

# Tandem Practice Model: A Model for Physician–Nurse Practitioner Collaboration in a Specialty Practice, Neurosurgery

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### **Purpose**

To describe the benefits of a physician–nurse practitioner (NP) collaborative practice model, specifically that of a tandem practice model, using a neurosurgeon and a primary care NP in the clinic and inpatient setting.

### **Data Sources**

Selected journal articles from Medline and CINAHL, and anecdotal clinical experience.

### **Conclusions**

This collaborative practice model, in which the physician and NP deliver patient care in tandem, is beneficial to patients and their families because they receive comprehensive care that is patient oriented and holistic. Further, the model benefits multiple disciplines across the healthcare continuum by providing efficient communication of patient needs, accessibility of the specialty team, and timely implementation of patient interventions. The collaboration of the physician specialist and primary care NP provides a holistic approach to the care of diverse and challenging patient populations.

### **Implications for Practice**

Patients seen in a specialty practice, particularly that of neurosurgery, often have little understanding of their problem and may be frightened or confused because of their perceptions of the unknown. Providing care to such specialized patient populations in a constantly changing healthcare environment may prove demanding to the specialist. The introduction of a primary care NP into such specialty settings offers patients, their families, consultants, and staff members an additional resource for evaluation, intervention, education, and communication, improving the continuity and comprehensiveness of care to challenging patient populations. This model

## INTRODUCTION

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The many changes in health care have challenged providers to modify patient care delivery systems to ensure that they are comprehensive, organized, and cost conscious. In this ever-changing healthcare environment, the increasing use of “midlevel practitioners,” namely, nurse practitioners (NPs), has been a provocative issue. Several publications (Martin & Coniglio, 1996; Siegler & Whitney, 1994; Silver & Ford, 1967; Teicher, Crawford, & Williams, 2001) have described the expanded role of nurses and the importance of nurse–physician collaboration as key factors in improving patient care. Likewise, several other authors (Barkley & Whitney, 2001; Burl, Bonner, Rao, & Khan, 1998; Hoffman, Tasota, Scharfenberg, Zullo, & Donahoe, 2003; Kleinpell, 1997; Russell, VorderBruegge, & Burns, 2002; Silver, Ford, & Day, 1968) have described the positive contributions that NPs provide to patients in diverse settings. However, descriptions of physician–NP collaboration in the specialty practice are lacking. This article describes a tandem practice model of the neurosurgeon and primary care NP at a selected neurological institute in an urban setting. The authors discuss the use and benefits of this collaborative practice model in the clinic and inpatient setting.

## COLLABORATION

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As defined by Merriam-Webster, collaboration is “to work jointly with others ... in an intellectual endeavor” (Mish et al., 2004). Siegler and Whitney (1994) described three “elements of collaboration”: structure, process, and outcome. Regardless of the definition, the concept of collaboration when applied to health care continually changes. Collaboration is defined and shaped by the dynamics of a changing healthcare delivery system and the various provider scopes of practice.

The history of nurse–physician collaboration has been well documented over time through such classics as the “doctor–nurse game” (Stein, 1967) in which a hierarchical relationship between physicians and nurses was identified and the dynamics of physician–nurse interactions and how participants recognize their boundaries was proposed. Participants, Stein suggested, also knew how to elicit ideas and orders from each other without directly asking. In other words, whether overtly or not, collaboration of a sort was, in fact, occurring on some level.

## NP ROLE DEVELOPMENT

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Soon after Stein’s publication, other articles authored by physicians such as Bates (1970, 1975) called for physicians and nurses to examine their

is an option for physician specialists interested in augmenting their practice and provides further resources for meeting the holistic needs of selected patient populations regardless of the setting.

### Key Words

Physician–nurse practitioner collaboration, practice model, specialty practice.

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respective roles and their effect on patient care. Such literature suggested that the initiation of “new approaches” like further growth of the nurse’s role would positively influence patient care. Positive perceptions of collaboration evolved, partially because such literature presented the multifaceted benefits of collaboration for nurses, patients, and, ultimately, patient outcomes (Bates, 1970).

