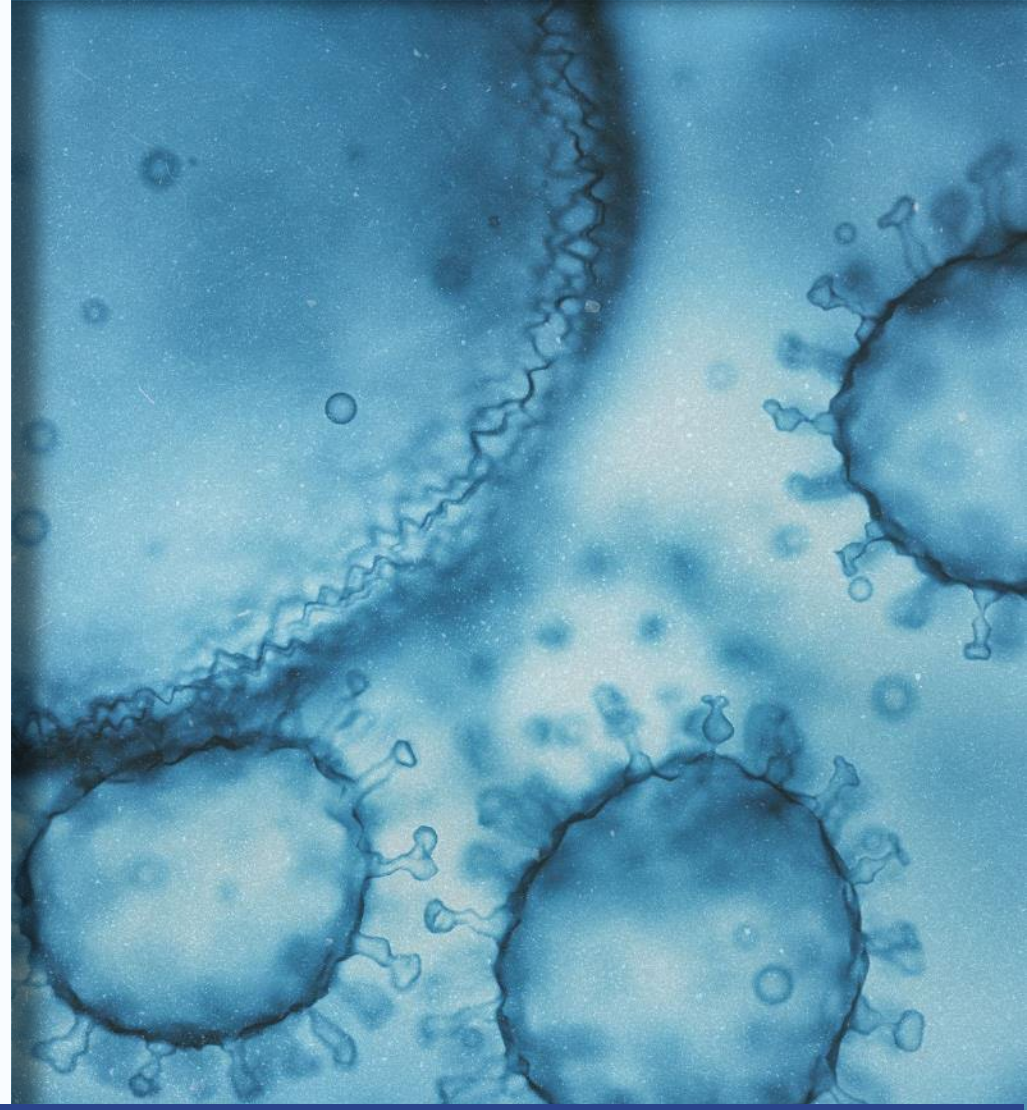
Quality Insights | QIN-QIO
Quality Innovation Network - Quality Improvement Organizations
CENTERS FOR MEDICARE & MEDICAID SERVICES
iQUALITY IMPROVEMENT & INNOVATION GROUP

