

You're the Flight Surgeon

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You are the flight surgeon at a large fighter aircraft base and have just finished seeing a dozen pilots for morning sick call and return to flight status dispositions. You are preparing to see your first annual public health assessment exam for the day when your front desk staff sergeant calls you stating "Maj. Smith is on the other line who needs a medication refill." You have never met Maj. Smith and you tell your staff sergeant you will return the call later that morning but ask him to take a message and be sure to record the patient's needs. In between patients you get to the telephone message and read, "Maj. Smith needs his Luxiq refilled before his annual appointment in 1 mo because he is about to run out of the medication."

1. Given this scenario, what is the next best course of action?

- Refill the Luxiq (betamethasone valerate) and follow up with him at his next annual appointment.
- Ask your support staff to call the patient and further investigate his need for this medication.
- Query Maj. Smith's medical records and investigate his past medical history and prescription usage.
- Forward this telephone consultation to another flight surgeon since the patient is not empaneled to you.

ANSWER/DISCUSSION

1. C. Gathering additional information before making this medical decision is advisable. The current Official Air Force Aerospace Medicine Approved Medications list does not include the chronic usage of betamethasone foam or other medium potency glucocorticoid steroid without waiver authority. Topical steroids are only approved for short-term use for acute conditions and require a period of no flying before symptoms are controlled and idiosyncratic reactions are ruled out.* By reviewing this aviator's medical record it may indicate a current waiver for this medication, and by reviewing his refill history you can estimate his compliance with the prescribed therapy. Refilling this medication without further knowledge of the

* U.S. Air Force. Official Air Force aerospace medicine approved medications. Washington (DC): Department of the Air Force; 2016. [Accessed 9 Feb. 2016]. Available to those with access from <https://kx2.afms.mil/kj/kx4/FlightMedicine/Documents/Forms/ShowFolders.aspx?RootFolder=/kj/kx4/FlightMedicine/Documents>.

patient's current or past medical history is inadvisable and may put your medical license at risk with inadequate documentation of care. Furthermore, tasking clerical staff to investigate a patient's medical history is of limited utility. Finally, deferring this decision to another physician at this juncture may free up your time, but may be construed as unprofessional to your colleague and does not aid in addressing the immediate needs of the patient.

After reviewing Maj. Smith's medical records, you see he is a 40-yr-old F-15 Strike Eagle pilot with over 2000 flight hours in high-performance jet aircraft who was previously diagnosed with seborrheic dermatitis of the scalp 10 yr ago. He has failed multiple medications in the past for this condition, including topical selenium sulfide 2.5% and topical ketoconazole 2%. He is now prescribed betamethasone foam 0.12% (Luxiq) to be applied twice a week to affected areas of the scalp. There is limited documentation of this medical condition in his record and all previous treating physicians who have seen this patient and refilled the medication have either separated from the military or are currently deployed.

2. As you prepare to return Maj. Smith's call, you create a checklist of items to review with him. What would you most want to include in this checklist?

- A comprehensive review of systems.
- Review of the patient's medication usage.
- Family medical history for skin conditions.

ANSWER/DISCUSSION

2. A. Chronic steroid use poses a risk to a multitude of organ systems, including immune, musculoskeletal, renal, cardiovascular, neurological, and endocrine systems. Of particular concern is the chronic suppression of the hypothalamic-pituitary-adrenal axis.^{1,6} While systemic glucocorticoids have well-known side effects, even topical glucocorticoids also have been shown to suppress cortisol levels in upwards of 40% of patients.⁶ Signs of adrenal insufficiency include fatigue, weight loss, irritability, hypoglycemia, and gastrointestinal complaints, which may be picked up on a thorough review of

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systems. Additionally, topical glucocorticoids can depress leukocyte count and alter hepatic enzyme activity.^{1,3,7,9} A negative comprehensive review of systems via telephone consultation would allow one to assess the urgency for further evaluation of the patient, as well as form an initial aeromedical disposition. Electronic medical records allow one to assess the patient's medication usage, including over- or underutilization. Family medical history of skin conditions would be of little value at this juncture, as an established diagnosis has been made and treated for the past 10 yr.

You call Maj. Smith and discover his review of systems is negative, including no fatigue, no thinning of skin, no orthostatic changes, and no recognized gonadal changes. During this discussion Maj. Smith tells you he is actually using the betamethasone foam twice a day, not twice a week as previously prescribed. He is having no side effects and no lesions are present; however, at times he has noticed thinning of his skin along his frontal hairline. You broach the subject with Maj. Smith that this class of medication is disqualifying for long-term usage. He is noticeably upset and does not understand why he cannot just get a refill. He questions your medical judgment and asks you to refill the medication "just like all the other flight docs."

3. What do you do at this point?

- A. Refill the Luxiq (betamethasone valerate) and follow up with him at his next annual appointment.
- B. Calmly explain the necessity for his duties not to include flying, then temporarily ground the pilot and explain to him the need for further laboratory analysis.
- C. Ground the pilot and begin to taper him off the medication completely.

