

# Overview of Dialysis Options

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When your kidneys no longer work

# Kidney failure



# Uremia Symptoms



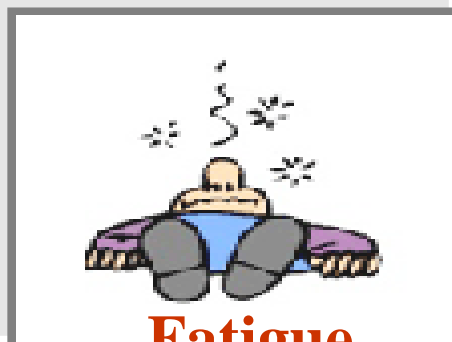
**Anemia**



**Hypertension**



**Edema**



**Fatigue**



**Vomit**



**Poor appetite**

**Other systems : nerve 、 heart 、 lung 、 bone marrow 、 GI 、 endocrine 、 skin 、 bone etc.**

# Treatments Options When Kidney Fail

Hemodialysis

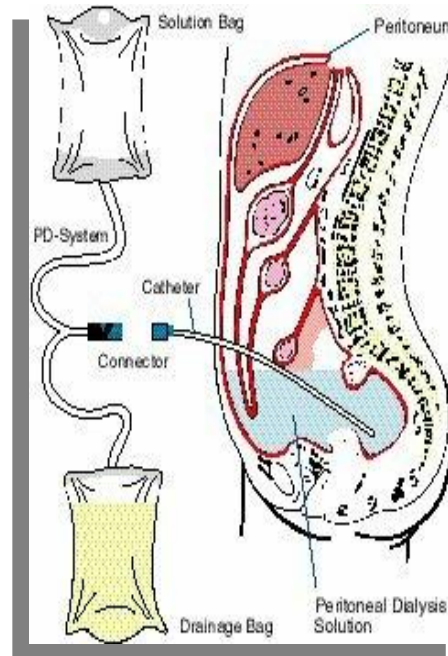
**In-Center**  
3 times /week



**Home**  
6 days /week



Peritoneal  
Dialysis

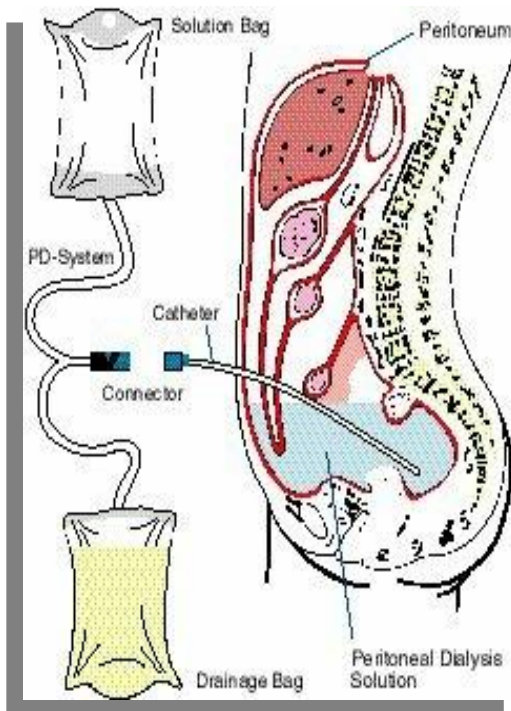


Kidney  
Transplant



# Treatments Options When Kidney Fail

## Peritoneal Dialysis



- Gentle modality
- Zero recovery time after each treatment
- Able to continue working
- Retain longer residual kidney function
- Will need to transition to hemodialysis after few years

