# DFASM3 – FollowUp 02 *Shortness of Breath* Transcript

Based on *http://www.medscape.org/viewarticle/727945?src=emed_case_nl_0*

*Dr Jeremy Daven, attending physician in the Emergency Medicine Department at Mayo Clinic Hospital, is talking to Mrs Edna Zlock, a 43-year old black woman.*

JEREMY DAVEN: Hello Mrs Zlock, I am Dr Daven.

EDNA ZLOCK: Hello doctor.

JEREMY DAVEN: What's brought you to the **emergency department** today?

EDNA ZLOCK: I am having trouble breathing, so much so that I haven't been able to function well at home.

JEREMY DAVEN: Can you remember when it started?

EDNA ZLOCK: Well it's getting worse, that's why I came today. It's been happening for 5 days. And I've been coughing.

JEREMY DAVEN: Can you tell me more about your breathing difficulties?

EDNA ZLOCK: I need to breathe more to do even little things. And today I really had a hard time going up the stairs to my house because of that, and even **doing the dishes**. The cough is nothing much but it is **annoying** because nothing comes up - but it keeps happening.

JEREMY DAVEN: So you've had increasing breathing difficulty for the past 5 days, along with a cough. Is there anything else that you have experienced?

EDNA ZLOCK: No, nothing else.

JEREMY DAVEN: Any fever, **chills**, chest pain, palpitations?

EDNA ZLOCK: No, no.

JEREMY DAVEN: Has anyone around you been out of breath or coughing like you, or have you visited any sick person in the past weeks?

EDNA ZLOCK: No, I don't know anybody who's sick.

JEREMY DAVEN: Have you been travelling recently?

EDNA ZLOCK: No, I haven't gone out of town in the past 5 years.

JEREMY DAVEN: Okay. Have you ever felt this type of breathing difficulty before?

EDNA ZLOCK: Well, it's actually been happening for about a year, but it wasn't too bad at first, it's been getting slowly worse and the last 5 days have been really bad. I don't know what could have started it, I didn't do anything special, or have a cold or anything.

JEREMY DAVEN: Can you tell me a bit about your overall health?

EDNA ZLOCK: I have asthma, which I thought was making the breathing harder, and I have high blood pressure.

JEREMY DAVEN: Have you had any recent episodes of respiratory trouble, colds, **flu**, etc.?

EDNA ZLOCK: Well, yes, I did have a few **bouts** of that this year, I even got antibiotics from my doctor – I had a bad chest.

JEREMY DAVEN: Alright, and are you taking any medication?

EDNA ZLOCK: Well, I take **oral** contraceptives because I've had really bad, really heavy periods, and I'm supposed to take a few other things regularly but I haven't really been. I brought them along, I never remember the names!

JEREMY DAVEN: Let's see, we have something for your blood pressure, and two drugs for your asthma. And you don't take them regularly?

EDNA ZLOCK: Not really, no, I don't feel any different when I do and I don't want to take too many drugs. I don't tend to be good about seeing doctors or taking drugs.

JEREMY DAVEN: I see. Are there any particular diseases that **run in your family**?

EDNA ZLOCK: Well, my dad has diabetes and my grandma had heart problems.

JEREMY DAVEN: Ok, do you smoke at all?

EDNA ZLOCK: No, not any more. I quit 10 years ago. I did used to smoke quite a bit.

JEREMY DAVEN: Can you tell me how much and for how long?

EDNA ZLOCK: About a pack a day for 20 years. I mean it was less at the beginning, I started far too young, and more at the end. So on average, it must be about that.

JEREMY DAVEN: And would you say you drink more or less than 4 drinks a day?

EDNA ZLOCK: Well I don't drink at all, I'm **teetotal** and completely against alcohol and before you even ask, I have never done drugs and will never touch it.

JEREMY DAVEN: Ok. Do you have any allergies?

EDNA ZLOCK: No, not that I am aware of.

JEREMY DAVEN: Alright, well, if you'll allow me, I'll proceed to examining you then. Let's **measure** you and **weigh** you first. Please remove your shoes and stand along this wall. That's 5 foot 4. Ok, and could you step on those **scales** for me? Thank you. That's 262 pounds. So your weight and height give a BMI of 45 and—

EDNA ZLOCK: That's not great, is it?

JEREMY DAVEN: Well it is above the recommended weight and it is very common for people who are over the recommended weight to be **out of breath** because the extra weight forces the heart and lungs to work harder. But it wouldn't explain the recent **escalation** of your health troubles.

EDNA ZLOCK: Oh, ok, I understand.

JEREMY DAVEN: Now let's check your **vitals**. Would you **roll up your sleeve** for me please? I'll just take your blood pressure. Ok, 170/95, which confirms the high blood pressure. That's why you need the medication your primary care provider prescribed you.

