

# Chronic Kidney Disease (CKD) Education

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## Problems and Questions

- What are the benefits of pre-dialysis/ chronic kidney disease (CKD) education?
- What are the barriers to patient education?
- What are the different treatment options?

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## Objectives

- Explore the benefits of pre-dialysis/ chronic kidney disease education.
- Find solutions to address barriers to patient education.
- Discuss the elements of CKD education

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## Background

- CKD- defined as abnormalities of the structure or function of the kidney for more than three months, with effects on a person's health (Kidney Disease: Improving Global Outcomes, 2013).
- CKD affects about 10% of the world's population (World Kidney Day, 2017).
- About one in seven adults in the US are estimated to have CKD
- Majority of US adults do not know they have it. One in three American adults is at risk for developing the disease (National Kidney Foundation [NKF], 2017)



Figure 1

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## Background

- Yearly Medicare expenses for all stages of CKD patients amount to \$103 billion
- \$70 billion for stages one to four
- \$33 billion for ESRD patients
- Medicare spending for each dialysis patient is \$85,979 per year (NKF, 2017)

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## Background

- CKD- considered a silent disease
- Starts slowly and progresses over several years.
- Multiple conditions and factors contribute to the development of CKD.
- Most common causes are diabetes and hypertension.
- Other causes: glomerulonephritis, pyelonephritis, polycystic kidney disease, renal calculi, and chronic use of nephrotoxic medications (World Kidney Day, 2017).

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## Background

- Pre-dialysis education- one of the most important aspects of CKD care and management.
- Referral to a pre-dialysis education program will most likely benefit both the patient and family.
- Pre-dialysis education contributes to health literacy, which will influence the patient's decision-making capabilities for health-promoting behaviors (Cahill & Groenhoff, 2015).
- CKD education from a multidisciplinary care team will help improve health outcomes after starting renal replacement therapy (Centers for Disease Control and Prevention, 2017).

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## Barriers to CKD education

- **Patient Barriers:**
  - Low baseline perception of health risks
  - Limited health literacy
  - Limited access to CKD education
  - Readiness and willingness to learn (Narva, Norton, & Boulware, 2016)

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## Barriers to CKD education

- **Provider Barriers:**
  - Poor prioritization of CKD
  - Time constraints
  - Lack of confidence (Narva et al., 2016)

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## Barriers to CKD education

- **Provider Barriers (cont.):**
  - Communication gap
  - Competing management and education demands
  - Confusion about when to educate (Narva et al., 2016)

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## Barriers to CKD Education

- **System Barriers:**
  - Limited Incentives for CKD Education
  - Limited Decision Pathway Tools
  - Lack of Interdisciplinary Models (Narva et al., 2016)

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## Literature Review

- **Multidisciplinary care improves clinical outcome and reduces medical costs for pre-end-stage renal disease in Taiwan (Chen et al., 2014)**
  - Multidisciplinary (MDC) approach in managing CKD/ pre-dialysis
  - Subjects:
    - 822 patients enrolled
    - MDC 391 patients
    - Usual care 431 patients
  - Intervention: MDC group- nephrologist, nephrology nurse educator, social worker, dietitian, pharmacy specialists, and surgeon
  - Results:
    - MDC- fewer CVC, fewer hospitalizations, lower risk of hospitalization, slower progression, and more savings

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## Literature Review

- **Early referral to a nephrologist improved patient survival: Prospective cohort study for End-Stage Renal Disease in Korea (Kim et al., 2013)**
  - Effects of early referral (ER) to a nephrologist and frequent attendance at the nephrology clinic
  - Subjects:
    - 1,208 enrolled
    - ER group- 599 patients
    - Late referral (LR)- 429 patients
  - Results:
    - ER group- longer time before start of dialysis, higher survival rate
    - LR group- more urgent start dialysis, associated with patient mortality

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## Literature Review

- **Multidisciplinary predialysis education reduced the inpatient and total medical costs of the first six months of dialysis in incident hemodialysis patients (Yu et al., 2014)**
  - Financial benefit of a multidisciplinary pre-dialysis education program within first six months of starting hemodialysis
  - Subjects:
    - MPE group: 232 patients
    - Non-MPE: 213 patients
  - Results:
    - MPE group- less CVC, fewer hospitalizations, shorter hospitalizations, and reduced medical expenditure

