

Emergency Department Considerations

Patients with Intrathecal Baclofen infusions may require care in an emergency department, although this will most often be unrelated to the ITB therapy. However, there are a number of complications that could occur that are related to the pump and infusion of Baclofen.

It is most important to perform a thorough history and physical examination of the patient. Although the ITB therapy should be considered as a potential cause of the symptoms, it should not automatically be considered the primary cause. For example, a SCI patient suffering from Autonomic Dysreflexia (AD) may exhibit symptoms of restlessness, agitation, and increased spasticity. While these symptoms can occur with Baclofen withdrawal, they are also commonly seen with AD. One difference between these; AD is often accompanied by hypertension, where withdrawal symptoms from Baclofen often include hypotension.

Patients seen in the ED with complications from the Intrathecal Baclofen infusion may demonstrate these problems:

- Baclofen Overdose
- Baclofen Withdrawal
- Audible Alarm from the Implanted Pump
- Signs of Infection

The following sections will provide additional information related to these complications, including causes, symptoms, and suggested treatment options.

Baclofen Overdose

Although rare, an overdose of Baclofen can occur. This is most frequently associated with an error in the refilling or reprogramming process. A key question to ask patients that exhibit symptoms of Baclofen overdose would be: “When was your last refill?” A refill in the past 1-2 days increases the likelihood of a programming error that could cause an overdose.

Other causes of Baclofen overdose may be a malfunctioning pump, or a patient’s reaction to an increase in the infusion rate that indicates that they are susceptible to very small increases in the infusion rate.

Contact information: Please contact the Mary Free Bed Spasticity Clinic for any issues that occur Monday – Friday, 8am-5pm. (616-242-0481) Mary Free Bed Hospital Nursing Supervisors are available at all other times for assistance when issues related to ITB occur (616-242-0483). This assistance is available for patients who are currently being seen for ITB management in the MFB clinic.

Symptoms of Overdose:

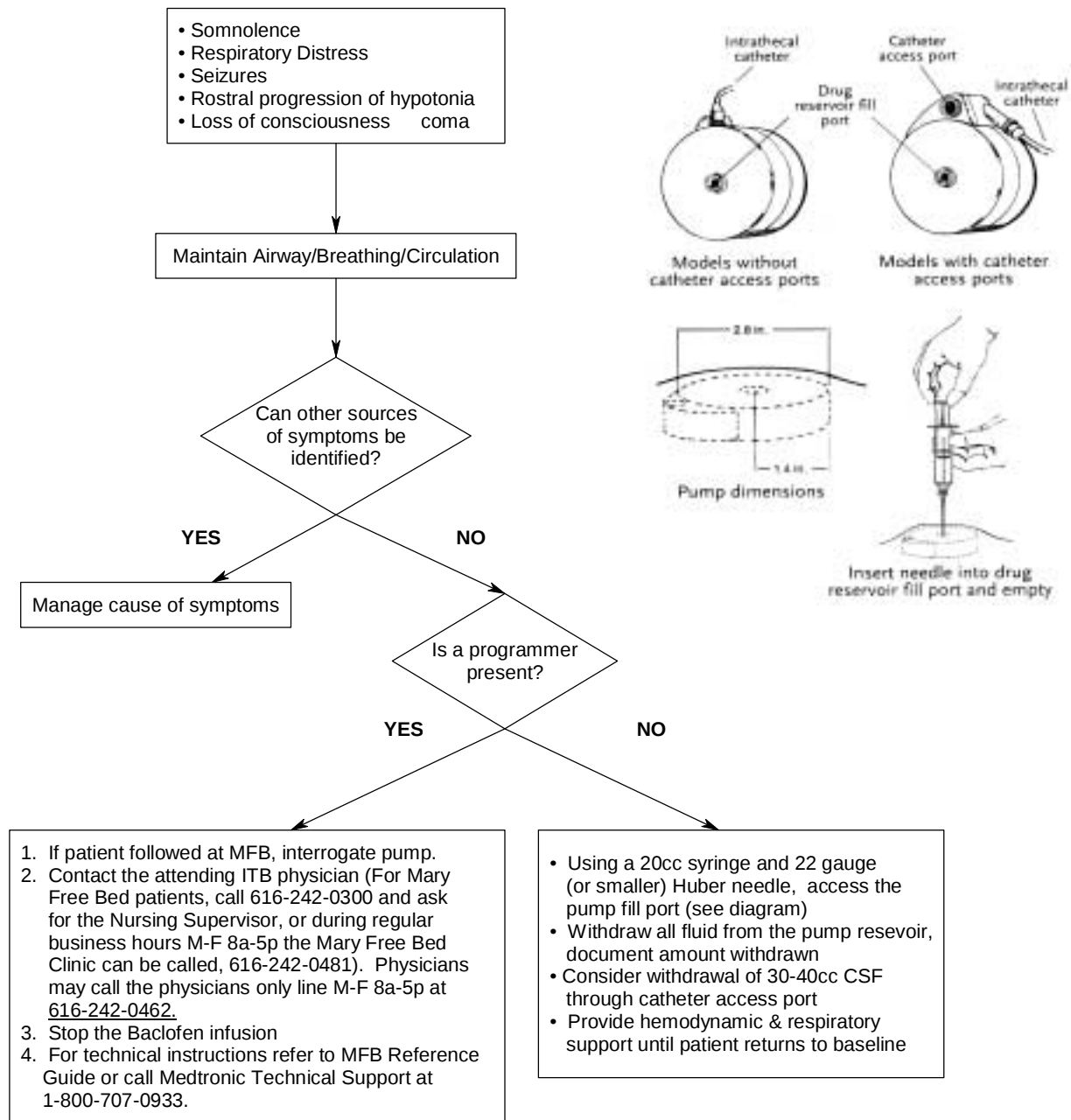
- Somnolence
- Respiratory Depression
- Seizures
- Rostral progression of hypotonia
- Loss of consciousness progressing to coma