# Spotlight on Sepsis

## Understanding The Vulnerability of Patients Receiving Dialysis

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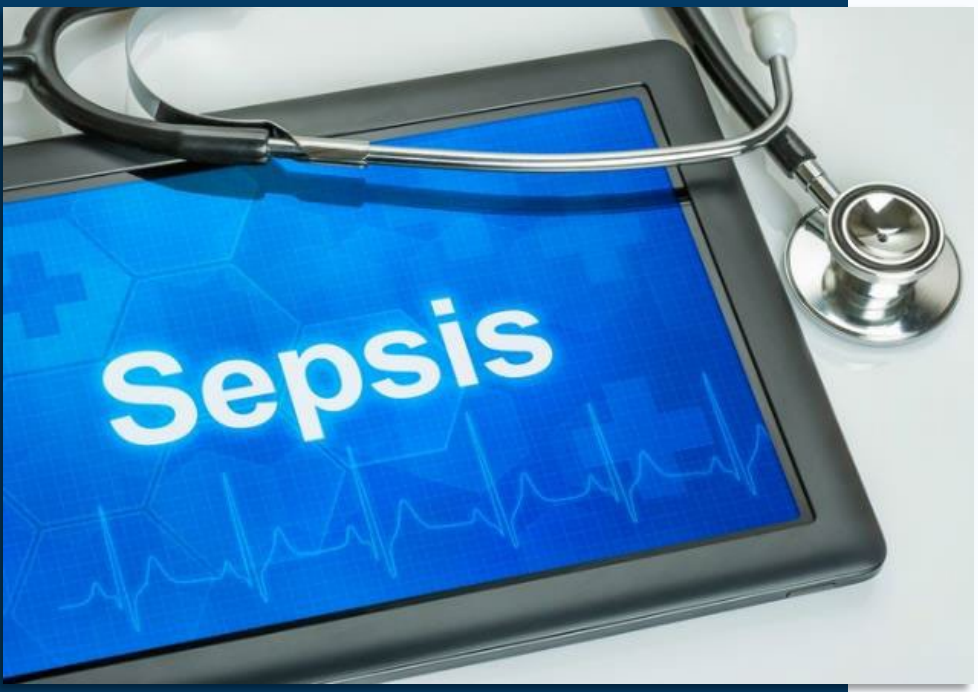
# Learning Objectives

At the conclusion of this presentation, the viewer will be able to:

1. Compare and contrast the different types of hemodialysis access
2. Summarize causes of increased risk of infection and/or sepsis in a patient receiving dialysis
3. Identify signs and symptoms of sepsis in the patient on dialysis
4. Understand how access sites become infected
5. Summarize preventive measures to reduce the risk of infection and sepsis in the patient on dialysis

# What is Sepsis?




"Sepsis is the body's **extreme response** to an infection. It is a life-threatening medical emergency. Sepsis happens when an infection you already have triggers a chain reaction throughout your body."

– Centers for Disease Control and Prevention (CDC)

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# Who is Affected?

Sepsis knows no bounds. Anyone at any age can be affected, but there are populations that are at higher risk.

- Age 65 and older
- Children younger than 1
- People with compromised immune systems
- Those with chronic disease (kidney disease, lung disorders, cancer, diabetes)
- Recent surgery or hospitalization
- Women who are pregnant or recently post-partum
- People with prior sepsis diagnosis