EDNA ZLOCK: But what's so bad about a bit of high blood pressure?

JEREMY DAVEN: High blood pressure also stresses the heart, so not taking your medication gives your heart an additional challenge to what the extra weight does. Over the long term, high blood pressure can lead to very serious conditions, such as **heart attack**, **strokes**, etc. It's the most important preventable risk factor for premature death worldwide.

EDNA ZLOCK: I never knew it could get to that. I guess maybe I'll try and remember to take the medication more often.

JEREMY DAVEN: That would be wise. Now, let's take your temperature. 37°C.

EDNA ZLOCK: What does that mean?

JEREMY DAVEN: That's 98.6°F, so perfectly normal. I'm just going to check your heart rate – 106. And your respiratory rate is 18 breaths per minute, that's normal but on the higher range. I'm going to **clip** this to your finger to check how much oxygen there is in your blood – 97%, that's normal too. Now I'm going to listen around with my stethoscope. Just relax, take a deep breath. Ok, a few **crackles** in the lungs, nothing too bad. Let's have a listen to your heart then. All normal, that's good. I'm just going to check your **lymph nodes** now. Any pain here?

EDNA ZLOCK: No, not at all.

JEREMY DAVEN: Good – they *are* a little **swollen**. You don't seem to have any **rash**, that's good. If you'll let me, I'll have a look at your feet. Ah a little bit of swelling there.

EDNA ZLOCK: Is this all really bad?

JEREMY DAVEN: No no, please don't be **alarmed**. You are in no **acute distress**. We just have to run a few tests to understand what is causing your symptoms, so I'm going to **admit** you. I'll put in an order for an electrocardiogram, some blood tests, and an X-ray and CT-scan of your chest, just to be **thorough**. For now I'll just ask you to get some rest and relax as much as possible. Is that alright with you?

EDNA ZLOCK: Yes, that's fine doctor, thank you.

*Later in the week, JEREMY DAVEN is talking about the case with his second year resident, EMILY EASTWICH.*

JEREMY DAVEN: Hello Emily, have you familiarized yourself with Mrs Zlock's case?

EMILY EASTWICH: Yes, I have.

JEREMY DAVEN: Ok, good. Can you summarize it to me?

EMILY EASTWICH: Yes, alright. Mrs Zlock, a 43-year-old black woman, presented to the ER with a 5-day history of increasing shortness of breath along with a **mild**, nonproductive cough. She denied having any fever, chills, chest pain, or palpitations. No sick contacts were identified, and she denied any recent travel. On further questioning, the patient reported that she first experienced shortness of breath 1 year ago, and that it had been gradually progressive since then. Her shortness of breath had particularly **worsened** over the 5 days **prior to** presentation, to the point that it was limiting her daily activities; this prompted her to come to the **ED.** She did not attribute the shortness of breath to any **precipitating event**. Her **past medical history** is significant for asthma and hypertension, as well as for several episodes of presumed bronchitis or pneumonia last year; she recalls being treated with antibiotics as an **outpatient** by her primary care provider. She also has a history of heavy menstrual **periods**, for which she has been on **OCPs**. Her family history is positive for **DM** and ischemic heart disease. Except for the OCPs, she is **non-adherent** to the rest of her regular medications, which includes an ACE inhibitor, an inhaled corticosteroid, and a beta-2 agonist. She quit smoking 10 years ago, after a 20-**pack-year history**. She denied any alcohol or illicit drug use, and she has no known allergies – drug or otherwise.

JEREMY DAVEN: Good, perfect actually, very well done. What about the examination? You may look at your notes for this.

EMILY EASTWICH: On physical examination, she appeared to be in no acute distress. She is **morbidly obese**, with a BMI of 45. Her blood pressure was 170/95, her heart rate 106, her respiratory rate was 18, and her temperature 98.6°F. Her $O^2$ sats were at 97% while breathing ambient air. Pertinent findings on chest examination included fine crackles at the lung bases, with **decreased vocal fremitus**. Auscultation of the rest of the chest revealed no abnormalities. Her cardiovascular examination showed normal **first and second heart sounds**, with no **jugular venous distention**, murmurs, **rubs**, or gallops. There were several enlarged, non-tender cervical and axillary lymph nodes bilaterally. She had no rashes. The neurologic examination was non-focal. Her peripheral **pulses** were palpable. Examination of her lower extremities elicited mild bilateral **pitting pedal edema**. The rest of her examination revealed no significant findings.

