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**Modeling of usage and estimation of cost for efinaconazole 10% topical solution in the treatment of onychomycosis**

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Onychomycosis accounts for half of all nail diseases with toenails more commonly affected compared with fingernails. Efinaconazole 10% solution is often prescribed for toenail onychomycosis due to its higher mycologic and complete cure rates compared with other topicals. Cost is a limiting factor, with the average retail price for a 4-mL bottle being \$575.49. Since the manufacturer has not reported the number of drops in a 4 or 8 mL bottle, it is unknown how much to prescribe for each patient and to estimate cost. We sought to calculate the volume of efinaconazole needed for a full treatment course and approximate cost by modeling patient usage. The length and width of all toenails were recorded from 26 volunteers and surface area was calculated. A 17 × 14 mm acrylic nail was affixed to a foot mannequin to reproduce the average female great toenail with 2-mm margins demarcated to replicate the nailfolds. One drop of efinaconazole 10% solution was applied to the surface of the great toenail and one drop was applied to the hyponychium. This process was repeated until the 4 mL bottle was depleted and then the experiment was replicated with a total of 5 bottles. Our study shows that there is large variability in the output volume of efinaconazole 10% solution. A 4 mL bottle lasts a mean of 24 days, and 2 drops is sufficient to treat 2 smaller toenails, which enables physicians to estimate volume and cost for a full onychomycosis treatment course.

*Commercial disclosure: None identified.*



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**Violaceous nodules in the elderly**

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Blastic plasmacytoid dendritic cell neoplasm (BPDCN) is a rare aggressive hematologic malignancy associated with a poor prognosis with a median survival of 12-14 months. It most often affects the elderly with a male to female ratio of 3:1. It is of importance to dermatologists as ninety percent of patients present with cutaneous lesions. Leukemic dissemination can occur before or after cutaneous presentation. The natural progression of the disease usually involves rapid spread to the blood, bone marrow, and lymph nodes. BPDCN originates from precursor cells known as plasmacytoid dendritic cells (pDC). Skin biopsies are characterized by the presence of a diffuse monomorphic infiltrate of medium-sized blast cells with fine chromatin, irregular nuclei, and one or more small nucleoli. The proliferation is localized to the dermis, sometimes extending into the subcutaneous fat. Histology must be combined with immunophenotyping or flow cytometry to diagnose BPDCN. BPDCN is characterized by the expression of CD4+ and CD56+ as well as expression of pDC specific antigens which include CD123, blood dendritic cell antigen (BDCA-2), T cell leukemia/lymphoma (TCL1), and CD2AP. While violaceous plaques on the head or neck of an elderly individual generate a differential of both benign and malignant diagnoses, it is important to be cognizant of lesser known mimickers such as BPDCN. We present a case series of patients with the diagnosis of BPDCN to review the important role dermatologists play in diagnosing a rare and aggressive hematologic malignancy.

*Commercial disclosure: None identified.*



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**HLA gene testing and carbamazepine-induced toxic epidermal necrolysis in pediatric patients**

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Background: Two pediatric patients presented to Dermatology at the University of Alberta (UofA) within a 2-week span with carbamazepine (CBZ)-induced toxic epidermal necrolysis (TEN). The patients were of Han Chinese and Filipino ethnicity. Neither patient had HLA gene testing done prior to initiation of medication which is the current black box label recommendation from the Food and Drug Administration. Despite the known association between CBZ-induced TEN in HLA-B\*1502 positive patients of Asian ethnicity, the screening test was not done. This prompted a review of real-world practices in hopes to identify and reduce knowledge gaps.

Methods: We created a 12-question survey and distributed to physician and nurse practitioners at pediatric grand rounds and pediatric neurology grand rounds at UofA. The questions assessed the knowledge surrounding HLA genotype testing and CBZ in high risk patients.

Results: We had twelve volunteers complete the survey. 10/12 and 7/12 practitioners correctly identified that Han Chinese and Filipino ethnicities, respectively, are at higher risk of CBZ-induced Stevens-Johnson syndrome (SJS)/TEN. However, only 1/12 practitioners recognized that it was standard of practice in Canada to complete HLA gene testing in high risk ethnicity patients prior to initiating CBZ. Therefore, 9/12 revealed that they did not complete testing prior to initiating the medication, and between the 12 practitioners there had been 11 reported cases of CBZ-induced SJS/TEN.

Conclusions: There is a significant lack of awareness of the importance of HLA genotype testing in high risk ethnicity patients before initiating CBZ. The gene testing is an accessible test with minimal cost.

*Commercial disclosure: None identified.*



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**Skin cancer screening using total body photography and digital dermoscopy: A pilot study among firefighters**

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Objective: The purpose of this study was to determine the feasibility and diagnostic accuracy of total body photography (TBP) and digital dermoscopy (DD) as a triage alternative to the initial face-to-face skin cancer screening (SCS) among Florida firefighters.

Methods: In this cross-sectional observational study, subjects completed a survey about their skin cancer history, sun-protective and sun-exposing behaviors. A SCS was performed by a physician, and TBP with DD performed by a nondermatologist team member. A second physician, blinded to the SCS results, reviewed the images. Physicians documented suspicious findings, confidence level, and management decision.

Results: 136 firefighters were enrolled. Only 47.8% (65/136) had ever had a FBSE performed by a physician and 38.2% (52/136) regularly perform a self-skin exam. From the 136 firefighters, 127 underwent FBSE and TBP (110 males). Physicians reported suspicious lesions in 26.8% (n = 34) with FBSE versus 33.9% (n = 43) with digital images, showing a trend towards more skin cancer diagnoses with TBP. When FBSE did not reveal suspicious lesions, the physician would reassure in 96.9% of the cases, compared with 54.3% of cases with TBP. A total of 57 suspicious lesions were found on FBSE while 102 were found on TBP. The strength of agreement in finding suspicious lesions on FBSE and TBP, using a simple kappa coefficient calculation, is moderate.

Conclusions: Our preliminary results demonstrate an opportunity to improve primary prevention efforts for skin cancer among firefighters. Further studies are needed to validate the clinical utility and cost-effectiveness of TBP for virtual SCS.

*Commercial disclosure: None identified.*

