

You're the Flight Surgeon

This article was prepared by David B. Leary, D.O., M.P.H.

It is the end of a busy Friday clinic day and you are finally headed home, and although you are the flight surgeon on call this weekend, you still hope for a quiet weekend. As you pull into your driveway, your phone rings and it is one of your pilots. He mentions that he just got back into town yesterday after having been on leave for the past 2 wk with his newly pregnant wife traveling around Southeast Asia to celebrate. After a few pleasant exchanges about his trip, he mentions that his nose has been running nonstop since he woke up this morning and he felt he might have a fever that started late last night. He states although he didn't want to bother anyone on the weekend, he was on the schedule to fly Monday morning and wanted to make sure he was going to be good to fly. As he is not one of your high-utilizers, you wonder how bad his symptoms must be for him to call you after hours. You are tempted to give him some home-care instructions and call it a day, but you recall him saying his wife was pregnant and decide to go the extra mile. You tell him to meet you back in the clinic in 20 min and you head back toward base.

1. What concerns regarding his story interest you the most?

- A. Is he safe to fly on Monday?
- B. Symptoms.
- C. Travel history.
- D. Pregnant wife.
- E. All of the above, but still need more info.

ANSWER/DISCUSSION

1. E. Although you suspect this is just a posttravel upper respiratory infection (URI), you hold off judgment until all of the data are in. All of the above items peak your interest, but as you haven't seen the patient yet, you defer making any rash judgments until you've done your exam.

You roll into your clinic waiting room and find that your pilot, a 29-yr-old Caucasian male F-16 driver, is already there waiting for you. He doesn't look too bad, but you do notice he is wearing his flight jacket despite it being warm outside, and his eyes look a little bloodshot. You take him back into the exam room and get the following vitals: height 73 in, weight 187 lb, blood pressure 131/82 mmHg, heart rate 98 bpm, temperature 99.9°F, pain 1/10 (achy). The patient states

that he is normally healthy and rarely gets sick. He did take some acetaminophen this morning and again this afternoon for the body aches and fever. He states he didn't take his temperature and doesn't know what his temperature was prior to the acetaminophen. He reports their trip went great and states neither he nor his wife had any gastrointestinal issues on their trip, they used insect spray to ward off bites and reports that it worked well, and he wasn't aware of having any contact with actively sick people on their trip. He does report they visited an orphanage in the Philippines that their church sponsors. His wife wasn't complaining of any symptoms at present and he states that they were both up-to-date on their vaccinations prior to their trip.

On physical exam you note the following: conjunctiva injected and watery; nasal mucosa erythematous, slightly swollen with watery discharge; throat slightly injected without exudate; no neck lymphadenopathy noted; tympanic membranes (TMs) mildly injected bilaterally, but clear and able to Valsalva, although right TM was sluggish; lungs clear, and heart regular without murmurs noted; skin clear; abdomen normal exam.

2. What diagnosis is most likely given the available information?

- A. Viral URI.
- B. Seasonal allergies.
- C. Bacterial URI.
- D. Cerebrospinal fluid leak.
- E. None of the above.

ANSWER/DISCUSSION

2. A. Reported fever, chills, rhinorrhea, and the exam findings listed above support a viral URI. Bacterial origin is less likely with the absence of purulent discharge on the nasal and throat exam. Cerebrospinal fluid leak, although on the differential for clear rhinorrhea, would be unlikely given no recent head injury or surgery.

As he does not appear toxic and the symptoms just started and appear to be viral in nature, you decide to send him home with instructions to practice good hand and cough hygiene precautions to avoid

DOI: <https://doi.org/10.3357/AMHP.5346.2019>

passing this on to his spouse and to get some rest. He is told he can use over-the-counter medications for his symptoms, as you are going to ground him from flight duties until he is able to clear his ears easily. You tell him you'll see him Monday morning to see about returning him to flying status, but as you are the on-call flight doc, you tell him he can call you if his symptoms worsen.

Sunday evening you receive a call from the pilot's wife and she sounds worried. She reports that her husband has been in bed since Saturday morning, his nose is still running despite taking some over-the-counter pseudoephedrine and acetaminophen, he complains of feeling cold, and he now has a slight cough. She says that she also found their lost thermometer and that his temperature is now 102°F. He now has a red spotty rash along his hairline that appeared this morning and seems to be spreading down his neck, but she thinks he might have reacted to their new shampoo. You have her drive him to the urgent care center on base and tell her that you'll meet them there. In the urgent care center, the technician gets him checked in and his vitals are now as follows: height 73 in, weight 187 lb, blood pressure 138/85 mmHg, heart rate 107 bpm, temperature 103.4°F, pain 3/10 (achy). He appears similar as before, but he now has a maculopapular rash spreading from his hairline down his neck, which itches mildly. His right TM is now injected with a clear serous effusion and is no longer mobile on Valsalva. Oropharyngeal exam reveals a slightly red pharynx and some small white lesions on the buccal mucosa. The remainder of his exam is unchanged.