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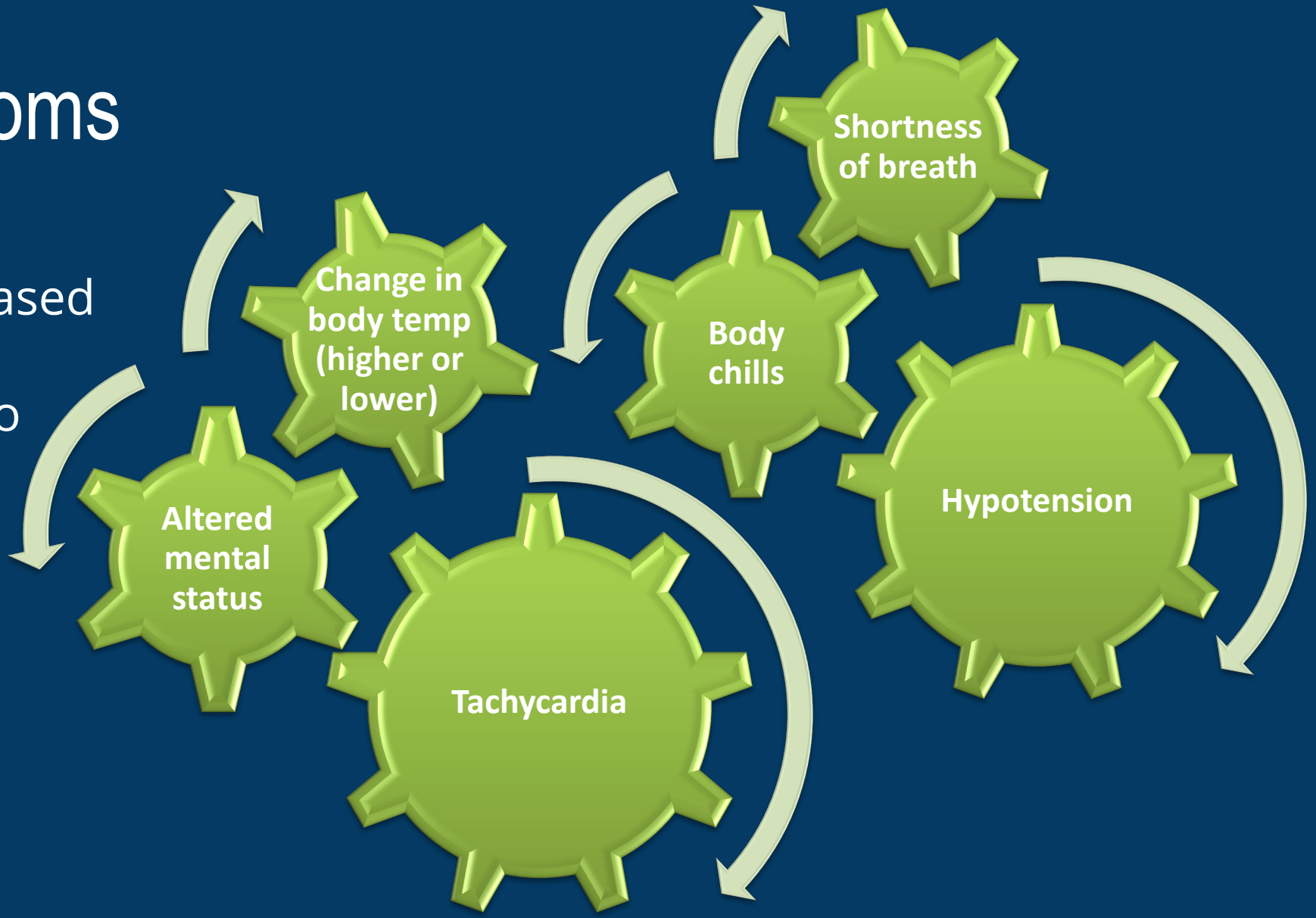
# Signs & Symptoms

Symptoms can vary based on the individual. The most common signs to watch out for include:

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# What Makes the Dialysis Patient More Vulnerable?

During the time period of 2017-2020, adult patients receiving dialysis were **100 times** more likely to develop a bloodstream infection related to staph as compared to adults not receiving dialysis. WHY?

- Treatment requires frequent access to their bloodstream (3-4 times per week on average).
- Each access has the potential to introduce new bacteria that could lead to sepsis.
- Additional comorbidities and decreased immunity make it more difficult for them to fight off an infection.

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# Most Common Causes of Infection

- Central Line-Associated Blood Stream Infections (CLABSI or BSI)
- Skin infections at access site (fistula and graft)