Management of Overdose:

1. Maintain Airway/Breathing/Circulation
2. Interrogate the pump using the programmer and contact the primary physician managing the ITB therapy. This step applies only if you have a programmer available. This step is determine the current dose of ITB therapy.
3. If needed, stop the infusion
 - Use the programmer to shut the pump off (refer to instructions in the manual) **or**
 - Using a 20cc syringe and 22 gauge Huber needle, access the fill port of the implanted pump and remove the medication (refer to instructions in this manual)
4. Consider withdrawing 30-40 ml of CSF through the catheter access port (see diagram) to dilute the concentration of Baclofen in the CSF. A lumbar puncture to drain CSF will have the same effect.
5. Provide respiratory and hemodynamic support as needed until the patient returns to baseline.

These steps are also included in the algorithm found on the next page. Technical instructions are contained in this manual or can be received by calling Medtronic Technical Support at 1-800-707-0933.

SYMPTOMS OF BACLOFEN OVERDOSE



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6/19/03; 4/19/04, 5/25/05; 6/21/05

Baclofen Withdrawal

Contact information: Please contact the Mary Free Bed Spasticity Clinic for any issues that occur Monday – Friday, 8am-5pm: (616-242-0481). Mary Free Bed Hospital Nursing Supervisors are available at all other times for assistance when issues related to ITB occur. (616-242-0483)

Withdrawal symptoms can develop for patients that experience an abrupt decrease or stop of the intrathecal Baclofen infusion rate. This can occur for a number of reasons, including:

- Obstruction, occlusion, fracture, or disconnection of the catheter
- Catheter dislodging from the subarachnoid space
- Pump malfunction
- Low volume in the pump which leads to decreased flow

Symptoms of Withdrawal:

- Pruritis without rash
- Diaphoresis
- Hyperthermia
- Hypotension
- Neurological changes including agitation or confusion
- Sudden generalized increase in muscle tone, spasticity, and muscle rigidity.