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## Literature Review

- **Educational intervention in CKD retards disease progression and reduces medical costs for patients with stage 5 CKD (Lei et al., 2013)**
  - Benefits of a multidisciplinary care (MDC) approach in delaying progression of kidney disease and cost-effectiveness
  - Subjects recruited from Chang Gung Memorial Hospital in Chiayi, Taiwan:
    - MDC- 202 patients
    - Non- MDC- 174 patients
  - MDC: nephrologist, nurse educators, and renal dietitians
  - Non-MDC: nephrologist only
  - Results: reduced number of temporary catheters, shorter hospitalizations, lower medical costs for the MDC group

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## Elements of CKD Education

- **Introduction to CKD-** kidney function can be determined through blood work, urine testing, and calculation of estimated glomerular filtration rate (eGFR)
  - **eGFR-** measures how well the kidneys are cleaning the blood; kidney function is best measured by eGFR (Dutka & Szromba, 2015).
  - **Five stages of CKD:**
    - Stage 1- 90-120
    - Stage 2- 60-89; mild to moderate loss of kidney function
    - Stage 3- 30-59; moderate to severe loss of kidney function
    - Stage 4- 15-29; severe loss of kidney function
    - Stage 5- less than 15; ESRD (Kidney Disease: Improving Global Outcomes, 2013).
  - **Signs and Symptoms:**
    - Changes in urination, fatigue, itching, swelling, SOB, low back pain

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## Ways to Help Slow the Progression of CKD:

- Avoid NSAIDs
- Avoid IV contrast dye
- Limit salt and sodium
- BP and blood sugar control



Figure 1



Figure 2

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## Treatment Options for ESRD

- **Peritoneal Dialysis (PD)**
  - **Access:** PD catheter- flexible tube inserted into the abdomen; a small piece of tubing left outside of the body; healing time required before use usually two weeks depending on the urgency to start treatment
  - **Who performs treatment:** patient with/ or without a care partner's help
  - **Types:**
    - **Continuous Ambulatory Peritoneal Dialysis (CAPD)-** 3-5 times/day, 20-30 minutes per session, manually done
    - **Automated Peritoneal Dialysis (APD)-** uses a machine, can be done separately or in combination with CAPD, overnight dialysis about 8-10 hours/session
  - **Key Considerations:**
    - Flexibility with schedule, can be done while traveling, no needles required during treatment

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## Continuous Ambulatory Peritoneal Dialysis

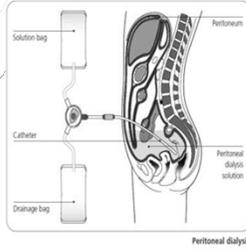


Figure 3



Peritoneal dialysis

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## Automated Peritoneal Dialysis



Figure 4



Figure 5

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## Treatment Options for ESRD

- **Home Hemodialysis**- patient is connected to a dialyzer and dialysis machine
  - **Access:**
    - **Arteriovenous Fistula (AVF)**- about 6-8 weeks maturity time, lesser chance for infection and clotting, higher blood flows, better quality of dialysis
    - **Arteriovenous Graft (AVG)**- 2-3 weeks maturity time
    - **Central Venous Catheter (CVC)**- no waiting time, higher risk for infection
  - **Types:**
    - **Daily**- 5-6 times per week, about 2.5-3 hours per session, can be done with or without a care partner\*
    - **Overnight**- 6-8 hours per session
    - **Conventional**- 3 times per week, 4-5 hours per session, requires a care partner
  - **Key Considerations:**
    - Flexible schedule
    - Lesser trips to the clinic- once a month
    - More freedom with diet
    - Nurse is available 24/7 by phone

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## Home Hemodialysis



Figure 6

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## Treatment Options for ESRD

- **In-center Hemodialysis**- patient gets hemodialysis treatment in the dialysis center
- **Who performs the treatment:** trained nurses and technicians
- **Access:**
  - AVF
  - AVG
  - CVC
- **Frequency:**
  - Three times a week MWF or TTS
  - Three nights a week, about 8 hours per session (nocturnal)- available in selected dialysis clinics only
- **Key Considerations:**
  - Treatment is done by trained personnel so patient can relax
  - Can connect with other patients experiencing the same type of treatment
  - Patient is given an appointment time, three times a week travel to the clinic

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## In-center Hemodialysis



Figure 7



Figure 8

