

SEPTIC SHOCK REVERSED IN ED

BACKGROUND: The patient was a 78-year-old male who was in his normal state of good health until the morning of Saturday, November 5. On Friday, November 4 he had done a 3-mile hike with his wife and their dogs and had no recent illness. He and his wife live independently in Highlands Ranch Colorado. He is 5' 9" weighs 150 pounds and his last hospitalization was in January 2014 for right hip replacement.

On the morning of Saturday, November 5 he did not get out of bed and his wife noticed he was confused and warm to touch. She could not get him to walk and she called 911.

EMS: The paramedics arrived to find a confused, healthy-appearing 78-year-old with a temperature of 101.6, they attempted to place an IV. This was unsuccessful, as the patient was hypotensive with a blood pressure of 82/40. He had a respiratory rate of 20 and a heart rate of 124. They were able to draw some blood and a lactate blood test was performed and showed an elevated value of 4.0 (normal is less than 2). They communicated by radio with their medical control and a SEPSIS ALERT was initiated. The patient was transported emergently to the local Emergency Department.

HOSPITAL ARRIVAL: The patient was greeted by a physician, two nurses and a critical care tech. The patient had no IV access and the nurses went to his right and left arms to obtain IV's. The patient was confused, he knew his name and the hospital he was at, but he did not know the date. His wife was with him and conveyed to the physician that he had hypertension, BPH and had had a hip replacement in 2014. The patient had seen his urologist 3 weeks ago and they had discussed surgical interventions for his enlarged prostate. He was otherwise healthy and had been in good health. She found him warm to touch and "not himself" this morning.

The doctor performed a physical exam that showed a confused 78-year-old with some mild suprapubic tenderness and fullness. The repeat vital signs showed a temperature of 101.8, a pulse rate of 128, a respiratory rate of 20 and a blood pressure of 78/44. The rest of his physical exam was unremarkable and his lungs were clear. His wife further reported that his only medication was lisinopril for hypertension and he had no medication allergies.

The critical care tech brought in the **BBS Revolution™** bladder scanner. A bladder scan was done and showed a bladder volume of 782 mLs of urine. The bladder volume was obtained 5 minutes following arrival, prior to IV access being obtained by the nursing staff.

Direct Questions regarding case to our Chief Medical Officer, bquirk@dbmedx.com

Copies of case report available at www.dbmedx.com/resources

From the bladder volume, the physician ordered a Foley catheter, Rocephin 2 grams IV (antibiotic), 2 liters of normal saline, full laboratories, chest x-ray, blood cultures, urinalysis and a repeat lactate level in one hour. Two peripheral IVs were ultimately obtained by the nursing staff and antibiotics and IV fluids were initiated 10 minutes into his arrival to the Emergency Department.

Over the next hour the patient received IV Rocephin and IV fluid boluses. 60 minutes later the repeat lactate was 1.8. The patient became alert and oriented. His BP was 124/60, heart rate was 88 after receiving 2 L of normal saline. His temperature was 99.4 after receiving 1 g of Tylenol. He was no longer confused and was stating that he was hungry. Laboratories and chest x-ray were normal. His urinalysis was positive for infection (positive nitrites and leukocyte esterase). The subsequent culture on this urine showed *Escherichia coli* that was sensitive and responsive to Rocephin.

The patient was admitted to the hospital for observation. He was discharged 24 hours later on oral antibiotics and next day follow-up with his urologist.

DISCUSSION: This case highlights the importance of the **BBS Revolution** bladder scanner. The volume obtained of 782 mLs of urine confirmed the diagnosis of urinary retention and infection. This allowed the physician to immediately start goal-directed UROSEPSIS therapy. No other diagnostic tests (other than the paramedics lactate level) had been resulted.

Mortality for UROSEPSIS is time-sensitive. Death and disability rates are directly linked to the rapidity of goal-directed therapy of antibiotic and IV fluid administration. The **BBS Revolution** bladder scanner was diagnostic and therapeutic. The volume obtained by the scanner confirmed the diagnosis of urinary retention as the cause for UROSEPSIS. Goal-directed IV fluid and antibiotic therapy were ordered even before IV access had been obtained.

The patient's care was expedited by the quick result obtained from **BBS Revolution** bladder scanner. Because of this, his length of stay in the hospital was decreased, unnecessary diagnostics (i.e. head CT) were not performed and he had an excellent clinical outcome.