With Advanced Withdrawal, the following complications are possible:

- Rhabdomyolysis
- Multiple organ failure

This condition may resemble:

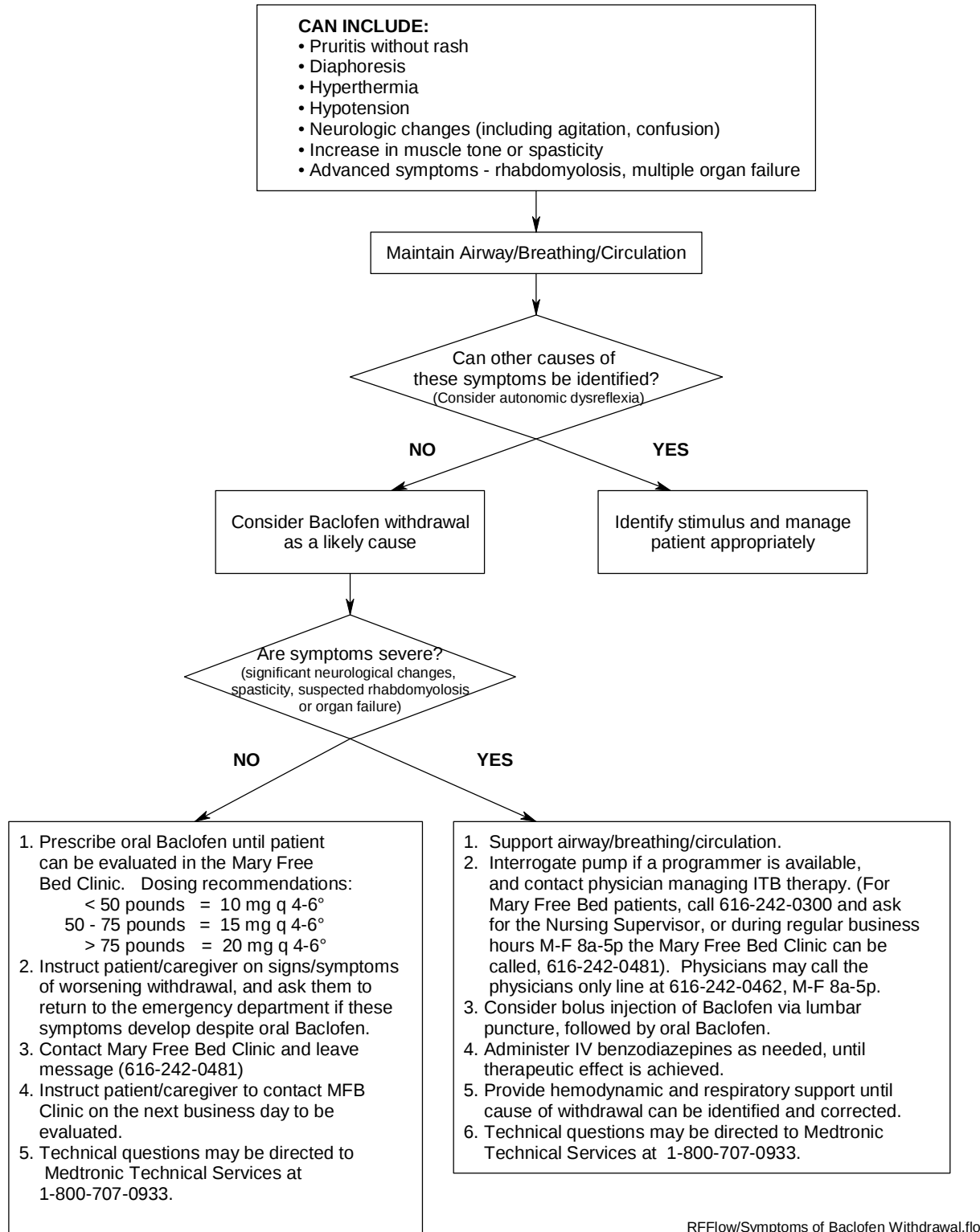
- Autonomic Dysreflexia (most common)
- Sepsis
- Malignant Hyperthermia
- Neuroleptic-malignant syndrome

Management of Withdrawal:

- Support Airway/Breathing/Circulation
- Consider other causes of increased spasticity, such as Autonomic Dysreflexia. Is there a new painful stimulus? (Recent surgery, fracture, infection, decubiti)
- Listen for an audible alarm from the implanted pump.
- Interrogate the pump using the programmer and contact the primary physician

