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A Critical Assessment of Inpatient Dermatology Service Line in the Rural United States

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Abstract

Objective: We sought to classify dermatologic conditions presenting in rural inpatient hospitalization.

Methods: Retrospective chart review.

Conclusion: Limited rural dermatology care in the United States prompted the establishment of an inpatient dermatology consult line in rural Upstate New York. Over 3 years, 27.7% of consults were admitted for dermatologic concerns, 21.5% for both dermatologic and medical issues and, 50% for non-dermatologic reasons but later seen by dermatologists. Common conditions included eczematous rashes, infections, drug reactions, edematous skin conditions, and autoimmune diseases. Among patients admitted for dermatologic concerns, cellulitis (3) and rashes (3) were the most common. Interestingly, 74% of provisional dermatologic diagnoses matched final diagnoses before further workups. Approximately 58.5% of consults were deemed highly valuable. Follow-up showed 73.8% improvement, 23.1% deceased from different pathologies, and 3.1% stable. Understanding the rural dermatology landscape could enhance access, diagnostic accuracy, and the feasibility of inpatient consult services. Understanding the rural dermatology landscape may improve access to specialist care, increase diagnostic accuracy, reduce disease burden and associated costs, and communicate the feasibility of inpatient consult services either in-house or via teledermatology to rural hospital systems.

Introduction/methods

Dermatological services in rural America are sparse, and minimal research is published on the demographics and presentations of patients and their dermatologic conditions in these areas. There are 3.4 dermatologists per 100,000 people in the United States (U.S.); while this density has increased in the past two decades, it is less than the recommended 4 per 100,000 [1]. Jefferson County, New York has 2-3 dermatologists per 100,000. Before 2018, patients in need of dermatologic evaluation were either discharged and seen in the outpatient setting or transferred to a higher-level care center, a major potential barrier for several patients to receive dermatologic care. Watertown, New York, is the largest town in the North Country area of Upstate New York. The population is approximately 24,000 people. About 20,000 people work in the town, and it is near Fort Drum, a US Army military base that trains nearly 80,000 troops per year. Samaritan Medical Center (SMC) is a 290-bed community hospital located in Watertown. Some consult services included cardiology, pulmonary-critical care, infectious disease, general surgery, and neurology. A full-time dermatology office with inpatient consult service was founded.

Results

These results span over the first three years of the service (2018-2021). Patients were admitted for various dermatologic and non-dermatologic conditions prior to being seen by the dermatology consult service, composed of two dermatologists and two physician assistants who confirmed final diagnoses with physicians. There was a slight male predominance (52.2%)

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and a median age of 57 (Table 1). Admission reasons purely for a dermatologic concern represented 27.7% of patients (14), and 21.5% (14) had a dermatologic concern in addition to other medical indications. About 50% (33) of patients had no dermatologic reason to be admitted and were subsequently seen at some point during their stay. The most frequently consulted specialties were rheumatology (3), infectious disease (1), and neurology [1]. Dermatology performed 18 skin biopsies; 17 were punch, and one was graft. The most common laboratory values, which were specifically added after a dermatology consult was obtained and did not include basic labs like a CMP and CBC with differential included HIV, Tb, ANCA, ANA, mycoplasma, and genetic testing. Two patients received CT scans of the chest and abdomen, respectively. Reasons for tissue culture, microscopy, or imaging included concern for HSV, MRSA, COANS, and GAS (micro swabs).

Common conditions included eczematous rashes, infections, drug reactions, edematous skin conditions (stasis dermatitis, anasarca, third-spacing type events), and autoimmune diseases. The most prescribed treatments were triamcinolone, clobetasol, and hydrocortisone 2.5% cream; common antibiotics were cefalexin and doxycycline. Approximately 74% (48) of provisional diagnoses included the final diagnosis (Table 2). 23% (15) did not have the final diagnosis in the provisional. Of note, a psychiatric unit at the hospital consulted dermatology for a possible scabies outbreak. Eight of these cases were provisionally diagnosed by a single provider as scabies and then finally diagnosed as asteatotic eczema by a dermatology provider. Among patients admitted for dermatologic concerns, cellulitis (3) and rashes (3) were the most common. Other reasons included foot ulcers (1), oral sores (1), impetigo (1), toxic epidermal necrolysis (1), blisters (1), and a flare of a bullous eruption (1). There were 5 cases of rashes and 2 cases of cellulitis in the patient subgroup that had multiple admission reasons. Other presenting issues in this group included itching (1), drug reactions (1), vasculitis and leg ulcers (2), trauma (2), and postoperative bleeding (1).

Table 1: Demographics.

Male Gender	52.3% (33)
White Ethnicity	96.9% (63)
Age (median)	57

Discussion

Skin disease is either a primary reason for hospitalization or comorbidity in 12% of hospitalized adults [2]. Bacterial skin infections were the most common and costly condition, driven by an aging population, increasing comorbidities, and multidrug resistance [2]. Rurality and nonteaching hospital status are associated with an increased risk for hospitalization from skin disease [2]. Dermatology consults reduce the diagnostic time and hospital stay for pseudo cellulitis by 2.1 days in comparison to diagnostics by hospitalists [3]. For patients with chronic conditions experiencing an in-patient flare, dermatology consultations reduced the length of stay by 2.6 days [4]. Our population's diagnoses were relatively benign, correctly recognized by a dermatologist, and treatable. Dermatologist consultation could decrease the time to diagnosis, cost, and length of stay for infectious etiologies. Additionally, our patient population largely had government-funded insurance plans. Effective management with in-patient dermatologic consults could be beneficial long-term for overall outcomes and cost to the healthcare system. A longitudinal study of future diagnoses and the efficacy of the consult service line would help to better characterize the landscape of dermatology in rural America.

Table 2: Visit characteristics.

High Utility Derm Consult*	58.5% (38)
Laboratory Values Obtained	46.2% (30)
Biopsy	29.2% (19)
Tissue culture, micro, or imaging	21.5% (14)
Time spent with patient (hours) (median)	1
Time spent with patient (hours) (mean)	1.5
Follow Up Condition**	Improved - 73.8% (48) Deceased - 23.1% (15) Stable - 3.1% (2)
Final diagnosis included in provisional diagnosis	73.9%
Main reason for admission was dermatologic in origin	Yes - 28% Partially - 50.8%

*A high-utility dermatology consult means a board-certified dermatologist indicated it as a visit of high importance for the admitted patient's clinical status.
**The follow-up condition was determined by either seeing patients in the outpatient clinic or having a medical assistant call patients.

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