



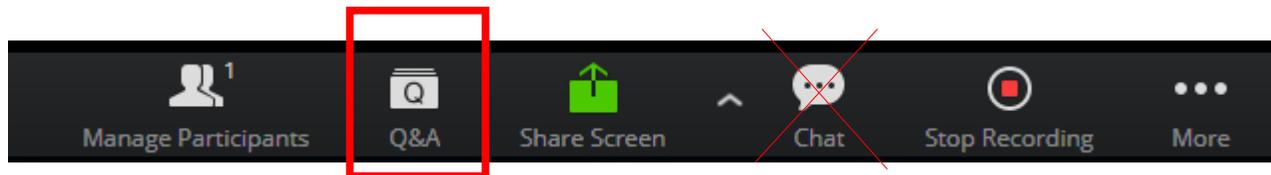
Nephrotic Syndrome Post-Kidney Transplantation

Samira S Farouk, MD, MS, FASN



Technical Overview

- Please stay on **'mute'** throughout the duration of the webinar.
- The chat box has been disabled.
- If you have questions for the speaker or for the AKF team:
 - please type it into the **Q&A box** in your control panel.
 - we will answer questions out loud during the Q&A portion of the presentation.



Thanks to our speaker!



Samira S Farouk, MD, MS, FASN

- Transplant nephrologist
- Assistant Professor of Medicine & Medical Education at Icahn School of Medicine at Mount Sinai (ISMMS)
- Associate Program Director of the Nephrology Fellowship, and Social Media Director of the Division of Nephrology at ISMMS

Objectives

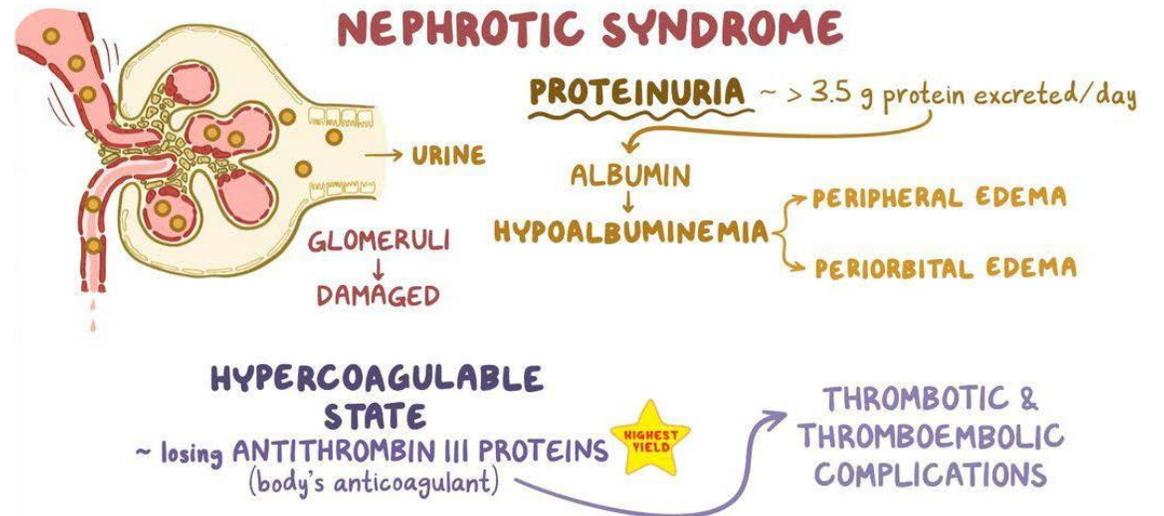
- Nephrotic syndrome causes and symptoms
- The risk of nephrotic syndrome post-transplant
- The importance of follow-up visits after transplant

What is nephrotic syndrome?

Nephrotic syndrome is *not* a disease.

