



Perioperative Management of Neurosurgical Patients by Hospitalists: Time for Specialized Training

Rene Daniel, MD^{1,2} , Newton Mei, MD^{1,2}, James Evans, MD³, Catriona Harrop, MD^{1,2}, Geno Merli, MD⁴

¹ Farber Hospitalist Service, Department of Neurological Surgery, Thomas Jefferson University,

² Department of Medicine, Thomas Jefferson University,

³ Department of Neurological Surgery, Thomas Jefferson University,

⁴ Department of Medicine, Thomas Jefferson university

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Abstract

Management of patients that undergo neurosurgery increasingly involves hospitalists. In this article, we outline and discuss the roles of these neurosurgery hospitalists, and training which is required. We describe both commonalities of their work with hospitalists which take care of non-neurosurgical patients, as well as the differences. We highlight the decision process which led to forming of the first of its kind fellowship, which builds on the new body of knowledge which accumulated over years. We believe that extended training of neurosurgery hospitalists will lead to increased quality of patient care.

THE ROLE OF A NEUROSURGERY HOSPITALIST IN THE MANAGEMENT OF NEUROSURGICAL PATIENTS

Hospitalists generally care for these patients at multiple levels in the perioperative setting. Neurosurgery hospitalists at Thomas Jefferson University Hospital work collaboratively with the neurosurgery team in a co-management model. In this model, hospitalists can provide active medicine consultative services for patients on the neurosurgery service, placing orders in real-time and calling in any other appropriate consults. Additionally, for medically complex patients, the hospitalist can serve as the primary provider for the patients ([Figure 1](#)). The severity of medical comorbidities of the neurosurgical patient generally determines the decision on the level of hospitalist involvement.

From the standpoint of medical management, the neurosurgery hospitalist's role in the perioperative setting can be divided into two critical parts: preoperative and postoperative.

- During the preoperative period, the hospitalist focuses on preoperative risk stratification and optimization. The hospitalist may involve other services as needed, such as cardiology, depending on the risk conferred by specific organ systems.¹
- During the postoperative period, the hospitalist concentrates on the prevention of infection, treatment of infection, deep vein thrombosis, and pain management.²

These issues are common to the general postoperative management for other surgical patients, yet certain aspects stand out for neurosurgical patients. One example is pain management.³ In addition, a high fraction of spine infection patients are patients who have opioid use disorder.⁴ Thus, pain management involves a multimodal approach.² Another challenge is helping spine patients improve their functional status. This involves the use of braces, early mobilization, and specialized physical and occupational therapy teams.² The perioperative management of these neurosurgical patients requires a multidisciplinary approach, with the hospitalist being the process node.

THE NEW BODY OF KNOWLEDGE

Neurosurgery hospitalists are graduates of the internal medicine or family medicine programs. These programs provide excellent training in all aspects of medicine. However, most of their patients are non-surgical. Consequently, the exposure to surgical patients may be limited. Thus, the neurosurgery hospitalist often needs to rely on additional resources when caring for these patients. Up-to-date or Dynamed websites are excellent sources, as is the Oxford Medicine Online in the United Kingdom.⁵⁻⁷ However, the required information is usually spread over multiple different topics. Thus, feeling an urgent need for a comprehensive source of information, we have recently published the "Medical Management of Neurosurgical Patients" book.^{3,4} In this way, we hope to create medical guidelines for neurosurgery hospitalists to help standardize care for these patients nationwide. The book's pub-