# Treatments Options When Kidney Fail

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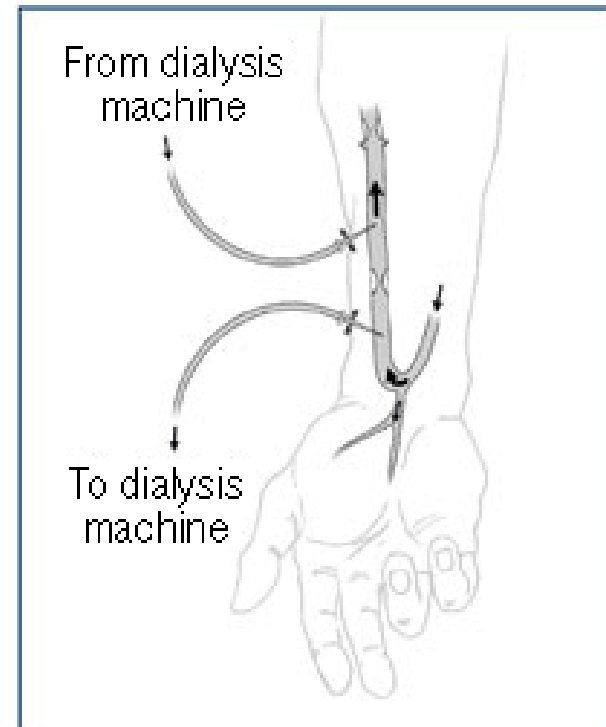
**Hemodialysis**

**In-Center**  
3 times /week

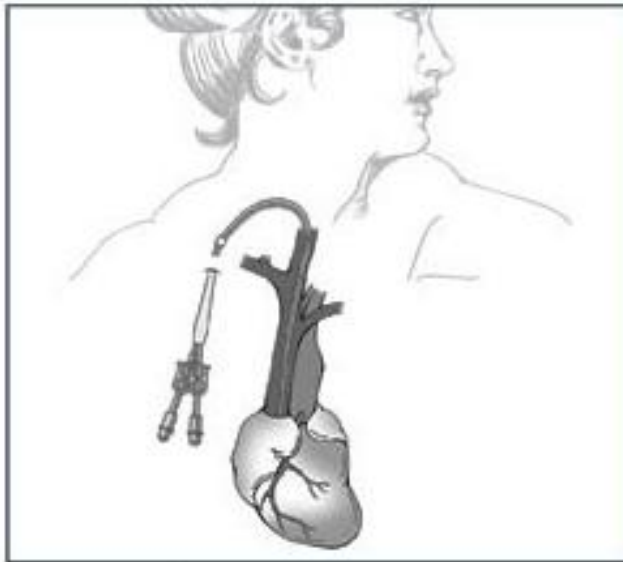
**Home**  
6 days /week



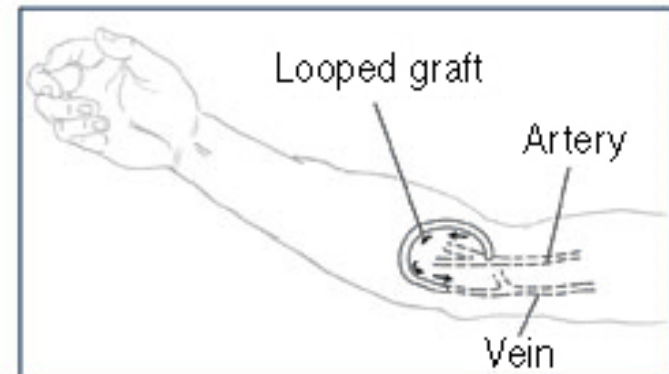
# Options of Hemodialysis Access



Forearm arteriovenous fistula



Venous catheter for temporary hemodialysis access



One kind of AV graft

# Treatments Options When Kidney Fail

## Hemodialysis

**In-Center**  
3 times /week



- Dialysis in a center
- 3 times a week
  - MWF or TThS
- Diet and fluid restriction
- Low blood pressure during dialysis
- Requires 6-7 hours recovery time after each treatment
- Common symptoms:
  - Fatigue
  - Poor sleep pattern
  - Restless leg
  - Depression
  - ....