One such approach was the introduction of the role of the clinical nurse specialist or nurse clinician. This role encompassed “skilled nursing practice, knowledge in depth and recognition of the full spectrum of patient needs” (Bates, 1970, p. 131). Bates also discussed the “expanded role of the nurse,” a role that “enabled the nurse to take on certain responsibilities usually restricted to the physician ... (such as) interviewing, physical examination, and the biological and psychosocial factors in health and disease” (1970, p. 132). This reference to the expansion of the nurse’s role referred to the utilization of NPs in the pediatric population (Silver & Ford, 1967; Silver et al., 1968). NPs in a variety of practice settings, such as home care, long-term care, and acute care, then began to report their experiences (Burl et al., 1998; Burns-Tisdale & Goff, 1989; Martin & Coniglio, 1996; Siegler & Whitney, 1994), stressing the necessity of physician–NP collaboration and its benefits for patient outcomes (Burns-Tisdale & Goff; Martin & Coniglio).

Other publications have documented the emerging role of the NP and its impact on outcomes and patient care in certain patient populations such as in pain management and such acute care areas as the intensive care unit (ICU), epilepsy unit (Barkley & Whitney, 2001; Kleinpell, 1997; Sarkissian & Wennberg, 1999; Teicher et al., 2001). One publication compared the role of the acute care NP to that of the physician in training (Hoffman et al., 2003). The authors found that acute care NPs and medical students spent the same amount of time with patient care activities, but the acute care NPs spend more

time than medical students coordinating patient care with interdisciplinary team members and case management and interacting with the patient and their families.

To date, only limited literature has described the collaboration between a primary care NP and a surgeon. One related article described the collaborative practice of an acute care NP with a head and neck surgeon (Martin & Coniglio, 1996). In that article, the authors presented the multiple benefits associated with physician–NP collaboration in a specialty practice: delivery of comprehensive patient care, improved patient outcomes, improved patient/family satisfaction, continuity of care, and enhanced staff education.

## PRACTICE SETTING

The setting that serves for the focus of this article is a private neurosurgical group with 18 neurosurgeons and is an urban setting. The NP is one of four NPs employed by the neurosurgical group who works directly with one neurosurgeon. The three other NPs are primary care NPs, and each work with one physician collaborator within the same model of practice. In this proposed model practice, the NP is a primary care NP (board certified in geriatrics) who works with a vascular neurosurgeon.

The group is affiliated with a selected neurological institute that is part of a large urban teaching hospital. Most of the staff subspecialize in one or more areas. The institution admits more than 9000 patients per year and performs more than 5000 major neurosurgeries per year. The institution also sponsors a 7-year residency in neurological surgery. In such an environment, communication and collaboration are necessary to expedite patient evaluation and specialty intervention and to enhance overall patient care, satisfaction, and outcomes.

### Neurosurgical Population

The neurosurgical population spans the range from pediatric to geriatric, with diagnoses that pertain to problems of the spine (congenital, traumatic, degenerative), brain tumors (primary and metastatic), vascular malformations (aneurysms, cavernous malformations, arteriovenous malformations), extra- and intracranial stenosis/occlusion, and intracerebral hemorrhage. Neurosurgical patients can pose a challenge to their healthcare providers based on the etiology of their neurosurgical problem alone. Management is complicated by the patient’s comorbidities and age. As with most surgical procedures, older patients are at higher risk for surgery. Most cases require collaboration with a variety of consultants to provide comprehensive patient care and to optimize patient outcomes.

## SPHERICAL PRACTICE MODEL

The hallmark of the proposed model is that it is patient centered. The physician specialist and primary care NP work in tandem to deliver patient-oriented care. The providers share the mutual goal of ensuring an optimal outcome. The components

of this model are the patient, physician, and NP (see Figure 1). The neurosurgeon and primary care NP are represented by two spheres that overlap with each other and each with the sphere that represents the patient. As the focus of this model, the patient is depicted as the largest sphere. The spheres of the neurosurgeon and primary care NP are of the same size and overlap equally to convey joint participation and the tandem approach to care. The degree to which the neurosurgeon and primary care NP spheres overlap with the patient's sphere will vary according to the disease process and its impact on the patient's life. The clear area of the patient's circle represents aspects of the patient's life that are not directly involved with the illness (such as social, religious, cultural, and familial relationships) but that nonetheless shape the patient's perspective and may influence the patient's interaction with the healthcare providers and treatment approach.