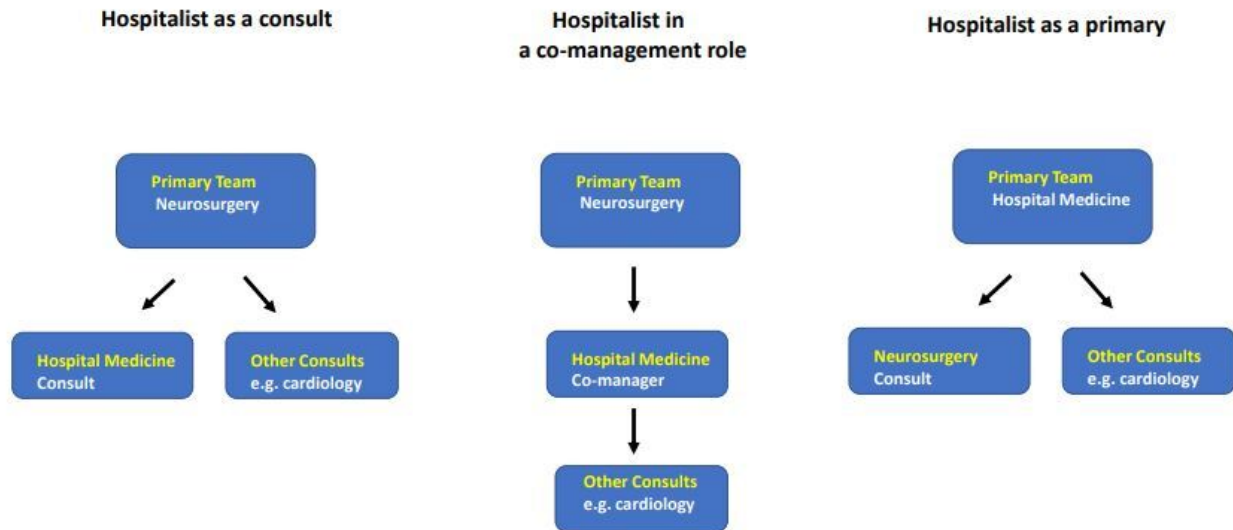


Figure 1. The role of a neurosurgery hospitalist in the management of neurosurgical patients

lication also provided the necessary support for forming a separate division of hospitalists under the Department of Neurological Surgery. This task was only possible with the support of the department and the university administration.

THE NEW SUBSPECIALTY

The body of knowledge that neurosurgery hospitalists need to know continuously evolves. Thus, it was felt that the on-the-job-training may no longer be sufficient to provide optimal patient care for the new neurosurgery hospitalists. Our group of neurosurgery hospitalists (Farber Hospitalist Service, FHS) is a part of the Department of Neurological Surgery. Following the publication of the first textbook in the field, we have thus created a new hospitalist fellowship.² The goal is for the fellow to acquire a strong foundation in the latest clinical knowledge and skills to become a leader in the growing field of perioperative and consultative medicine. The fellow is expected to absorb many aspects of perioperative management during their one-year training, particularly emphasizing the care of neurosurgical patients. Particular emphasis is given to the training in multimodal anesthesia, which is extensively used for this group of patients.

The desired outcome is for a specialized physician to efficiently interact with the neurosurgical and other surgical teams to improve outcomes and patient safety. This is a trail-blazing initiative, the success of which should impact perioperative care nationwide. Of course, the outcomes should and will be subjected to clinical studies. Growing neurosurgical co-management models are being

created in top hospitals across the USA. Our institution is also expanding its neurosurgery coverage in satellite hospitals. Therefore, this additional training will increase marketability for those applying for these jobs. Neurosurgical patients are a unique population with high medical complexity, as evidenced by our high case mix index, so having this fellowship training will also increase one's clinical skill set, comfortability, and proficiency in managing these patients. Our first fellow successfully graduated in 2023.

Taken together, neurosurgery hospitalists are a new kind of hospitalists who cooperate with neurosurgeons to provide optimal, evidence-based care to patients who undergo neurosurgical procedures. This article explains the need for and setup of this training. This is a new, unique initiative, and its success may impact patient care nationwide and even on the international level.

Author Contributions

All authors have reviewed the final manuscript prior to submission. All the authors have contributed significantly to the manuscript, per the International Committee of Medical Journal Editors criteria of authorship.

- Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND
- Drafting the work or revising it critically for important intellectual content; AND
- Final approval of the version to be published; AND

- Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Disclosures/Conflicts of Interest

The authors declare no conflict of interest.

Corresponding author

Rene Daniel MD
Farber Hospitalist Service, Department of Neurological
Surgery
Department of Medicine,
Thomas Jefferson University, Philadelphia, PA, 19017
rene.daniel@jefferson.edu



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