It is a group of symptoms that show your kidneys are damaged:

- Too much protein in your urine
- Not enough protein in your blood
- Too much fat or cholesterol in your blood
- Swelling



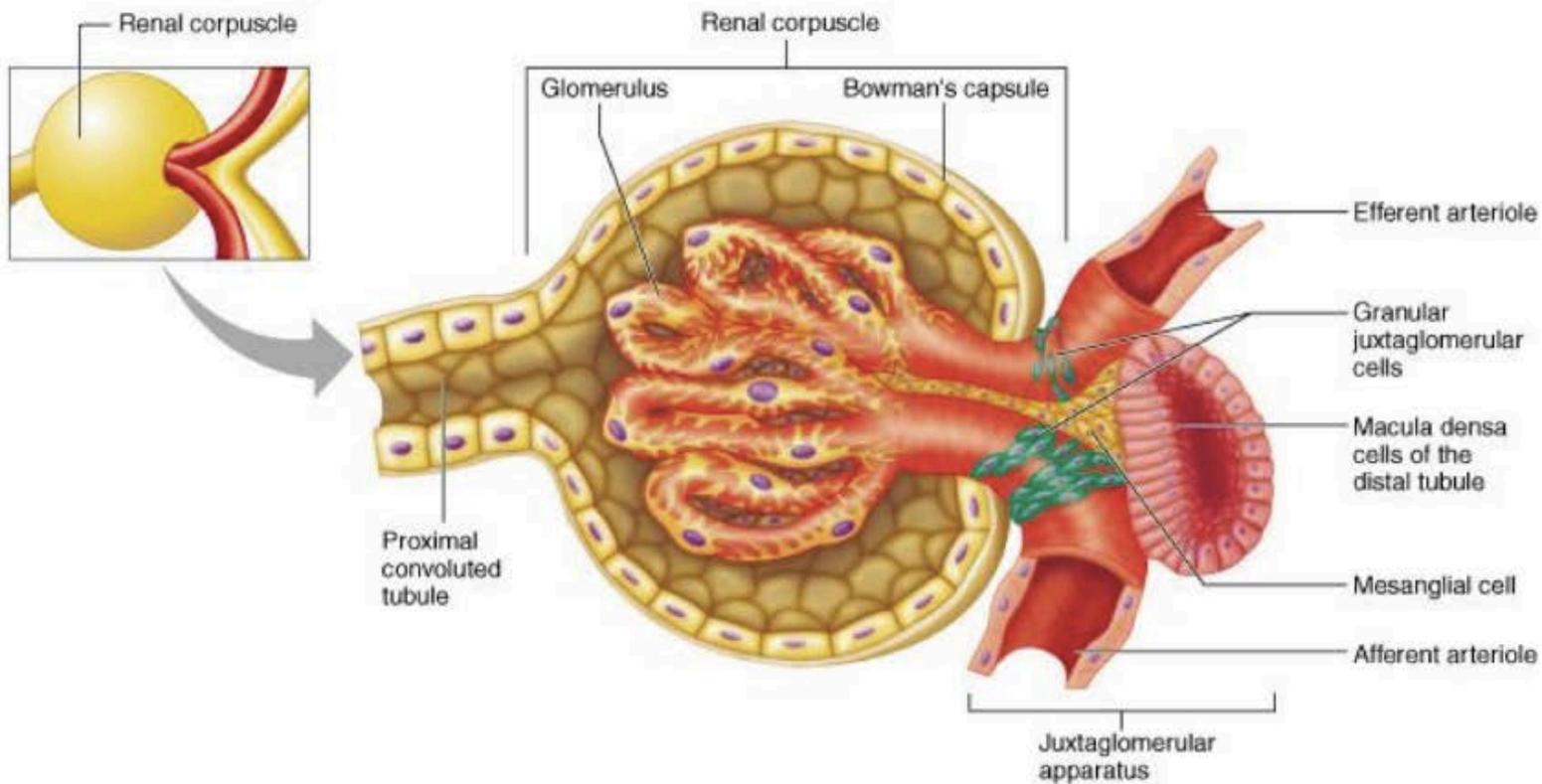


**Sorry I keep
spilling all of this
protein. I hope that
doesn't cause any
other problems.**

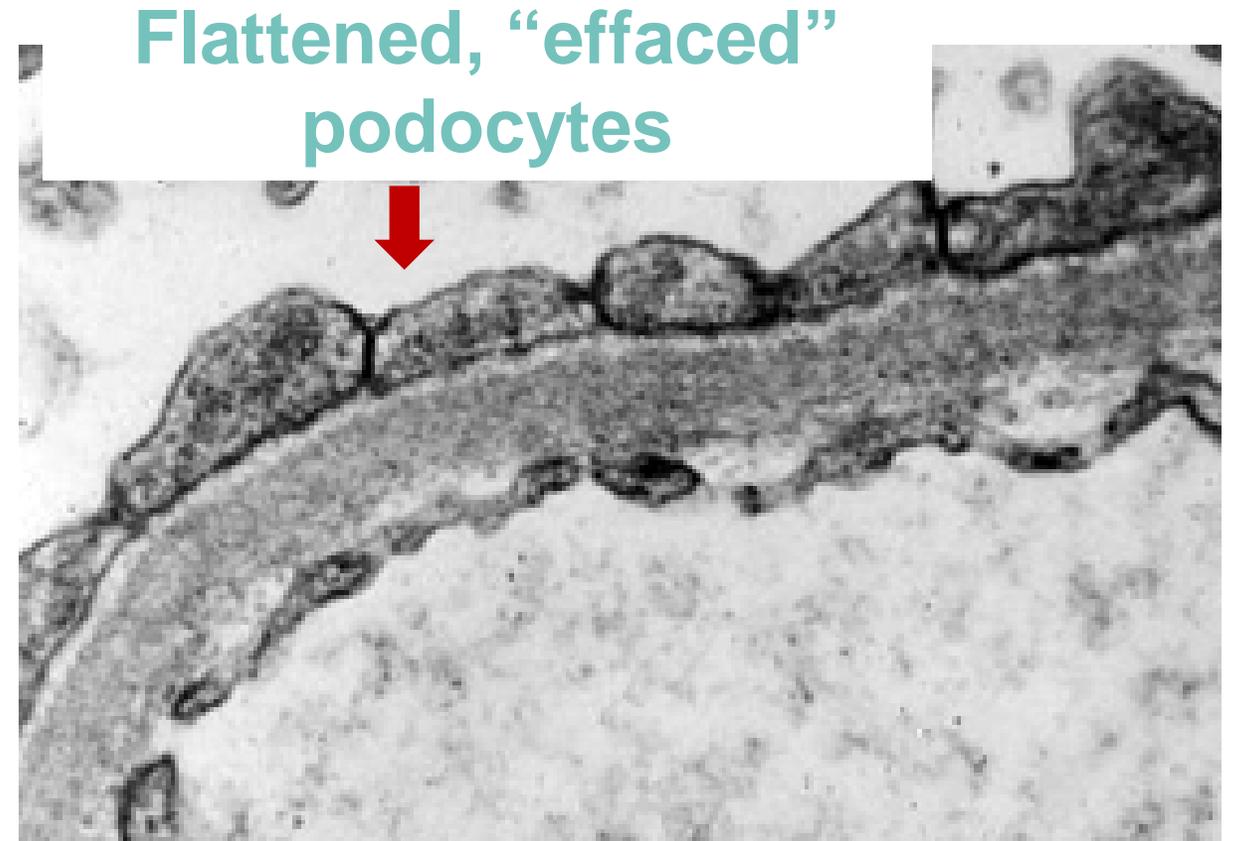
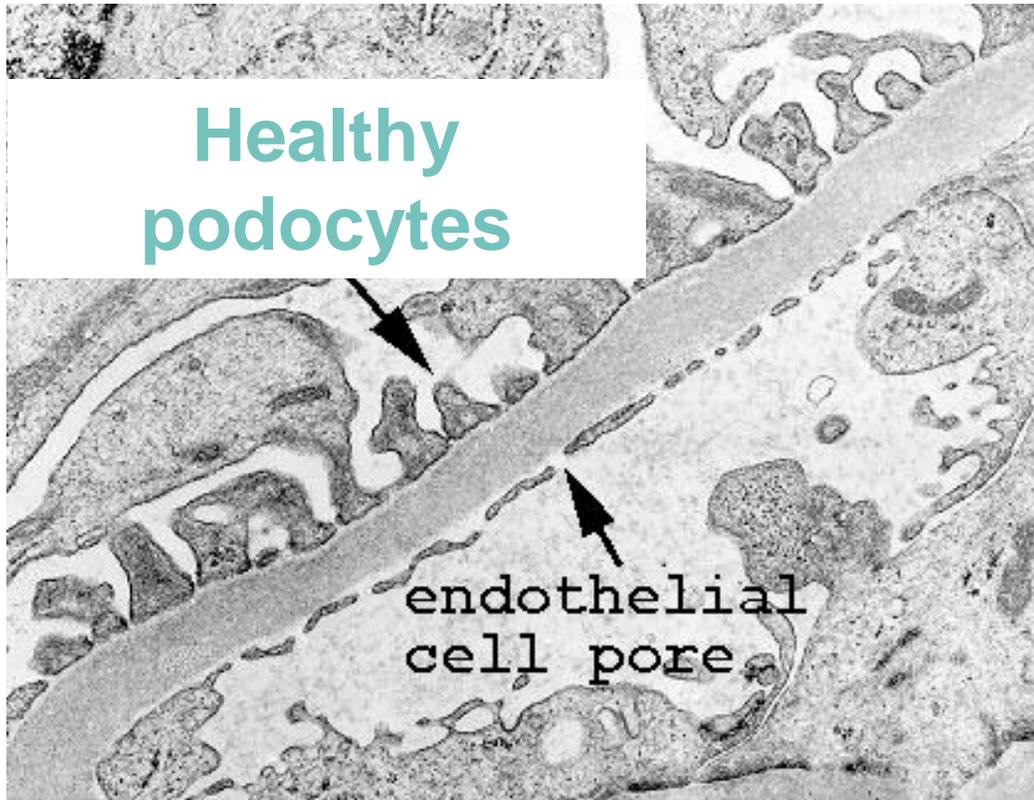