3. What is the most likely diagnosis given the above?

- A. Allergic reaction to shampoo.
- B. Varicella.
- C. Rocky Mountain spotted fever.
- D. Rubeola (measles).
- E. Rubella (German measles).

ANSWER/DISCUSSION

3. D. Rubeola or measles is the most likely diagnosis given the history and exam. High fever, the three C's (cough, coryza, and conjunctivitis), and Koplik spots (small red/white spots on buccal mucosa) are hallmark early characteristics of measles and are usually present 2–3 d before the rash.¹ The exanthem (rash) appears approximately 3 d after these symptoms start and begins on the face/head and spreads cephalocaudally onto the trunk and extremities, sparing the palms and soles (unlike Rocky Mountain spotted fever), and blanches early on but not late in the illness. The rash is not infectious, like varicella (chicken pox), and doesn't have vesicles or pustules associated with it. It would be unlikely for a topical allergic reaction to cause the symptoms noted. Rubella and rubeola share a lot of the same characteristics, although rubella tends to resolve quicker (3-d rash) and the symptoms tend to be subclinical, but rubella is more harmful to pregnancies than rubeola.

You determine that, although you've never personally seen an active case of the measles, the clinical diagnosis matches what you know about the disease. The prodrome for measles can be up to 14 d after exposure¹ and it is possible that your patient was exposed during his trip in Southeast Asia, as there have been no local reports of measles to date. After talking with the internist on call, the patient, and his wife, you all decide admission into the hospital with respiratory

droplet precautions for a few days is warranted, given the patient's wife is pregnant and the member is still infectious. On admission, the internist orders confirmatory labs to be drawn (serum measles immunoglobulin M and measles ribonucleic acid real-time reverse transcription polymerase chain reaction) and alerts the public health officer of an infectious disease on base. As the measles virus is one of the most contagious diseases known to man, it is important that the public health department verify all exposed to the airman have been vaccinated and have positive antibody serologies to rubeola.¹

4. What sort of treatment is required for measles?

- A. Antiviral therapy (i.e., ribavirin).
- B. Antibiotic therapy.
- C. Supportive care (i.e., antipyretics, fluids, and rest).
- D. Vitamin A therapy.
- E. Measles, mumps, and rubella (MMR) booster.

ANSWER/DISCUSSION

4. C. Supportive care is the only treatment required for a person who is not in a high-risk category (i.e., age < 12 mo, > 12 mo with pneumonia, or severe immunosuppression). Antiviral therapy has been shown to slightly shorten the duration of the fever, but more research is required to determine if it should be a standard of care. Antibiotics may be warranted for secondary infections (i.e., pneumonia, otitis media, etc.), but not for the disease itself. Vitamin A therapy is used in children with vitamin A deficiencies.^{2,6} MMR vaccine postexposure prophylaxis can be done within 72 h postexposure to measles per the Centers for Disease Control and Prevention. Your patient is more than 72 h after start of symptoms, which puts him at more than 7–14 d postexposure and is therefore not eligible.⁴ Measles virus sheds for up to 4 d after the rash appears, so it is important to self-isolate (at home is an option) to avoid exposing others to the virus.¹

Your patient is discharged after 3 d in-patient. He is afebrile, the rash has cleared from his face/head, and is slowly resolving down his trunk. His other symptoms (rhinorrhea, cough, and serous otitis) are improving slowly and he asks how he could have gotten the measles since he was fully vaccinated. You tell him that the MMR vaccination is extremely effective and is thought to give 97% of people who get two separate doses of the vaccine lifelong immunity. However, that leaves up to 3% of those receiving the vaccine to be considered nonconvertors. Those 3% are at higher risk of contracting measles if they are exposed to live measles, but may only have milder symptoms and decreased infectivity than someone who has not received the vaccine.²

5. He asks if he and his wife should be worried, given she is pregnant. What should you tell him?

- A. She should receive an MMR booster immediately.
- B. She should have her immunity checked and receive an MMR booster during pregnancy if negative.
- C. She should have her immunity checked and receive an MMR booster after she delivers her child.
- D. Reassurance.
- E. Both C and D.

ANSWER/DISCUSSION

5. **E.** You reassure him that they both were exposed near the same time and she hasn't shown any symptoms to date, which is a good sign. It is unlikely that both of them are nonconvertors to the MMR vaccine, but it is a good idea to check her immunity status (serum immunoglobulin G level) and offer her the MMR vaccination after she delivers their baby if her immunity is waning. The MMR vaccination is not recommended during pregnancy, as it is a live virus vaccine, but it is recommended for all women of child-bearing years at least 1 mo prior to getting pregnant.⁴

You follow up with the patient 7 d after hospital discharge. On exam, his vital signs have all normalized and he is off all medications. He reports his right ear is no longer painful and, other than a slight cough and a resolving rash, he has no other symptoms. On exam he is able to Valsalva, although the right TM is still a little sluggish.