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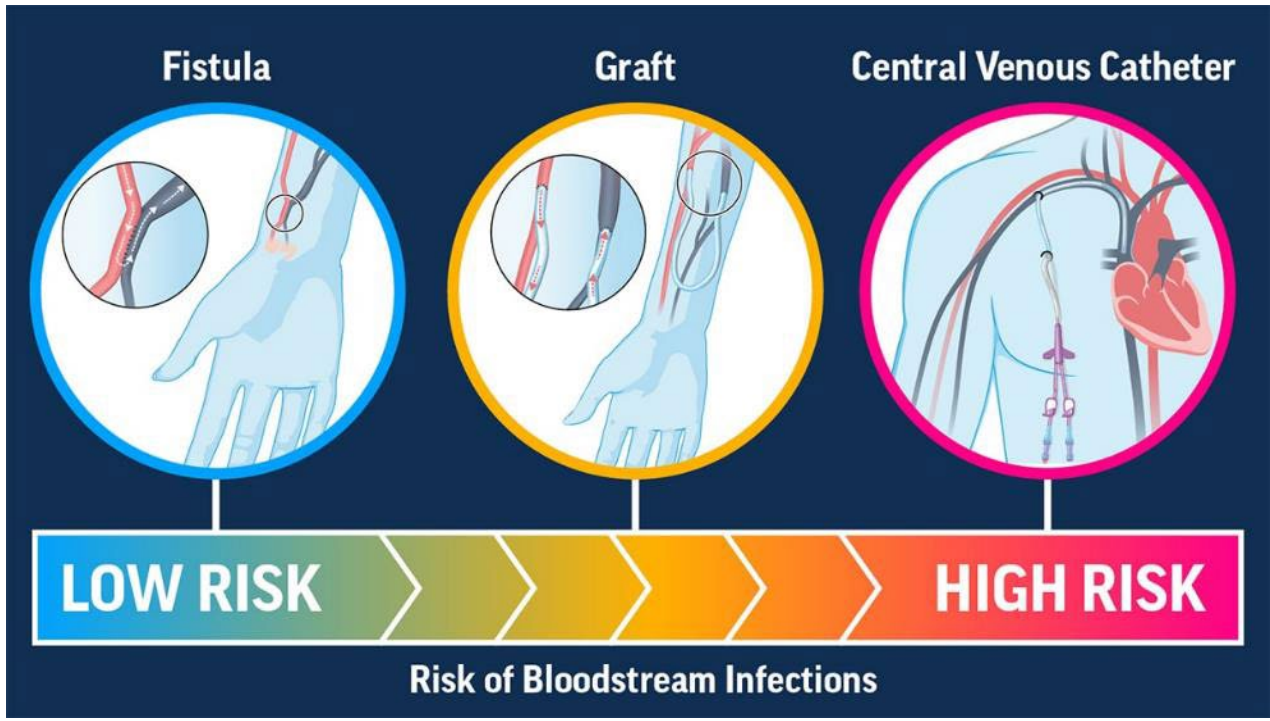
# Types of Hemodialysis Access

- Fistula – Joins an artery and vein
- Graft – Joins an artery and vein indirectly by placement of a tube (foreign body = increased risk)
- Catheter – Tube inserted through the chest or neck with the tip resting in the Superior Vena Cava or just above the heart (foreign body + placement in a large vein = extra increased risk)



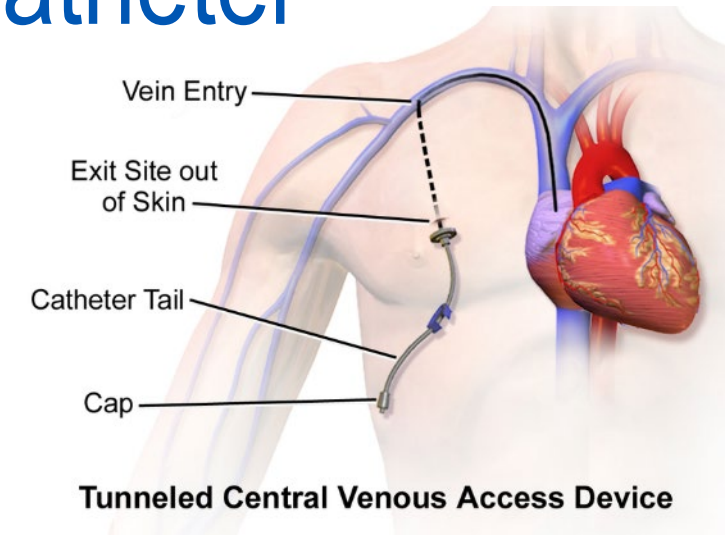
# Anatomy of the Central Venous Catheter

