

# Infection Prevention in Dialysis

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# Dialysis History

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- Dr. William Kolff – “Father of Dialysis”
  - Constructed the first dialyzer in 1943
- First kidney transplant in 1954
- Dr. Belding Scribner – creation of how to connect patients to a dialyzer
  - First outpatient dialysis facility opened in 1962 by Scribner

# Dialysis Statistics

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- At the end of 2017 3.2 million patients receive dialysis globally.
- It is expected by the end of 2025 approximately 4.9 million people will be affected globally.
- 400,000 patients on dialysis in the United States currently.
- ESRD is increasing in the United States by 6% annually.
- More than 100,000 patient are on the kidney transplant in the United States
  - In 2017 there were just over 21,000 donor organs available

# Dialysis Statistics

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- Taiwan, Japan, Mexico, United States and Belgium have the highest prevalence of ESRD
- After one year of dialysis treatment patients have a 20-25% mortality rate with a 5 year survival rate of 35%
- Patients who receive transplants have a 3% mortality rate after 5 years

# Costs of Dialysis

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- Medicare spending for ESRD patients is at 35 billion in 2016
- Hemodialysis care costs the Medicare system an average of \$90,000 per patient annually in the United States
  - For a total of \$28 billion
  - Spending for transplant patient care is \$3.4 billion

# Terms

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- Acute Kidney Failure
- Chronic Kidney Disease
- End Stage Renal Disease

# Modalities In Dialysis

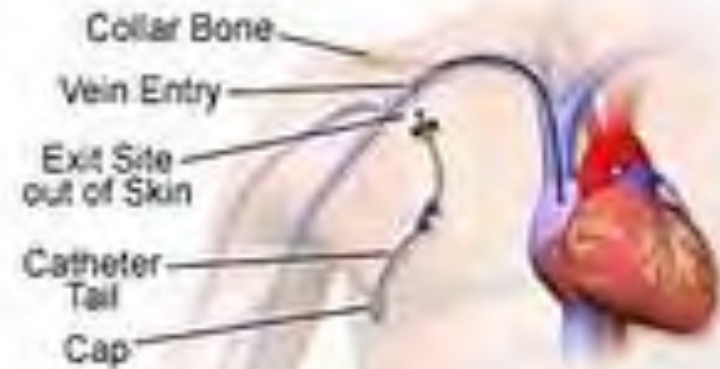
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- Hemodialysis (In-center or home)
- Peritoneal
- Transplant
- Withdraw

# Types of Dialysis Access

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- Catheters – tunneled or temporary





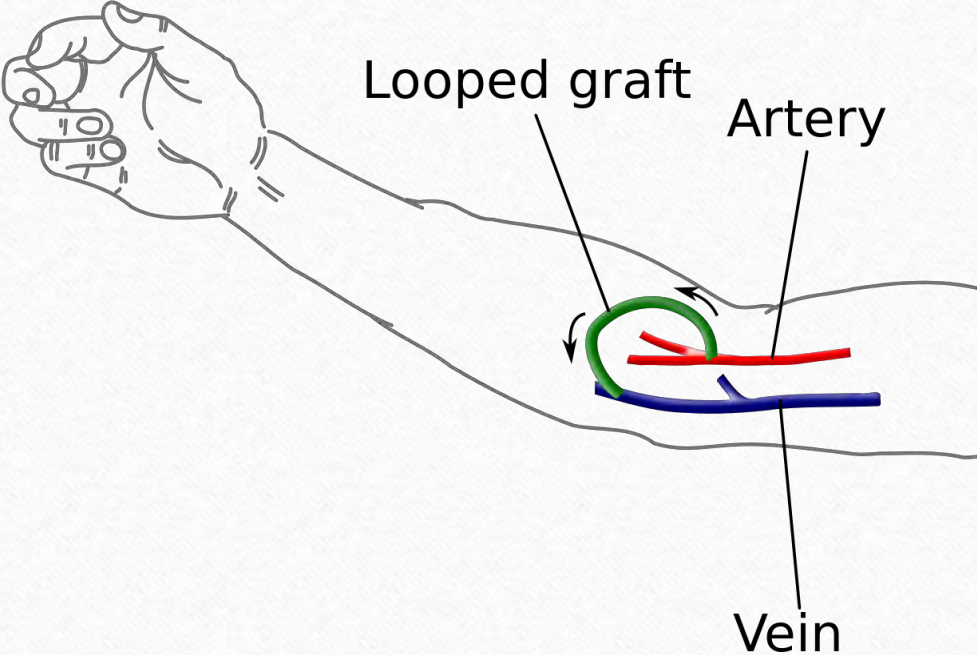
# Fistula

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# AV Graft

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# Peritoneal Dialysis Catheter



# Why Infection Prevention

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- Infections are the second leading cause of death in hemodialysis patients
- Immunocompromised patients
- Reasons patients develop high risk of infections
  - Close distance to other patients
  - Fast patient turn over between dialysis sessions

# Dialysis Water Room

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# Bicarb Mixer



# Dialysis Machine

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# Cleaning and Disinfection

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- Cleaning after every treatment
- Daily Acid cleaning
- Daily Heat disinfect
- Weekly Chemical rinse



# Hepatitis B

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- Easy to spread
- Initial Hepatitis Antigen, Antibody and core
- Monthly Antigen

# Hepatitis B Positive

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- Hepatitis B Isolation
- Staff needs antibodies
- Isolated Machine
- Bleach

# Review and Questions

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# References

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Centers for Disease Control. Chronic Kidney Disease in the United States. 2019. <https://www.cdc.gov/kidneydisease/publications-resources/2019-national-facts.html>

Centers for Disease Control. Core Interventions. 2016. <https://www.cdc.gov/dialysis/prevention-tools/core-interventions.html>

Centers for Disease Control. Infection control for peritoneal dialysis patients. 2015. <https://www.cdc.gov/disasters/icfordialysis.html>

Centers for Disease Control. Recommendation for preventing transmission of infection among chronic hemodialysis patients. 2001. <https://www.cdc.gov/mmwr/preview/mmwrhtml/rr5005al.htm>

DaVita. The history of dialysis. <https://www.davita.com/treatment-services/dialysis/the-history-of-dialysis>

Fresenius. 2008K hemodialysis machine operator's manual. 2018.

Fresenius Medical Care. The history of dialysis. <https://www.freseniusmedicalcare.com/en/media/stories/the-history-of-dialysis>

Kirchhoff, S., Medicare coverage of end-stage renal disease (esrd). 2018.

The Kidney Project. Statistics. 2019. <https://pharm.ucsf.edu/kidney/need/statistics>

Miller M, Clark E, Dipchand C, et al. Hemodialysis tunneled catheter-related infection. *Canadian Journal of Kidney Health and Disease*. 2016. 3:2054358116669129. doi:10.1177/2054358116669129

National Kidney Foundation. Kidney Disease: the basics. 2017. <https://www.kidney.org/newsroom/factsheets/kidneydiseasebasics>

Salzer, W. Peritoneal dialysis-related peritonitis: challenges and solution. *International Journal of Nephrology and Renovascular Disease*. 2018. 11:173-186. doi:10.2147/IJNRD.S123618

Suzuki M, Satoh N, Nakamura M, Horita S, Seki G, Mariya K. Bacteremia in hemodialysis patients. *World Journal of Nephrology*. 2016. 5(6)489-495. doi:10.5527/wjn.v5.i6.489