- Consider checking reservoir volume manually, to ensure that volume remaining in the reservoir matches the reservoir volume reported during the pump interrogation (see instructions in this manual).
 - Consider KUB/lateral spine films to assess for catheter misplacement or disconnection.
- Administer high dose oral Baclofen if patient can take PO medications
- Consider administering an intrathecal dose of Baclofen via lumbar puncture if advanced or severe withdrawal symptoms are noted.
- Administer intravenous benzodiazepines by continuous or intermittent infusion, titrate the dose until the desired therapeutic effect is achieved.
- Continue to support hemodynamic and respiratory systems as needed.
- At primary physician's direction, contact the Mary Free Bed clinic during clinic hours to coordinate follow-up with the patient.
 - Interrogate/Reprogram/Refill pump
 - Consider Indium Infusion Study to assess for catheter fracture. Note: radiology studies for the troubleshooting of potential complications are available M-F during regular business hours. These radiology studies are not done at MFB but must be coordinated through an acute care hospital.

SYMPTOMS OF BACLOFEN WITHDRAWAL



RFFlow/Symptoms of Baclofen Withdrawal.flo
6/19/03; 4/19/04; 5/25/05; 6/21/05

Audible Pump Alarm

The pump used for the ITB infusions is produced by Medtronic, and has two alarms that may be heard:

1. One tone alarm (“single beep”). The beeps occur approximately 15 seconds apart. The alarm indicates that the infusion volume limit has been reached.

Important characteristics of the single tone alarm include:

- This alarm is set during the refill and reprogramming process.
- There is usually sufficient volume remaining in the pump reservoir to last 2-3 days from the onset of the alarm. This should be confirmed based on the patient’s current dose and volume left in the pump.
- The pump does not turn off when the alarm starts, but the flow rate may decrease due to decreased pressure in the system.

The nursing staff in the Mary Free Bed Spasticity Clinic schedule pump refills for each patient to avoid reaching the volume limit in the pump reservoir. However, it is possible that the low volume alarm may start if the refill appointment was missed or delayed.

Management of the patient with an audible alarm (“Single Beep”):

A. Assess patient for withdrawal symptoms.

- If no symptoms are present, instruct the patient/caregiver to use oral Baclofen if mild symptoms of withdrawal develop.
- If early withdrawal symptoms are present (Pruritis without rash, increased tone or spasticity, diaphoresis), instruct patient to take oral Baclofen. **Should symptoms persist or worsen**, instruct the patient to return to the Emergency Department.
- If advanced withdrawal symptoms are present, follow the steps as indicated in the algorithm addressing Baclofen withdrawal.

B. Instruct patient to call the Mary Free Bed Clinic (616 -242-0481,) on the following business day to arrange a refill and reprogramming of the pump.

C. Leave a message for the clinic at Mary Free Bed, which will notify them to contact the patient to facilitate a pump refill (616-242-0481).

(PLEASE NOTE: A single alarm tone may also indicate that the internal battery for the pump needs replacement. The battery usually has 2-3 months of power remaining when the alarm starts. There is no way to differentiate between a “low volume” alarm and a “low battery” alarm. In both scenarios, assess the patient for signs of withdrawal and manage this appropriately. All patients with audible alarms should be referred to the Mary Free Bed Clinic on the next clinic day.)

2. Dual tone alarm (“double beep”) – see next page

2. **Dual tone alarm** (“double beep”) This is an uncommon alarm, but a significant one. The dual tone alarm indicates pump failure.