**Location of Placement**

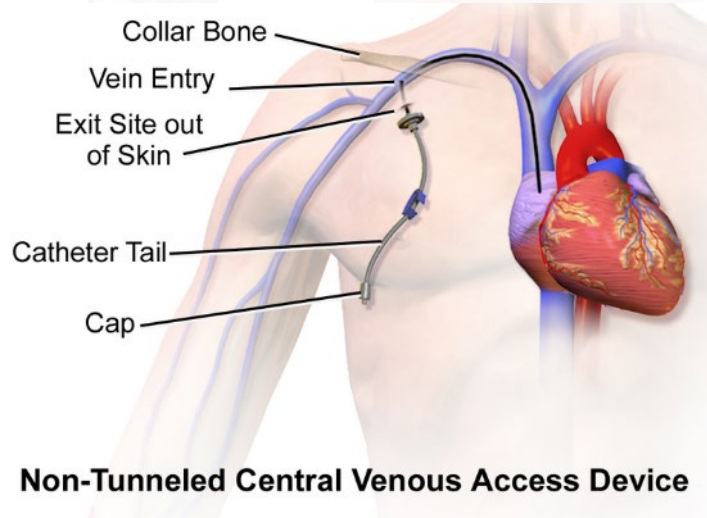
- Subclavian (chest) – preferred location
- Juglar (neck)
- Femoral (groin)

**Tunneled vs. Non-Tunneled**

- Tunneled – access to the vein is separated by a tract made in the skin, preferred for long-term use
- Non-tunneled – access to the vein at the point of insertion, intended for short-term use and higher risk of infection



Tunneled Central Venous Access Device



Non-Tunneled Central Venous Access Device

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# But How Do They Become Infected?


**Arteriovenous Fistula (AVF)/Arteriovenous Graft (AVG)**

- Dressing left on longer than the recommended time
- Access sites are not cleaned properly
- Patient picking at scabs

**Catheters**

- Soiled dressing (wet, visibly dirty, or peeling off)
- Ports accessed without proper aseptic technique
- Improper dressing change (non-sterile, mask not worn, etc.)
- Improper use (blood draws and medication administration without approval from nephrologist)
- Patient showering

**AV fistulas, grafts, and catheters should not just be considered access, but a patient's LIFELINE. If their access becomes infected, it puts them at risk for missed treatments and hospitalization.**

# Prevention Strategies – The Basics

**Hand Hygiene**

- Education and audits on proper hand hygiene
- Patients and staff

**Proper PPE**

- Patients and staff should wear a mask in the event of a removed central venous catheter (CVC) dressing
- Gloves should be worn any time you are touching a patient's access and sterile gloves are required for dressing changes

**Environmental Cleanliness**

- Auditing of cleaning processes
- Follow CDC guidelines for environmental cleaning procedures


**Immunizations**

Ensuring residents are up to date with:

- Influenza vaccines
- Pneumococcal vaccines
- COVID-19 vaccines

# Prevention Strategies

| AVF/AVG | CVC (Catheter) |
| --- | --- |
| • Remove post-dialysis pressure dressing within 4-6 hours. A dressing should never be left on until the next scheduled dialysis treatment.<br>• Monitor access sites for signs of infection (redness, warmth, drainage).<br>• Discourage patients from picking at scabs. | • Dressing must remain clean, dry, and intact.<br>• Monitor for loose dressings or patients that pick at the dressing.<br>• It is advised that patients with catheters **do not shower** and only sponge bathe. **IF** they must shower, catheter **MUST** be protected with waterproof covering, or patient can sit in the shower and use a handheld showerhead to wash the lower part of their body only.<br>• Never immerse the site in water.<br>• Do not remove the caps on the catheter tips.<br>• Do not use the catheter for blood draws or medication administration unless approved by nephrologist. If approved, must follow aseptic technique and both patient and staff should wear mask. |

# CVC Dressing Change

If you find yourself in a situation where the dressing is compromised and must be changed:

1. **Immediately contact the dialysis team and follow their guidance.**
    - Many facilities have pre-established guidelines for these situations.
2. **Change the dressing.**
    - This must be performed by licensed staff.
    - Follow CDC guidelines (aseptic technique).
    - This is considered a competency-based skill to ensure it is done correctly.
3. **Communicate!**
    - Make sure the dialysis team is aware of the compromise so additional monitoring of infection can be performed.