Collaboration by the neurosurgeon and primary care NP is depicted by the crosshatched area (see Figure 1). The largest portion of this collaboration overlaps the patient's circle and includes outpatient clinic, inpatient consultations and rounds, patient education, and the patient's compliance with manage-

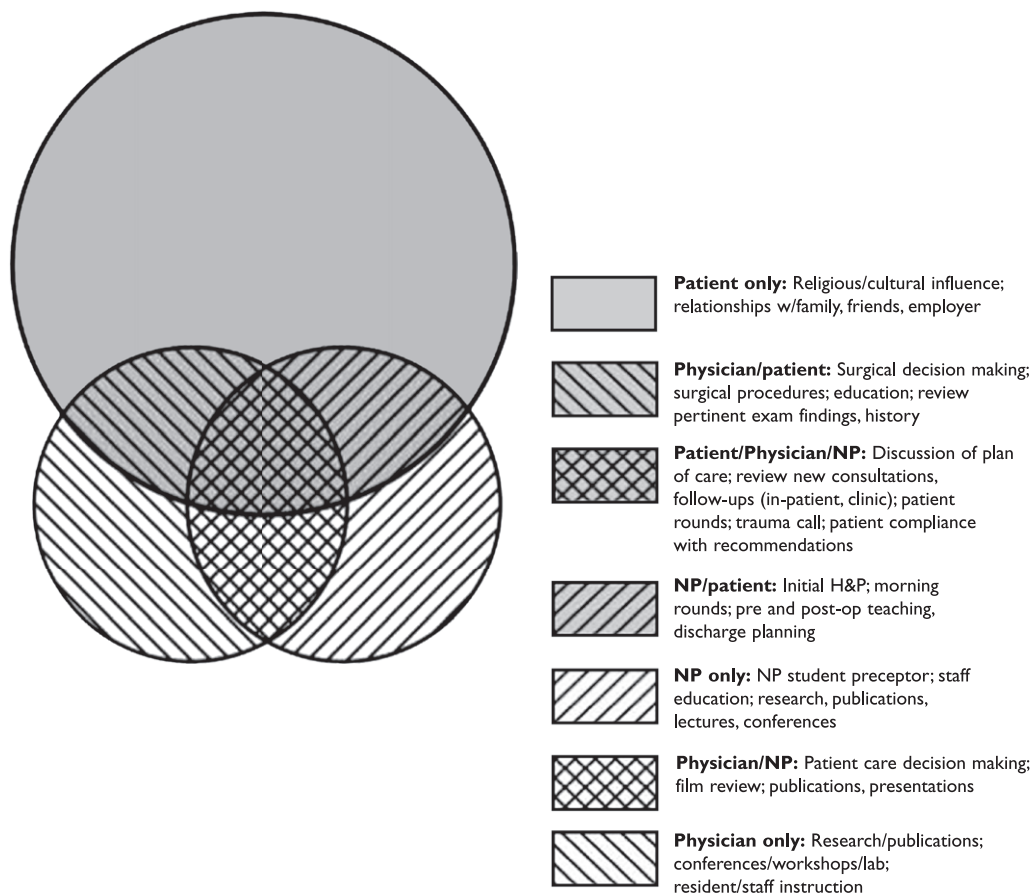
ment recommendations made by the physician/NP team. Collaborative efforts outside the patient's circle would include research projects and publications such as this article.

Areas of the neurosurgeon's sphere that overlap the patient's sphere but not the NP's sphere include surgical decision making and surgical intervention (see Figure 1). The corresponding areas of the NP's sphere represent activities such as preoperative and postoperative education of the patient and family and ongoing education of the staff. Finally, areas of both providers' spheres that lie outside their overlapping areas include interaction with family and friends, social and professional activities, ongoing education and training, other publications, and other academic/professional responsibilities.

