



# A case of acute chest syndrome

Quick thinking and anticipating treatment results in a good outcome.

By John T. Taylor, DNP, RN-BC, CPN

**DAVID ROBERTS\***, age 19, is admitted to your medical-surgical unit for management of a vaso-occlusive pain crisis related to sickle cell disease (SCD). Your initial assessment finds Mr. Roberts awake, alert, and oriented. He reports pain in his right arm but says it's controlled with his hydromorphone patient-controlled-analgesia infusion.

## History and assessment hints

You document Mr. Roberts' vital signs: temperature 100.5° F (38° C), heart rate (HR) 108 beats per minute (bpm), respiratory rate (RR) 22 breaths/minute, blood pressure (BP) 115/70 mmHg, oxygen saturation (SpO<sub>2</sub>) 93% on room air.

With the exception of the pain report, your assessment findings are unremarkable. You note an occasional dry, nonproductive cough and bilateral crackles when auscultating the lungs.

Eight hours later, Mr. Roberts' vital signs are temperature 101.5° F (38.6° C), HR 130 bpm, RR 28 breaths/minute, BP 112/68 mmHg, SpO<sub>2</sub> 89% on room air. Mr. Roberts says, "It's kind of hard to take a deep breath." His respiratory effort has increased, and you note subcostal retractions. Upon auscultation, you find worsening crackles in the left lung fields.

## Taking action

Knowing that Mr. Roberts' symptoms might be related to acute chest syndrome (ACS), you provide supplemental oxygen (3 L/minute) via nasal cannula and raise the head of the bed so it's easier for him to breathe, improving oxygenation. You STAT page the provider on call, who orders an immediate portable chest X-ray. You also verify patent I.V. access as you anticipate new medication orders, including antibiotics, and speak calmly with Mr. Roberts to reduce his anxiety.

The chest X-ray reveals a large infiltrate in the left lower lobe. This finding, combined with the clinical presentation, leads the provider to suspect ACS. You receive orders to obtain sputum culture, blood culture, and complete blood count. Pending results, the provider orders azithromycin 500 mg I.V. daily and cefepime 2 g I.V. every 8 hours. Anticipating a possible transfusion, you review Mr. Roberts' chart for a current type and

crossmatch. Finding no recent record, you alert the provider and obtain an order. You initiate the first doses of antibiotics and monitor the patient's response.

Mr. Roberts' respiratory status responds quickly to supplemental oxygen and repositioning: SpO<sub>2</sub> 96% on 3 L/minute of supplemental oxygen via nasal cannula, RR 21 breaths/minute, and breathing is less labored. Mr. Roberts is able to speak without shortness of breath, and he's transferred to a step-down unit for closer monitoring.

## Outcome

Within 36 hours, Mr. Roberts begins to respond to antibiotics, and his clinical status improves significantly. He's weaned off supplemental oxygen within 48 hours, and a follow-up chest X-ray shows that the infiltrate is reducing in size. Mr. Roberts is transferred back to the medical-surgical unit for the remainder of his hospital stay.

## Education and follow-up

When Mr. Roberts' pain is manageable without I.V. narcotics and a home pain-management plan is established, he's discharged home. Before he leaves, you teach him how to use incentive spirometry. You explain that determining the exact cause of ACS can be difficult so he should avoid people who may spread respiratory illnesses, and you remind him to avoid smoke exposure. You also instruct Mr. Roberts to stay hydrated at home to help avoid vaso-occlusive crisis, which can lead to ACS. Your final reminders to Mr. Roberts are that he keeps his follow-up appointments and calls his primary care provider if he experiences vaso-occlusive crisis or ACS symptoms.

Without early recognition and intervention, ACS can quickly evolve to acute respiratory distress syndrome, which can be fatal. Your quick action prevented this outcome. ★

\*Names are fictitious.

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