

# Investing in the Future of Inpatient Dermatology: The Evolution and Impact of Specialized Dermatologic Consultation in Hospitalized Patients

This column is the first in a series of Hospital Consult articles that will be produced in partnership with the Society for Dermatology Hospitalists. See page 220 for the editorial note.

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## PRACTICE POINTS

- Dermatology inpatient consultation enhances quality of care and reduces health care costs.
- Dermatology input in the inpatient setting leads to a diagnosis change in up to 70% of consultations.
- The majority of dermatologic misdiagnoses by nondermatologists involves common dermatoses such as cellulitis, stasis dermatitis, and hypersensitivity reactions.

Inpatient dermatology has transitioned from units that admitted and cared for patients with chronic dermatoses to consultative services that provide a wide breadth of care, leading to a paradigm shift in the role and impact of dermatologists in the inpatient setting. Consultative dermatology provides a distinct and essential service in the care of hospitalized patients, leading to improved care quality along with reductions in inappropriate health care spending.

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The practice of inpatient dermatology has a rich history rooted in specialized hospital wards that housed patients with chronic dermatoses. Because systemic agents were limited, the care of these patients

required skilled nursing and a distinctive knowledge of the application of numerous topical agents, including washes, baths, powders, lotions, and pastes<sup>1</sup>; however, with the evolving nature of health care in the last half a century, such dermatologic inpatient units are now rare, with only 2 units remaining in the United States, specifically at the Mayo Clinic in Minnesota and at the University of Miami.<sup>2</sup>

Although the shift away from a primary dermatologic admitting service is likely multifactorial, what is more sobering is that the majority of inpatients with dermatologic disorders are cared for by nondermatologists.<sup>2</sup> Although the dynamics for such a diminished presence are due to various personal and professional concerns, the essential outcome for patients hospitalized with a cutaneous concern—whether directly related to their hospitalization or iatrogenic in nature—is the potential for suboptimal care.<sup>3</sup>

## NEW PODCAST

Dr. Sergey Rekhman discusses consultative dermatology services with *Cutis* Editor-in-Chief Vincent A. DeLeo, MD, in a new episode of the “Peer to Peer” podcast.

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Fortunately, the practice of inpatient dermatology currently is undergoing a renaissance. With this renewed interest in hospital-based dermatology, there is a growing body of evidence that demonstrates how the dermatology hospitalist has become a vital member of the inpatient team, adding value to the care of patients across all specialties.

To explore the impact of consultative dermatology services, there has been a push by members of the Society for Dermatology Hospitalists to elucidate the contributions of dermatologists in the inpatient setting, which has been accomplished primarily by defining and characterizing the types of patients that dermatology hospitalists care for and, more recently, by demonstrating the improved outcomes that result from expert consultation.

### Breadth of Inpatient Dermatologic Consultations

With the adaptation of dermatology consultation services, the scope of practice has shifted from the skilled management of chronic dermatoses to one with an emphasis on the identification of various acute dermatologic diseases. Although the extent of such acute disease states in the inpatient setting is vast, it is interesting to note that the majority of consultations are for common conditions, namely cutaneous infections, venous stasis dermatitis, contact dermatitis, atopic dermatitis, and cutaneous drug eruptions (Table).<sup>4,5</sup>

Moreover, for the services that obtain dermatologic consultation, the majority of requests originate from internal medicine and hematology/oncology.<sup>4,5</sup> Although internal medicine often is the largest-represented specialty in the hospital and provides a proportional amount of dermatology consultations, hematology/oncology patients represent a distinct cohort who are prone to unique mucocutaneous dermatoses related to underlying malignancies, immunosuppression, and cancer-specific therapies (eg, chemotherapy, immunotherapy, stem cell transplantation). Within this subset of patients, cutaneous infections and drug eruptions constitute the majority of cases, while graft-versus-host disease and neutrophilic

dermatoses account for a smaller percentage of dermatologic disease in this population. Given the complex and uncommon nature of these dermatoses, timely intervention by a dermatologist can have a considerable impact on morbidity and mortality associated with such disease states.<sup>6,7</sup>

Among pediatric patients, dermatology consultation patterns mimic those seen among adult patients, with common conditions such as atopic dermatitis and contact dermatitis representing the majority of consultations.<sup>8-11</sup> Vascular lesions further represent a unique source of consultation among pediatric patients. Although they often are considered an outpatient concern, one group found that the majority of inpatient consultations for vascular lesions led to early identification of a syndromic association and/or complication (eg, ulceration).<sup>10</sup> Identifying these cases in the hospital provides early opportunities for intervention and multidisciplinary care.