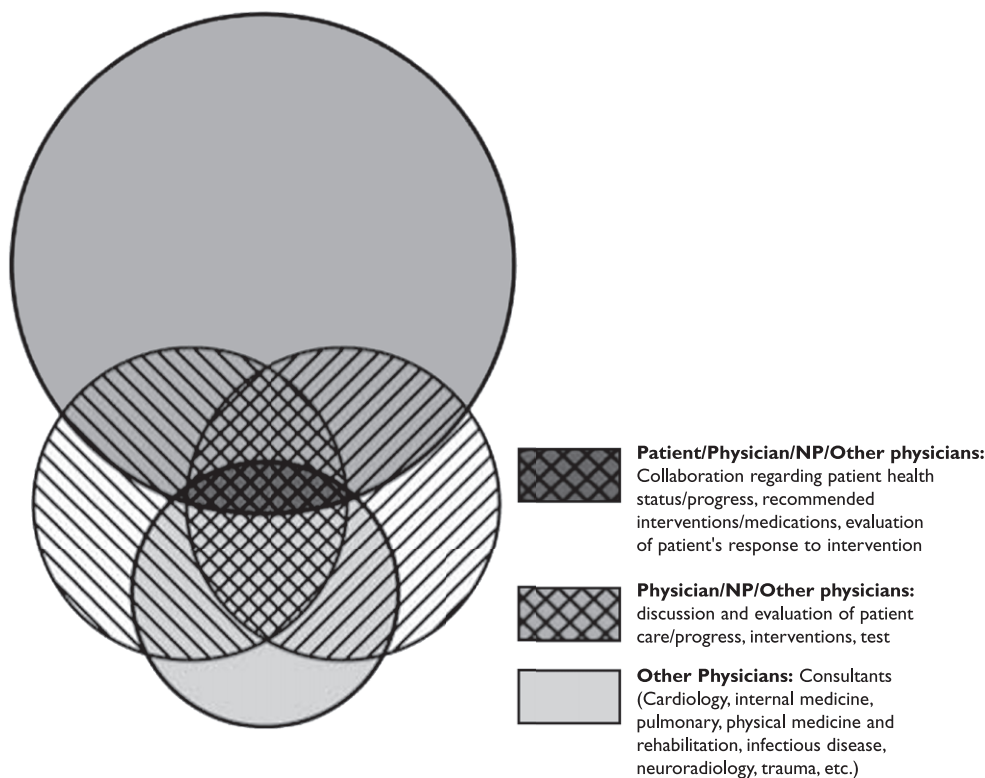
## CONSULTANTS

An important factor in collaborative practice is the appropriate utilization of clinical consultants (see Figure 2). The consultant's sphere overlaps with the spheres of the patient, physician,

**Figure 1 Patient-centered tandem practice model depicting physician–NP collaboration and roles within model**



**Figure 2 Tandem practice model depicting utilization of consultants within model**



and NP. Such physician consultants interact with the neurosurgeon and primary care NP as a team or individually to address certain patient care-related issues. For example, a cardiology consultant may be asked to evaluate and give preoperative clearance to a patient with severe carotid stenosis, congestive heart failure, and coronary artery disease who is scheduled for an endarterectomy.

The size of the consultant's sphere and extent of overlap with the other individual spheres will reflect the particular clinical problem being addressed. Except in the rare circumstance when it is in the patient's best interest that the consultant assumes primary responsibility for his or her care, the consultant's sphere will be smaller than the providers' spheres.

Three or more consultants may see a single neurosurgical patient. This situation can create confusion about who is addressing what problems. Under such circumstances, one provider must remain in charge to facilitate communication among the various consultants and the patient and family. An exemplar would be the request from the trauma service for a neurosurgical consultation on a patient with head injury, spinal cord injury, or both. Additional consultations may be requested to manage orthopedic injuries, facial trauma, and pulmonary issues. The individual consultants can become quite involved in the management of such a patient. In this case, the trauma surgeon remains the provider in charge and is responsible for coordinating the patient's care.