Proteinuria → Nephrotic Syndrome

**The kidney has about 1 million glomeruli.
The glomerulus is like a coffee filter (coffee grounds = protein).**



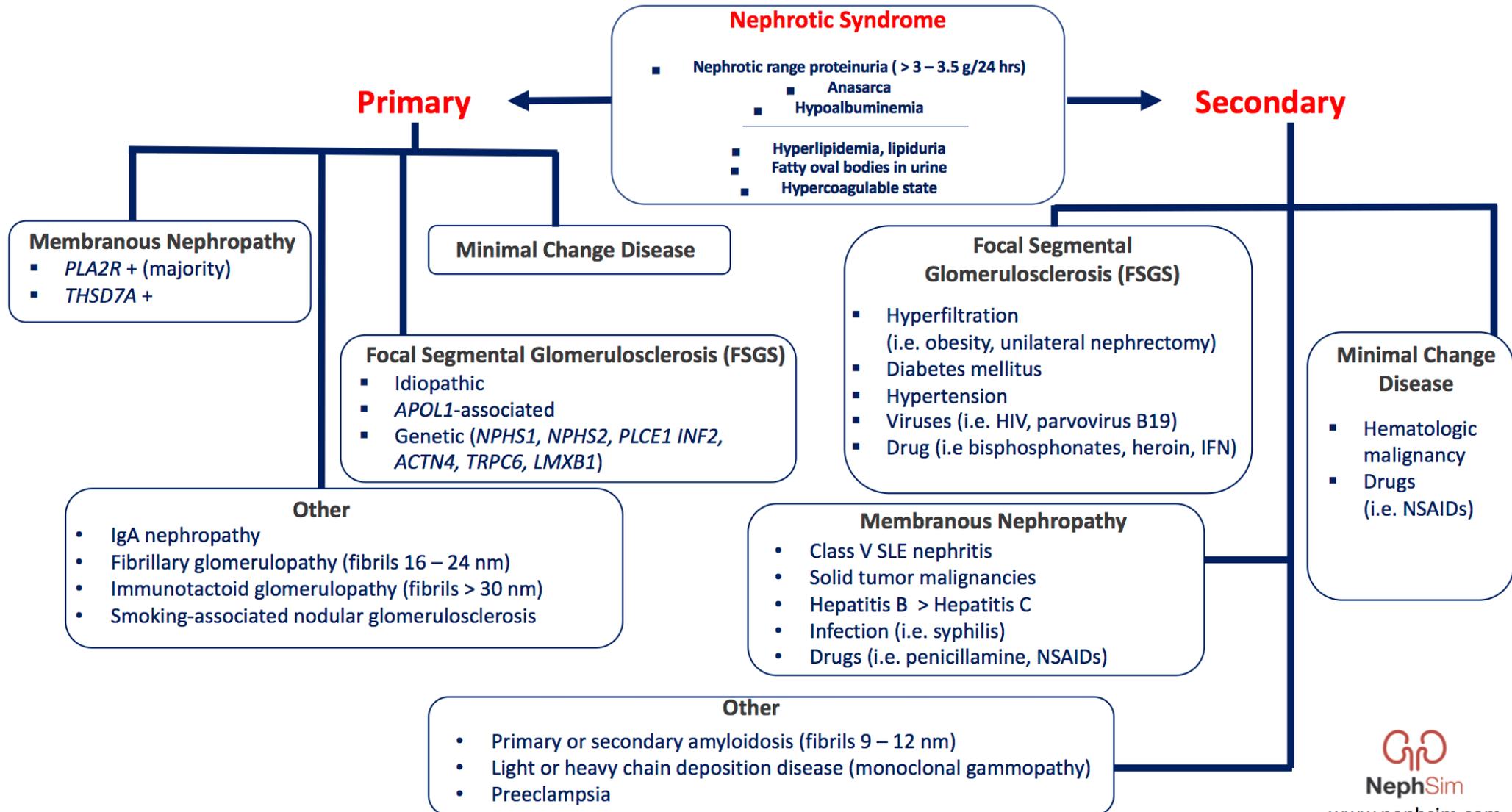
Podocytes are an important part of the filter that are damaged in patients with nephrotic syndrome.