6. He asks whether or not he can return to flying duties. What do you do?

- A. Return him to flying status today.
- B. Continue him on duties not including flying status but reexamine him in 2–3 d to verify he can clear his ears before returning him to flying status.

ANSWER/DISCUSSION

6. **B.** You inform him that although he is very close to returning to flying status, you want to make sure that his ears can clear easily on the ground prior to putting him back into the cockpit. You have him follow up with you in 3 d, at which point his serous otitis had resolved and he was able to clear his ears. He was swiftly returned to flying status and told to follow up with you as needed.

Measles is a ribonucleic acid virus that is preventable through routine vaccination. As a society we rely on herd immunity, but as reported above, 3% of people vaccinated are still at risk of contracting the disease.^{1,2} Although there is no specific guidance for aviators related to the measles infection, the grounding period is determined by the duration of the illness and full recovery from symptoms. No

waiver or special issuance is necessary following full recovery from the measles infection.^{3,5,7,8}

Leary DB. You're the flight surgeon: measles. *Aerosp Med Hum Perform.* 2019; 90(10):908–910.

ACKNOWLEDGMENTS

The author would like to thank Robert L. Holmes, D.O., M.S., FIDSA, for his expert advice in writing this article. The views expressed in this article are those of the author and do not necessarily reflect the official policy or position of the Air Force, the Department of Defense, or the U.S. Government.

REFERENCES

1. Centers for Disease Control and Prevention. Measles (rubeola). 2018. [Accessed 5 Dec. 2018]. Available from <https://www.cdc.gov/measles/hcp/index.html>.
2. Centers for Disease Control and Prevention. Vaccines and preventable diseases. Measles, mumps, and rubella vaccination: what everyone should know. 2018. [Accessed 5 Dec. 2018]. Available from <https://www.cdc.gov/vaccines/vpd/mmr/public/index.html>.
3. Federal Aviation Administration. Guide for aviation medical examiners. Washington (DC): Federal Aviation Administration; 2018. [Accessed 5 Dec. 2018]. Available from http://www.faa.gov/about/office_org/headquarters_offices/avs/offices/aam/ame/guide/.
4. McLean HQ, Fiebelkom AP, Temte JL, Wallace GS; Centers for Disease Control and Prevention. Prevention of measles, rubella, congenital rubella syndrome, and mumps, 2013: summary recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR Recomm Rep.* 2013; 62(RR-04):1–34.
5. Naval Aerospace Medical Institute. U.S. Navy aeromedical reference and waiver guide. Pensacola (FL): Naval Aerospace Medical Institute; 2018. [Accessed 5 Dec. 2018]. Available from <http://www.med.navy.mil/sites/nmotc/nami/arwg/Pages/default.aspx>.
6. Sudfeld CR, Navar AM, Halsey NA. Effectiveness of measles vaccination and vitamin A treatment. *Int J Epidemiol.* 2010; 39(Suppl. 1):i48–i55.
7. U.S. Air Force. Air Force waiver guide. Wright-Patterson AFB (OH): U.S. Air Force School of Aerospace Medicine; 2018. [Accessed 5 Dec. 2018]. Available from <https://www.wpafb.af.mil/afrl/711hwp/usafsam.aspx>.
8. U.S. Army. Standards of medical fitness. Washington (DC): Department of the Army; 2017. *Army Regulation 40-501.* [Accessed 5 Dec. 2018]. Available from https://armypubs.army.mil/epubs/DR_pubs/DR_a/pdf/web/ARN8673_AR40_501_FINAL_WEB.pdf.

This article was prepared by Hattie D. McAviney, D.O.

You're the flight surgeon covering a routinely busy morning of sick call, precepting independent duty medical technicians (IDMTs) in between your patients. One of these aviators had come in for a simple refill of loratadine for his mild seasonal allergies and, as the IDMT was sending the patient to the pharmacy, the patient said, "Oh by the way...can I get this cyst removed?" Eager for any opportunity to do clinical procedures, the question is brought to you with enthusiasm and you proceed to the exam room with your IDMT. The 24-yr-old male patient, a tanker

pilot new to the squadron, reports he noticed the painless lump on the right side of his neck 2 yr ago. He presented to the clinic at that time and was told that it was likely a small cyst, to just watch it and follow up if it got worse. He has no specific complaint about the lump now, aside from its persistent existence. cursory review of systems is negative. Upon examination, you can see the lump located on the right side of

DOI: <https://doi.org/10.3357/AMHP.5345.2019>