JEREMY DAVEN: Ok, good. Now that I know you're up to speed, here are the results of her tests. Her EKG is remarkable for sinus tachycardia. The initial laboratory workup reveals a creatinine of 1.6, proteinuria of over 300, and hematuria of 50-100 red blood cells per high-power field. She has anemia, with a hemoglobin of 8.1 and hematocrit of 25.4%, respectively. Her mean corpuscular volume is 77, with iron levels of less than 10, a total iron binding capacity of 197, and a ferritin level of 68. The D-dimer is positive at 4.73, and the ESR is elevated at 50. Her chest x-ray shows a right-sided **pleural effusion** and a **patchy linear opacity** at the base of the left lung that is **consistent with scar tissue**. CT scanning of the thorax shows bilateral small pleural effusions that are greater on the right than the left, significantly enlarged axillary and subpectoral lymph nodes bilaterally, and a small **pericardial effusion**. Now, keeping her history in mind, what are your thoughts about a possible etiology?

EMILY EASTWICH: Well, the constellation of serositis, hypertension, diffuse lymphadenopathy, azotemia, and proteinuria in Mrs Zlock seem to suggest a systemic autoimmune disease.

JEREMY DAVEN: Any more specific ideas?

EMILY EASTWICH: I don't think it can be rheumatoid arthritis given the patient has not complained of arthritis and it generally starts with that. IgA nephropathy is possible but not as likely as SLE, which would be my best bet at this stage.

JEREMY DAVEN: Very nice. Further laboratory workup revealed a positive result for ANA (antinuclear antibodies) at 1:640, including those against ds-DNA, an IgG titer of 300, and an anti-Smith finding.

EMILY EASTWICH: Well, I think we can go with SLE then.

JEREMY DAVEN: Yes, indeed Systemic Lupus Erythematosus fits this case. Other relevant findings included a decreased complement level, with C3 and C4 levels of 46.2 and 5.3 respectively, a positive Coombs test; hypoalbuminemia at 3.1, and a negative lupus anticoagulant antibody finding. Biopsy of the **kidney** was performed, which showed diffuse proliferative lupus nephritis class IV, with moderate activity and no chronicity. Moderate interstitial inflammation was also seen. So, do you have any ideas for treatment?

EMILY EASTWICH: Would oral corticosteroids and mycophenolate mofetil be **indicated** in this case?

JEREMY DAVEN: Yes, that's very good, great work. I'm going to give the news to the patient now. Care to come along? You could try and explain the diagnosis to the patient in terms she might understand.

EMILY EASTWICH: Sure, yes.

EDNA ZLOCK: Ah hello doctor Daven.

JEREMY DAVEN: Hello Mrs Zlock. This is Doctor Emily Eastwich, a resident here. (Hello!) Do you mind if she joins us today?

EDNA ZLOCK: Not at all. Hello doctor Eastwich. Dare I ask if you have found anything?

JEREMY DAVEN: We do have a pretty good idea of what is going on now.

EDNA ZLOCK: Well that's good with all the **poking and prodding** I have had to go through!

JEREMY DAVEN: The disease you have is quite complex actually. It is what we call an auto-immune disease, which means your body is attacking itself. What you have is called Systemic Lupus Erythematosus or SLE.

EDNA ZLOCK: What's that?

EMILY EASTWICH: It is a chronic inflammatory disease of unknown cause characterized by a **wide spectrum** of signs and symptoms – which makes it a little **tricky** to diagnose. So that explains all the tests.

EDNA ZLOCK: Ok, but what does it do? I mean how does it manifest?

EMILY EASTWICH: Well, because the disease affects the connective tissue – that's anything that links organs basically – multiple organ systems, including the skin, **joints**, kidneys, lungs, nervous system, and possibly other organs of the body can be affected. What happens is that the immune system attacks the body's own cells and tissue, which causes a continuous inflammatory response and tissue **damage**. The specific manifestations in patients vary greatly and the **disease course** is as variable as it is unpredictable, with periods of illness alternating with periods when patients feel better.

EDNA ZLOCK: Okay, so I guess that means I have a disease which is weird and changes all the time?

EMILY EASTWICH: Well that's one way to put it, yes. We don't know what it's going to do to you specifically.

EDNA ZLOCK: But how did I get it? I don't know anybody who has it. I've never even heard of it!

JEREMY DAVEN: While we don't know what causes SLE, the highest prevalence among ethnic groups is in African-Americans. SLE is also up to 10 times more common in women than in men and typically occurs between 15 and 45 years of age. Also, women like you, who have been exposed to estrogen-containing oral contraceptives, do have an increased risk of developing SLE.

EDNA ZLOCK: Oh, ok. So there wasn't much I could do to **prevent** it... But now what do I do?

JEREMY DAVEN: Well, SLE is not **curable**, but we can **treat** the symptoms. In your case, we'll begin treatment with high-dose oral corticosteroids and an immunosuppressant. You should feel much better in about a week, but you will need renal, rheumatological, and primary care follow-up. It does mean you'll have to go and see doctors fairly regularly.

EDNA ZLOCK: Well, I couldn't really function anymore so I guess I'll have to follow doctor's orders for once. At least now we know what's going on. Thank you, doctors.