicine
- Palliative care
- Hematopathology
- Infectious disease

COMPETENCY EVALUATION

In order to effectively assess the fellows' learning progression through fellowship rotations, we created a competency-based evaluation tool using the framework developed by the Accreditation Council for Graduate Medical Education (ACGME). The fellows are paired with their APP preceptors and supervisory physicians on each rotation. The fellows are expected to develop full competency of independent APP practice with broad specialty knowledge working in hematology and BMT. They are fully licensed APPs with the privilege to prescribe and bill under the regulation by the State of Minnesota during the fellowship training. Upon completion of each rotation, the preceptors

provide feedback and evaluate the clinical performance of the fellows. We designed this comprehensive evaluation tool to incorporate the practice of both NPs and PAs, and plan to publish it in the near future to serve as a competency evaluation resource for APPs.

FELLOWSHIP GOALS AND FUTURE DIRECTIONS

This 12-month postgraduate fellowship is focused on transition-to-practice training to prepare highly qualified APPs to become skilled, compassionate, efficient, and confident advanced practice clinicians in the hematology specialty. Two fellows are admitted each year who have strong interests in hematology/BMT practice. The applicants need to have graduated from an accredited NP or PA school with a master's or doctorate degree. Upon completion of the structured fellowship training, the fellows will establish high levels of hematology-specific clinical judgement and best patient-care skills in the practice of an autonomous-collaborative and multidisciplinary team approach.

The program goals are aimed to provide the fellows the abilities to 1) acquire knowledge of pathophysiology, clinical presentation, and disease prognosis of common benign and malignant hematology disorders; 2) strengthen physical assessment and critical-thinking skills to provide high-quality, evidence-based, and cost-effective care; 3) establish a diagnosis, develop a treatment plan, and evaluate treatment outcomes; 4) integrate a broad knowledge base of disease process and treatment, spiritual, and cultural diversity needs to enhance education to patients and families; and 5) develop effective communication and presentation skills. The fellowship also provides our current APP employees with opportunities to engage in educational activities and to improve staff job satisfaction through enhancing their academic development.

The future direction of the fellowship is to evaluate its ongoing outcomes to identify how it may benefit the fellows in both clinical competency and future career impact, and benefit the institution in employee retention. Additional studies will be conducted to compare the competency, productivity, job satisfaction, and career commitment of new APP employees graduated from the fellowship with the APP employees hired without fellowship training. If this fellowship can successfully help the trainees to transition from students to confident APP clinicians, it may positively influence their job satisfaction and future career choice to stay in hematology.

Because of the growing demand for APPs in complex health care, a comprehensive subspecialty training may benefit APPs to bridge the knowledge gap between NP and PA school education and specialized practice (Harris, 2014). The Institute of Medicine has called for formal postgraduate educational programs to help the transition in roles from APP students to practicing clinicians (Institute of Medicine [US] Committee on the Robert Wood Johnson Foundation Initiative on the Future of Nursing, at the Institute of Medicine, 2011). A previous study reported that fellowships increased the clinical skills and overall job satisfaction of NPs (Hill & Sawatzky, 2011). Development of the subspecialty fellowship program is a step forward in the future training of APPs. We believe our specialty-specific fellowship has the potential to serve as a postgraduate training model nationwide. ●

Disclosure

The authors have no conflicts of interest to disclose.

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