## APPLICATION OF PRACTICE MODEL

The authors have successfully applied this model of tandem practice in both inpatient and outpatient/clinic settings. This model of tandem practice was initially conceptualized and implemented out of necessity dictated by the neurosurgeon's schedule and to optimize patient care and communication with patients and their families and other healthcare providers. It has been mutually shaped by the experiences of the neurosurgeon and the NP. It was the neurosurgeon's and NP's desire to provide patients with a holistic approach to quality patient-centered care, with the shared goal of optimal patient outcomes and patient satisfaction, which was the impetus for such a collaborative model. The neurosurgeon did not hire the NP with the idea that the NP would function as a "first assist" in the operating room because there are neurosurgical residents available to do this. The attending neurosurgeon hired an NP to assess, round on, and deliver holistic care to the inpatient and clinic population. One of the goals of hiring an NP in this neurosurgical practice was to augment patient care by having the NP available for patient's questions, teaching, assisting with case management, office calls, and clinic. The proposed model was submitted after a 6-year partnership between the physician and the NP, mainly to describe it to interested healthcare providers, those physicians interested in hiring an NP, or to those NPs interested in working in a specialty practice.

## CLINIC SETTING

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The neurosurgical clinic population consists of new patient consultations, routine follow-up appointments, trauma follow-up, and visits that arise out of concern (i.e., assessment of postoperative incisions, new symptoms, headache). Specialty areas are cerebral aneurysms, carotid stenosis, arteriovenous malformations, cavernous malformations, dural arteriovenous fistulas, and brain tumors. Due in part to geography and to the vascular subspecialty, more than half of the patients are older than 50 years. Pediatric patients are referred to the pediatric neurosurgeon in the group.

During a new patient consultation, the primary care NP reviews the patient's history and films before taking the patient's history with family if applicable. The primary care NP then performs a comprehensive physical examination focused on the neurological assessment. Next, the primary care NP and the neurosurgeon together review the history and diagnostic images and discuss the patient's risk factors and overall health status. A plan of care, either surgical intervention or conservative management, is then jointly promulgated. Together, the neurosurgeon and primary care NP discuss the recommendations with the patient and family. The neurosurgeon may ask additional questions or review elements of the history and physical with the patient and family as indicated.

Routine outpatient visits include postoperative follow-up as well as nonoperative patients who return at designated intervals to monitor the status of their disease state. Typically, the primary care NP sees patients independently and reviews diagnostic studies with a neuroradiologist. The NP collaborates as necessary with the neurosurgeon such as in the case where a patient's clinical condition or follow-up imaging changes.

One of the most important contributions of the primary care NP in the specialty practice setting is patient and family teaching. Teaching begins at the first encounter with the patient. The teaching process focuses on the disease process, identification and modification of risk factors, the surgical procedure, hospital stay, and postoperative care and expectations.

The NP is readily accessible for phone triage when a patient, family, or other practitioner contacts the office with clinical concerns. The NP consults with the collaborating neurosurgeon as needed, depending on the level of acuity of the phone call or patient issue. For example, in a situation where a patient is exhibiting an abrupt change in condition (decline in level of consciousness or cerebral ischemic symptoms), the patient is instructed to proceed to the emergency room. However, a patient with a concern regarding the surgical incision is directed to come to the office within 48 h to have the wound evaluated by the NP and/or the neurosurgeon. The NP will contact the patient and/or family and facilitate an office visit the same day if necessary. This rapid response system reduces costs and wait time associated with utilization of the emergency room. Such continuity of care enhances quality patient care and patient satisfaction.

## INPATIENT SETTING

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The inpatient neurosurgical population is similar to the clinic population with respect to patient age and diagnoses. However, at any given time, the majority of patients may be critically ill (e.g., ruptured cerebral aneurysm, intracerebral hemorrhage, acute cerebrovascular accident, acute head trauma with cerebral edema).

On their morning rounds, neurosurgical residents and the NP examine the patients in the ICU and discuss any changes in patient acuity or condition. Although the NP communicates with the attending neurosurgeon regarding all the inpatients, it is the responsibility of the residents to discuss the ICU patients directly with the attending neurosurgeon. The residents do not usually round on patients in the step-down unit or neurological ward. In this model, the primary care NP rounds on all patients on the service from ICU to the ward. The NP will meet with case management, therapists, and other medical specialties to coordinate patient care.