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# Staff Tools & Resources

**Audits/Checklists**

- Hemodialysis Catheter Exit Site Care: https://www.cdc.gov/dialysis-safety/media/pdfs/CL-Hemodialysis-Catheter-Exit-Site-Care-508.pdf
- Hand Hygiene Audit Tool: https://www.cdc.gov/dialysis-safety/media/pdfs/Hemodialysis-Hand-Hygiene-Observations-P.pdf
- CLABSI Surveillance Audit: https://www.urmc.rochester.edu/medialibraries/urmcmedia/community-health/research/communicable-disease-surveillance/healthcare-associated-infections/documents/dressingintegrityaudit.pdf

**Education**

- Dialysis Access Care in Nursing Facilities: https://www.ediscolearn.com/learn/course/external/view/elearning/149/dialysis-access-care-in-skilled-nursing-facilities

**ICAR Assessments**

- Infection Control Assessment and Response: Each state offers a free, consultative, non-regulatory assessment of infection control practices in your facility. This is a non-stressful approach to enhancing infection control!

# Staff Tools & Resources

- "Protect Yourself, Protect Each Other," Flyer for infection control training
- "Outpatient Dialysis Early Warning Screen," McLaren Northern Michigan


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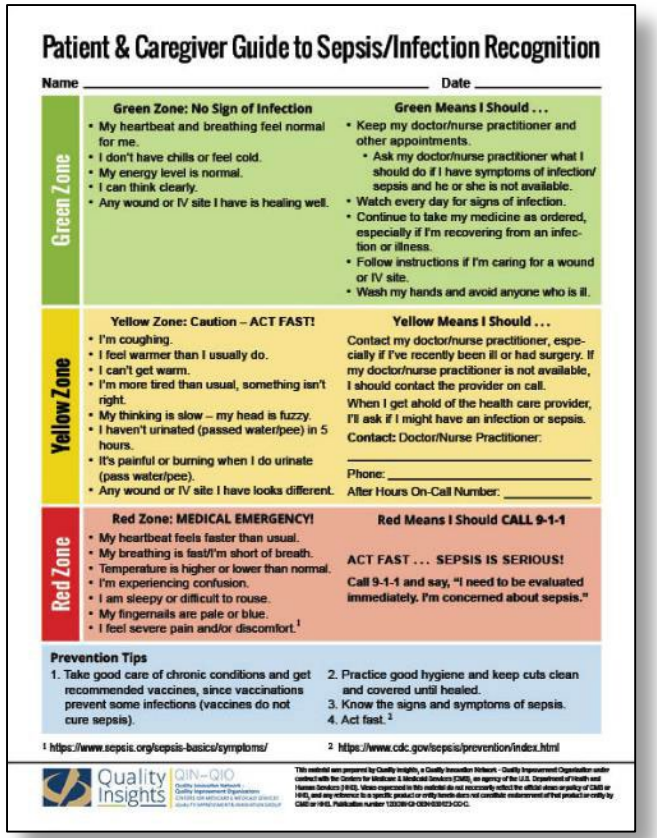
# Patient Tools & Resources



**Patient & Caregiver Guide to Sepsis/Infection Recognition**

Name _____ Date _____

**Green Zone: No Sign of Infection**
- My heartbeat and breathing feel normal for me.
- I don't have chills or feel cold.
- My energy level is normal.
- I can think clearly.
- Any wound or IV site I have is healing well.

**Green Means I Should . . .**
- Keep my doctor/nurse practitioner and other appointments.
  - Ask my doctor/nurse practitioner what I should do if I have symptoms of infection/sepsis and he or she is not available.
- Watch every day for signs of infection.
- Continue to take my medicine as ordered, especially if I'm recovering from an infection or illness.
- Follow instructions if I'm caring for a wound or IV site.
- Wash my hands and avoid anyone who is ill.

**Yellow Zone: Caution – ACT FAST!**
- I'm coughing.
- I feel warmer than I usually do.
- I can't get warm.
- I'm more tired than usual, something isn't right.
- My thinking is slow – my head is fuzzy.
- I haven't urinated (passed water/pee) in 5 hours.
- It's painful or burning when I do urinate (pass water/pee).
- Any wound or IV site I have looks different.