# Treatments Options When Kidney Fail

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Hemodialysis



**Home**

6 days /week



# Types of Home Hemodialysis (HHD)

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There are three basic schedules of HHD

- Conventional HHD
  - three times a week for three to five hours. It is like in-centre hemodialysis (IHD), but done at home.
- Short daily home hemodialysis (SDHHD)
  - five to seven times a week for two to four hours per session.
- Nocturnal home hemodialysis (NHHD)
  - three to seven times per week at night during sleep, for six to ten hours.

# Current HHD Options in US Market



Fresenius-K at Home



NxStage-System One



B Braun system



AmeriWater MROS  
Reverse Osmosis

# What would you do if you needed dialysis?

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- Survey of more than 600 US Nephrologists
  - More than 90% of practicing US nephrologists would choose a home dialysis therapy if their kidneys failed and the wait list for a transplant was 5 years (Merighi *et al. Hemodialysis International*, 2011)
- Survey of 78 dialysis center medical directors
  - 98% reported that they would choose a home modality if they needed dialysis (*BioTrends Special Report* April 21, 2010)
- Survey of 145 physicians and nurses working with a national US dialysis provider
  - More than 90% of the respondents said they would choose a home therapy if they needed dialysis as the preferred long-term therapy option (Schiller *et al. Nephrology News and Issue*, September 2011)
- International survey of 6.595 nephrology professional
  - Frequent application of home/selfcare dialysis was chosen as the best long-term therapy option (Ledebø *et al. Nephrology Dialysis Transplantation plus*, September 2008)

Studies on  
More Frequent & Home Hemodialysis

# The Frequent Hemodialysis Network (FHN) Daily Trial

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- Compared to thrice-weekly in-center HD, patients performing more frequent HD experienced:
  - Significant reduction in left ventricular mass
  - Significant improvement in self-reported physical health
  - Improved hypertension control
  - Improved hyperphosphotemia control
  - More interventions related to vascular access

# FREEDOM -12 Month Interim Results

Interim Measure	Baseline	Month 12	P - Value
Beck Depression Inventory Score <sup>1</sup>	11.2	7.8	P < 0.001
Post Dialysis Recovery Time (min) <sup>1</sup>	476	63	P < 0.001
% of Patients Reporting Symptoms of Restless Legs Syndrome <sup>2</sup>	36%	26%	P = 0.0495
# of Prescribed Anti-Hypertensive Medications <sup>3</sup>	1.7	1.0	P < 0.0001
% of Patients NOT Prescribed Anti-Hypertensive Medication <sup>3</sup>	21%	47%	P < 0.002
MOS Sleep Scale - Sleep Problems Index I <sup>2</sup>	39	33	P = 0.001
MOS Sleep Scale - Sleep Problems Index II <sup>2</sup>	41	34	P < 0.001
SF36 - Physical component scale (PCS) <sup>4</sup>	34	38	P < 0.0001
SF36 - Mental component scale (MCS) <sup>4</sup>	50	52	P = 0.01

<sup>1</sup>Jaber B, et al. Improvements in Depressive Symptoms and Post-Dialysis Recovery Time. Am J Kidney Dis 56:531-539, 2010.

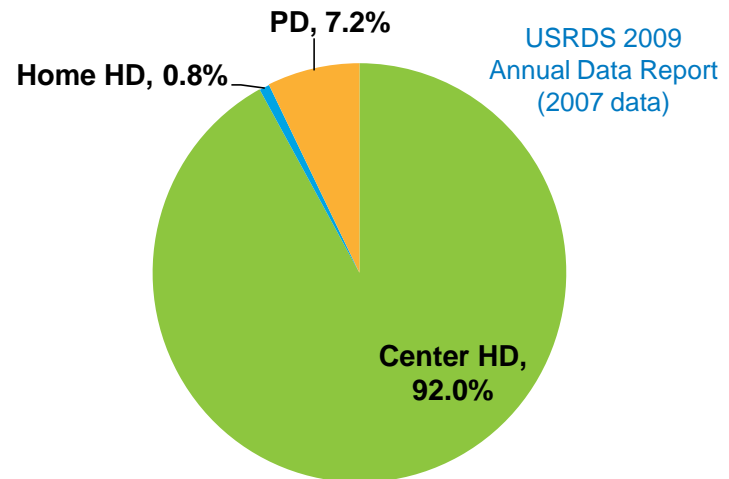
<sup>2</sup>Jaber B, et al. Improvements in Restless Legs Symptoms and Sleep Disturbances. Clin J Am Soc Nephrol 6: 1049-1056, 2011.