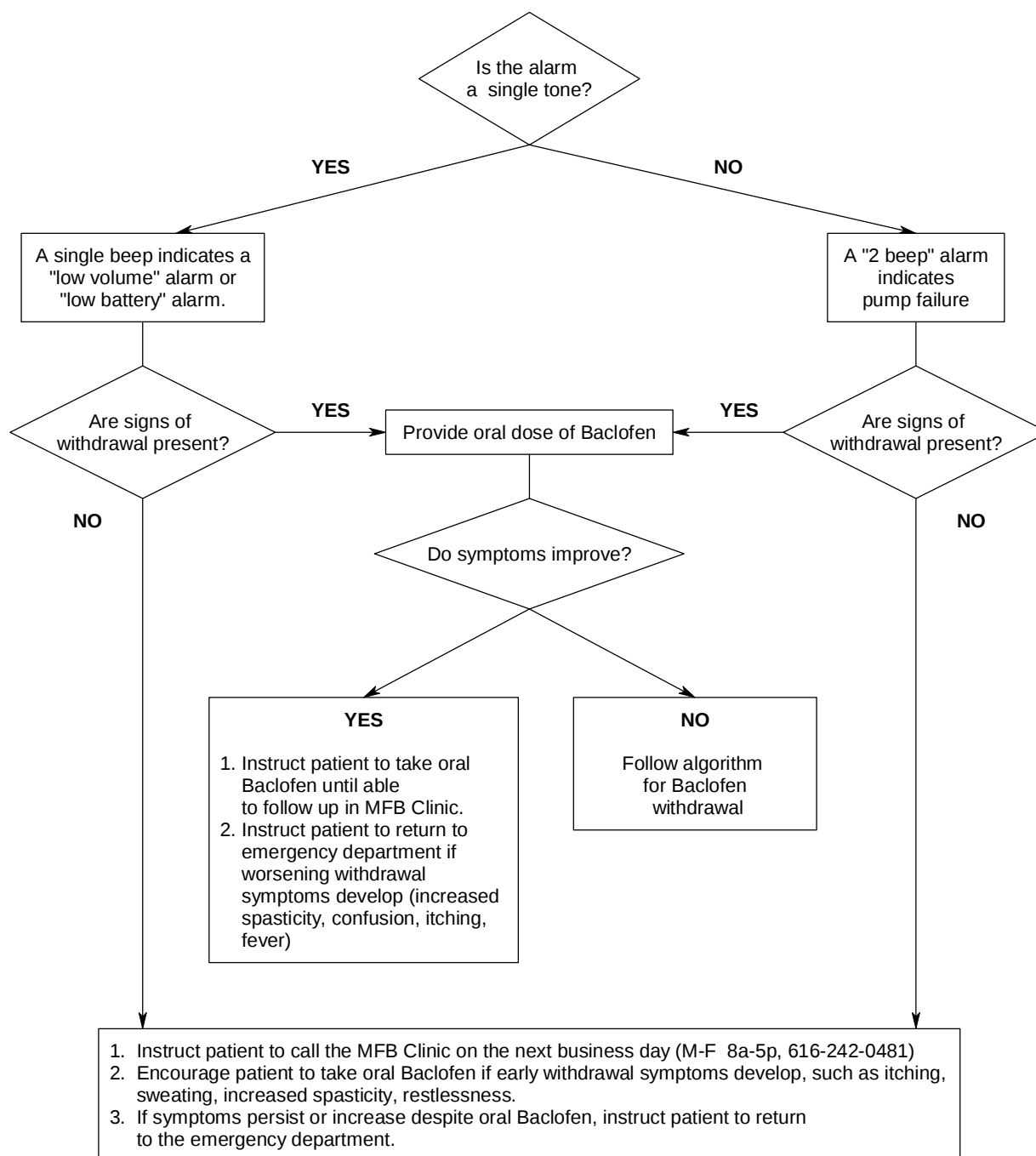
Key characteristics of this alarm include:

- Baclofen withdrawal symptoms may develop within 4-8 hours after the infusion ends.
- Baclofen overdose symptoms are also possible, depending on the type of pump malfunction.

Management of the patient with a dual alarm tone:

- A. Assess for signs of withdrawal or overdose and treat appropriately. Instruct the patient to return to the Emergency Department if the symptoms develop.
- B. Notify the attending physician on-call.
- C. Instruct the patient to contact the Mary Free Bed Clinic on the next clinic day, 616-242-0481.

AUDIBLE ALARM FROM IMPLANTED PUMP



RFFlow/Audible Alarm from Implanted Baclofen Pump
6/19/2003; 4/18/04; 5/25/2005

Signs of Infection

For patients seen in the ED that exhibit signs of infection, the Baclofen pump should be considered as a potential source. This is especially true for patients who have had a recent pump placement. Physicians are encouraged to complete a standard infectious disease work-up to identify all potential sources of infection.

Management of the patient with suspected infection:

- A. Manage Airway/Breathing/Circulation. Provide hemodynamic and respiratory support as needed.
- B. Perform a thorough physical examination, including assessment of the surgical sites for signs of infection.
- C. Contact the Mary Free Bed attending physician on call to review guidelines for evaluation and management of CNS or pump infections.