**Yellow Means I Should . . .**

Contact my doctor/nurse practitioner, especially if I've recently been ill or had surgery. If my doctor/nurse practitioner is not available, I should contact the provider on call.

When I get ahold of the health care provider, I'll ask if I might have an infection or sepsis.

Contact: Doctor/Nurse Practitioner: _____

Phone: _____

After Hours On-Call Number: _____

**Red Zone: MEDICAL EMERGENCY!**
- My heartbeat feels faster than usual.
- My breathing is fast/I'm short of breath.
- Temperature is higher or lower than normal.
- I'm experiencing confusion.
- I am sleepy or difficult to rouse.
- My fingernails are pale or blue.
- I feel severe pain and/or discomfort.[1]

**Red Means I Should CALL 9-1-1**

ACT FAST . . . SEPSIS IS SERIOUS!

Call 9-1-1 and say, "I need to be evaluated immediately. I'm concerned about sepsis."

**Prevention Tips**
1. Take good care of chronic conditions and get recommended vaccines, since vaccinations prevent some infections (vaccines do not cure sepsis).
2. Practice good hygiene and keep cuts clean and covered until healed.
3. Know the signs and symptoms of sepsis.
4. Act fast.[2]

[1] https://www.sepsis.org/sepsis-basics/symptoms/ [2] https://www.cdc.gov/sepsis/prevention/index.html

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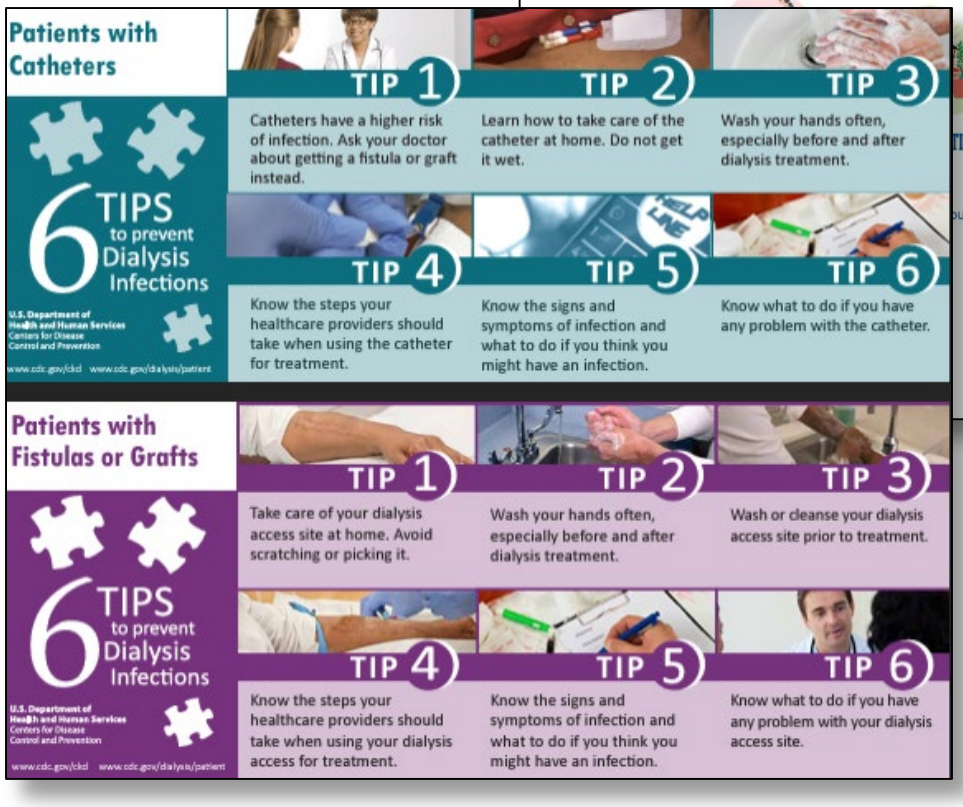


https://www.cdc.gov/dialysis-safety/hcp/tools/index.html

https://www.qualityinsights.org/qin/resources

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# Questions?

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# Contact Us


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