

Appendix to Gibson et al. “Application of a decision rule and a D-dimer assay in the diagnosis of pulmonary embolism” (Thromb Haemost 2010; 103.4)

Case 1

You are paged by an emergency room physician, who has just seen a 68-year-old woman who had a curative hemicolectomy four weeks earlier because of a Dukes B colon carcinoma. She now complains of a swollen left leg and shortness of breath. Upon the physical exam, the respiratory rate was 24/minute, the tension 110/75 mmHg, heart rate was 108/minute and the left leg looked very suspect for deep-vein thrombosis. The EKG shows a new right bundle branch block and on the chest X-ray some pleural effusion can be seen in the right pleural cavity.

CDR score: points

- A. You perform an ultrasound of the leg. If positive for thrombosis, you perform no further diagnostic tests.
- B. You ask for a D-dimer test and let further diagnostic actions depend on the outcome of this test.
- C. You perform a CT scan to exclude or diagnose pulmonary embolism.

Case 2 – version A

You see a 63-year-old Indian man. His medical history contains a knee operation in 1980, complicated by deep vein thrombosis of that leg. He also has diabetes and mild hypertension. The patient explains he's been having a severe flu for almost a week, but that he now also has shortness of breath and chest pain. Upon physical examination you find his body temperature is 37.7°C, the blood tension is 145/90 mmHg, he has an elevated heart rate (110/minute), his respiratory rate is 20/minute. The chest X-ray is normal. Besides tachycardia, the ECG shows no abnormalities.

CDR score: points

- A. You do not perform diagnostic testing for pulmonary embolism, because you believe this diagnosis is unlikely for this patient.
- B. You ask for a D-dimer test and let further diagnostic actions depend on the outcome of this test.
- C. You perform a CT scan to exclude or diagnose pulmonary embolism.

Case 2 – version B

Same case as version 1, only 'D-dimer 1.8 mg/l' was added to the information.

- A. You request a troponin assay and ask the cardiologist to examine the patient.
- B. You perform a CT scan to exclude or diagnose pulmonary embolism.
- C. You perform an ultrasound of the leg. If this is negative for thrombosis, you perform a spiral CT-scan.

Case 3

A man, 68 years old, who has an active carcinoma of the prostate, comes to see you in the outpatient clinic complaining of chest pain, cough, shortness of breath and a cold. With physical examination you find the following parameters: body temperature 37.5°C, tension 120/60 mmHg, heart rate 88/minute. Auscultation of the lungs is normal and so are the chest X-ray and the EKG. Laboratory test: D-dimer 0,3 mg/l.

CDR score: points

- A. You do not perform diagnostic testing for pulmonary embolism, because you believe this diagnosis is unlikely for this patient.
- B. You ask the patient to come back in two days, because you do not fully trust the D-dimer and the clinical decision rule with his underlying malignancy.
- C. You perform a CT scan to exclude or diagnose pulmonary embolism.

Case 4 – version A

You see a woman aged 61 years who stopped smoking two years ago. After her second pregnancy she had a DVT in the left leg. During the following three years she used oral contraceptives without any complications. The patient reports she has been coughing a lot more than usual during the past week. Five days ago, she had a fever when she measured her body temperature at home (38.4°C), but this was gone soon afterwards. Since one day, she has shortness of breath and a mild pain on the lateral side of the left thorax. With physical examination you find a body temperature of 37.2°C, her blood tension is 151/94 mmHg, the heart rate is 108/minute, the respiratory rate is 22/minute, on auscultations of the lungs no abnormalities. Both the chest X-ray and the EKG are normal. The D-dimer test is 2.4 mg/l.

CDR score: points

- A. You thoroughly re-examine the patient and the chest X-ray to exclude a rib fracture or pneumothorax.
- B. You perform a CT scan to exclude or diagnose pulmonary embolism.
- C. You refer the patient to a cardiologist.

Case 4 – version B

Same case as version 1, except for leaving out the D-dimer result.

- A. You do not perform diagnostic testing for pulmonary embolism, because you believe this diagnosis is unlikely for this patient.
- B. You ask for a D-dimer test and let further diagnostic actions depend on the outcome of this test.
- C. You perform a CT scan to exclude or diagnose pulmonary embolism.

Case 5

A 73-year-old woman with no medical history reports to your outpatient clinic. After she fell with her rollator while doing groceries a week earlier, she had to rest several days because of a painful right knee. Since two days, she also developed some chest pain and coughed up a little bit of blood. Body temperature 36.8°C, tension 115/68, heart rate 72/minute. Normal breath sounds. Lab: D-dimer 0.95 mg/l. There is some pleural effusion on the left side on the chest X-ray.

CDR score: points

- A. You perform an ultrasound of the right knee, and also check for deep-vein thrombosis of the right leg.
- B. You perform a CT scan to exclude or diagnose pulmonary embolism.
- C. You refer the patient to a pulmonologist to perform a bronchoscopy.