ANSWER/DISCUSSION

3. B. This pilot is rightfully upset that a medication he has been using for several years without consequence is now preventing him from performing his flight duties in his F-15. However, using a chronic topical steroid without proper monitoring and education has the potential for detrimental side effects.^{4,9,11} Seborrheic dermatitis presents with greasy, scaling, red patchy lesions on the scalp; these lesions can appear along the hairline and spread to the eyebrows.⁵ This presentation is important because glucocorticoids applied to these areas of the body have higher rates of absorption and warrant proper education. While absorption of topical glucocorticoids is approximately 1% on palms and forearms, the scalp and forehead absorb between four and six times as much topical glucocorticoid.⁴ Furthermore, applying topical glucocorticoids in the periorbital region can, in rare cases, predispose one to glaucoma and permanent vision loss.¹¹ If this pilot was chronically treating seborrheic lesions along his brows, he may be in serious jeopardy of meeting aircrew vision standards. For these reasons, the pilot should be grounded and brought in for proper examination, including laboratory analysis. This patient has reported an increase in medication frequency and is now running low on the product. Tapering the patient off the medication completely would likely lead to a flare in the skin lesions, which also has the potential to ground this pilot if lesions interfere with aircrew flight equipment. Asking the pilot to perform laboratory analysis at

this juncture would be the most appropriate course of action before a scheduled visit and waiver consideration.

Maj. Smith agrees to the need for laboratory surveillance after the consequences of unchecked glucocorticoid usage and the flight risks are explained to him. His labs are performed the following week and an appointment is scheduled with you. The labs [complete blood count, fasting lipid, morning cortisol level, comprehensive metabolic panel with liver function tests (LFTs), and hemoglobin A1C] return within normal limits, except for mildly elevated aspartate aminotransferase (AST) and alanine aminotransferase (ALT). Upon examination, Maj. Smith has no abnormal physical findings and no observable skin or scalp lesions, including no thinning of the skin or hypopigmented areas.

4. At this juncture, what should you do?

- A. Refer to gastroenterology for work-up of elevated AST and ALT.
- B. Change medication.
- C. Reduce medication usage to two to three times weekly as needed and repeat labs in 1 mo.
- D. Submit Maj. Smith for waiver consideration as this medication has posed no harm to himself, flight duties, or the safety of others during his last 5 yr of usage.

ANSWER/DISCUSSION

4. C. While elevations of AST and ALT have not specifically been documented in the medical literature with respect to betamethasone usage, betamethasone does undergo hepatic metabolism and is excreted in both the urine and bile.¹⁰ Additionally, other glucocorticoids have been shown to cause elevated LFTs with chronic usage.¹ The likely culprit for this aviator's mild bump in LFTs is his chronic topical steroid use given the patient is on no other prescriptions, over-the-counter medications, or herbal supplements. Moreover, the patient reports no alcohol usage. While there is limited absorption with topical products like Luxiq (betamethasone valerate), absorption can be varied by potency, amount applied, skin thickness, age of patient, and duration of use.⁹ With respect to the Luxiq (betamethasone valerate) product, it is the only glucocorticoid available in foam formulation and only is prescribed at one strength of 0.12%.¹⁰ Therefore, reducing the frequency to an as-needed basis will allow the patient and physician the ability to assess the severity of the condition while reducing hepatic metabolism from the previous twice-daily insult. Maj. Smith is not ready for waiver consideration at this time, as his LFTs are elevated and may be an indication of unrecognized pathology.

AEROMEDICAL DISPOSITION

According to the Air Force Waiver Guide, the severity of the dermatitis and the treatment used determine the waiverability of the case. To expect a waiver, flyers must be asymptomatic with minimal potential for flare-ups or the dermatitis must be in an area that doesn't interfere with aviation equipment and is controlled with topical therapy.¹³ In general, the Army and Navy determine aeromedical disposition on the same basis as the Air Force, although neither

service specifically provides information on seborrheic dermatitis. The Army only discusses atopic dermatitis, for which a waiver is required if the condition is moderate to severe and requires high-potency steroid ointments or oral medications.¹² In the Navy, dermatitis in general can be waived if topical steroids are used intermittently over a limited area and no oral medications other than loratadine or fexofenadine are prescribed.⁸ The Federal Aviation Administration doesn't discuss dermatitis other than acne that is treated with isotretinoin (Accutane) because of the drug's potential vision and psychiatric side effects. A decision by the Federal Air Surgeon isn't required as long as the condition or medication doesn't interfere with the airman's ability to safely perform his or her duties.²

One month from your last visit, Maj. Smith returns to your office with no skin lesions, signs, or symptoms of corticosteroid withdrawal, and his AST/ALT levels have returned to normal limits. He has used the Luxiq (betamethasone valerate) a total of four times in the past month and requests a waiver be submitted for the continued intermittent use of this medium-potency topical steroid foam. His waiver is submitted to his major command and a 1-yr unrestricted waiver is granted for his condition of seborrheic dermatitis with chronic topical corticosteroid usage. Maj. Smith thanks you for the time and attention you gave to his "simple" refill. Over the next year Maj. Smith goes on to fly 35 combat sorties in his F-15 Strike Eagle, during which time he is without medical concern and continues to safely and effectively bring overwhelming airpower to far parts of the world.

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