In the afternoon, the primary care NP and the neurosurgeon round together on their patients, usually after clinic/surgery. These collaborative practice rounds provide a mutually beneficial forum for the neurosurgeon and the primary care NP to exchange ideas on patient issues, progress, and plan of care. Patients and families also benefit as they gather updates and insight into patient progress, treatment plans, discharge plans/education, and follow-up. The practice of morning NP rounds followed by afternoon collaborative physician-NP rounds fosters continuity of care, good communication, and, ultimately, excellent patient care.

The NP performs neurosurgical inpatient consultations, during regular work hours. The NP completes the history and physical, preliminary film review and initiates patient education. The NP then reviews this with the neurosurgeon, and both meet with the patient and family to discuss formal recommendations.

## OBSTACLES TO COLLABORATION

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Despite literature documenting the contributions that NPs make in delivering comprehensive, cost-effective health care (Burl et al., 1998; Hoffman et al., 2003; Russell et al., 2002) and increased visibility of NPs, the NPs in this practice still encounter resistance from some physicians. Perhaps, this resistance stems from a lack of understanding about the potential NP role and/or scope of practice. Physicians may have the perception that NPs are competitors rather than collaborators. The intent of this article is to facilitate understanding of the role of the primary care NP in collaborative practice with a surgeon or specialist in order to further minimize these perceptions and barriers to cost-effective and high-quality care.

Other obstacles to collaboration include a patient or a family member who may not be familiar with the role of an NP or the dynamics of a physician-NP team. For example, during a new patient consultation, a patient or family member may inquire if

“the doctor” will see them. However, the model has been well received once the patient and families become familiar with the role of the NP and this model of practice.

Any resistance from other members of the healthcare team (i.e., physician consultants, therapists, and case managers) is typically alleviated once they experience the efficient communication and cohesive plan of care offered by the proposed model.

## CONCLUSION

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The benefits of this tandem practice model are multifaceted and have been experienced by patients across the healthcare continuum, by families, neurosurgical residents, other involved practitioners, staff nurses, case management, and therapists. The frequency of patient rounds, first by the NP then by the physician and NP together, sets the standard for establishing rapport and maintaining a cohesive plan of care. The NP's knowledge of primary care combined with the neurosurgeon's expertise facilitates a further holistic approach to patient care. Interdisciplinary rounds help expedite initiation of interventions, transfers/discharges, and communicate the plan of care. The fusion of the medical and nursing models into a bimodal approach such as with this model promotes efficient and comprehensive delivery of care. This model can provide a useful reference for physicians in a specialty area who wish to augment their practice with the addition of a primary care NP or for NPs/ NP students interested in pursuing a job in a specialty practice.

### *Areas of Future Research*

At this point, other than anecdotal positive feedback from patients/families and healthcare members, the authors have no data to demonstrate the benefits of this proposed model on issues that relate to cost-effectiveness, i.e., patients' length of stay or readmission rates. However, the authors plan to research the proposed model and measure its contribution to the inpatient neurosurgical population. Tentative plans have been made to study the proposed model in a group of neurosurgical/trauma patients in a community hospital setting. Endpoints of the study will include length of unit/hospital stay, patient satisfaction, and readmission rates compared to a neurosurgery practice without an NP.

## DISCUSSION

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The neurosurgical population, as with other specialty areas, can present a variety of challenges to the specialist, in this case, the neurosurgeon. Variables such as preexisting comorbidities superimposed on an aging patient population can increase a patient's risk of neurological surgery. Factors that contribute to a positive outcome include patient and family teaching, thorough history and physical, and continuity of care. The incorporation of a NP in a specialty area, in this case, neurosurgery, can enhance provision of health care to this unique population.

The primary care specialty of the NP complements the specialty practice by addressing a patient's comorbidities that ultimately enriches patient care. No model exists that describes physician–NP collaboration in a specialty practice in both the clinic and inpatient setting. The goal of both providers in this tandem approach is to provide holistic care to this specialty group, with a mutual goal of excellent patient care and optimal patient outcome. This model can serve as a reference for physicians who want to enhance their practices with an NP or for those NPs and NP students interested in pursuit of a job in a specialty practice.

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