### Adding Value to the Care of Hospitalized Patients

Following other inpatient models, hospitalist dermatology has begun to demonstrate feasibility, advances in quality improvement, and most importantly improved health care outcomes. In an effort to better characterize the enhancement of such health care delivery, recent literature around the impact of inpatient dermatology consultation has centered on improving key objective hospital-based quality measures, namely diagnosis and management as well as hospital length of stay (LOS) and readmission rates.<sup>5,12-18</sup>

When identifying cutaneous disease, recent evidence points to the increased diagnostic accuracy by way of dermatology consultation. Specifically, diagnoses were changed 30% to 70% of the time when consultations were provided.<sup>6,12-15</sup> Interestingly, misdiagnosis regularly centered on common diagnoses, specifically cellulitis, stasis dermatitis, and hypersensitivity reactions.<sup>6,12-16</sup> In a multi-institutional retrospective study that examined the national incidence of cellulitis misdiagnosis, the authors found that when a dermatology consultation

## Common Inpatient Dermatology Consultations by Specialty

Internal Medicine	Pediatrics	Hematology/Oncology
Cutaneous infections (bacterial>viral>fungal)	Cutaneous infections (viral>bacterial>parasitic)	Cutaneous infections (viral>bacterial>fungal)
Cutaneous drug eruptions	Atopic dermatitis	Cutaneous drug eruptions
Contact dermatitis	Cutaneous drug eruptions	Eczematous dermatitis
Connective tissue diseases	Vascular anomaly	Neoplasms
Neoplasms	Urticaria	Graft-versus-host disease

for presumed cellulitis was called, approximately 75% (N=55) of cases represented mimickers of cellulitis, such as stasis dermatitis, contact dermatitis, and cutaneous fungal infections. Moreover, in more than 38% (N=21) of such cellulitis consultations, patients often had more than one ongoing disease process, further speaking to the diagnostic accuracy obtained from expert consultation.<sup>16</sup> The result of such misdiagnosis is not trivial, as unnecessary hospital admission or inappropriate treatment due to misdiagnosis of cutaneous disease often leads to avoidable complications and preventable health care spending. In a cross-sectional analysis of patients diagnosed with presumed lower extremity cellulitis (N=259), approximately 30% were misdiagnosed. In these cases, more than 90% of patients received unnecessary antibiotics, with approximately 30% of them experiencing a complication or avoidable utilization of health care related to their misdiagnosis.<sup>17</sup>

Along with the profound impact on diagnostic accuracy, management and treatment are almost universally affected after dermatology consultation.<sup>5,12-14</sup> Such findings bear importance on optimizing hospital LOS as well as readmission rates. For hospital LOS, a recent study demonstrated reductions in LOS by 2.64 days as well as 1-year cutaneous disease-specific readmissions for patients who received dermatologic consultation for their inflammatory skin disease.<sup>18</sup> Similarly, in a recent prospective cohort study of patients diagnosed with presumed lower extremity cellulitis, hospital LOS decreased by 2 days following a diagnosis of pseudocellulitis via timely dermatologic consultation. Across the United States, such reductions in LOS associated with unnecessary hospitalization due to pseudocellulitis can result in annual health care savings of \$100 to \$200 million.<sup>13</sup> As such, early dermatologic intervention plays a vital role in diagnostic accuracy, appropriate treatment implementation, expedited discharge, and the overall economics of health care delivery and utilization, thereby supporting the utility of clinical decision support through expert consultation.

## Conclusion

There is a clear and distinct value that results in having specialized inpatient dermatology services. Such expert consultation enhances quality of care and reduces health care costs. Although the implementation and success of inpatient dermatology services has primarily been observed at large hospitals/tertiary care centers, there is incredible potential to further our impact through engagement in our community hospitals. With that said, all practicing dermatologists should feel empowered to employ their expert skillset in their own communities, as such access to care and specialty support is desperately needed and can remarkably impact health care outcomes. Moreover, in addition to the direct impact

on health care delivery and economics, the intangible benefits of an inpatient dermatology presence are innumerable, as opportunities to promote quality research and improve trainee education also demonstrate our value. These facets together provide a positive perspective on the potential contribution that our field can have on shaping the outlook of hospital medicine. As such, in addition to enjoying the current renaissance of inpatient dermatology, it is imperative that dermatologists build on this momentum and invest in the future of consultative dermatology.

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