<sup>3</sup>Jaber B, et al. Poster presentation. SDHD Reduces The Need for Anti-Hypertensive Medications ASN Renal Week 2009.

<sup>4</sup>Finkelstein F, et al. SDHD Improves SF-36 Health Survey Domains. Poster presentation ADC 2011

# Home Dialysis- Then and Now

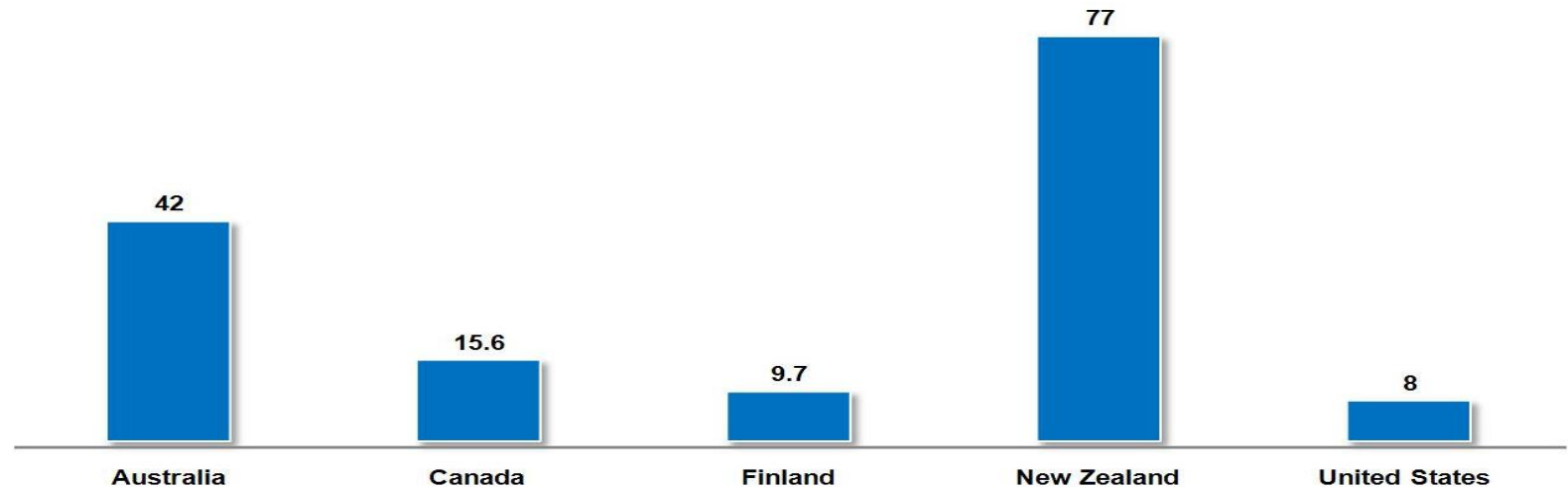
- In 1973, more than 40% of patients were performing dialysis at home.
- Today, less than 10% of the people on dialysis are at home<sup>1</sup>.



<sup>1</sup> U.S. Renal Data System, USRDS 2009 Annual Data Report: Atlas of Chronic Kidney Disease and End-Stage Renal Disease in the United States, National Institutes of Health, National Institute of Diabetes and Digestive and Kidney Diseases, Bethesda, MD, 2009.



# International Rates of HHD Usage Per Million People (PMP)



# Treatments When Kidney Fail

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Kidney  
Transplant



# First organ transplant in Human-Kidney Brigham and Women's Hospital, 1955



# Conclusion

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- Follow up with your kidney doctor regularly
- Be informed on the treatment options
- Choose treatment modality that fits your life style