What causes nephrotic syndrome?

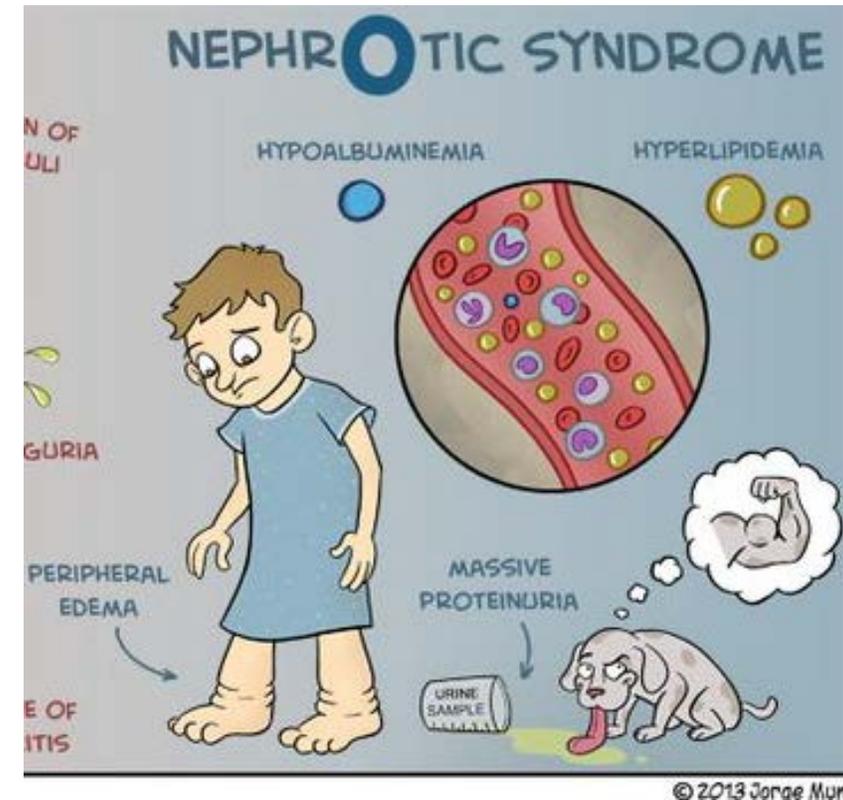
- **Primary causes** affect only the kidneys.
 - Focal segmental glomerulosclerosis (FSGS)
 - Minimal change disease
- **Secondary causes** are diseases that affect other parts of the body, including the kidneys.
 - Diabetes
 - Lupus
 - HIV

Nephrotic syndrome indicates glomerular injury.



What are the signs of nephrotic syndrome?

- Swelling in your legs, feet, ankles, and sometimes face and hands
- Weight gain
- Feeling very tired
- Foamy or bubbly urine
- Not feeling hungry



The best way to know if you have nephrotic syndrome is to visit your doctor for routine blood and urine tests.

How do doctors test for nephrotic syndrome?

- **Urine tests** –results show if there is protein in your urine. If so, you may have nephrotic syndrome.
- **Blood tests** –results show if kidneys are filtering waste properly. If so, it may be a sign of nephrotic syndrome.
- **Kidney biopsy** – results show signs of damage and disease

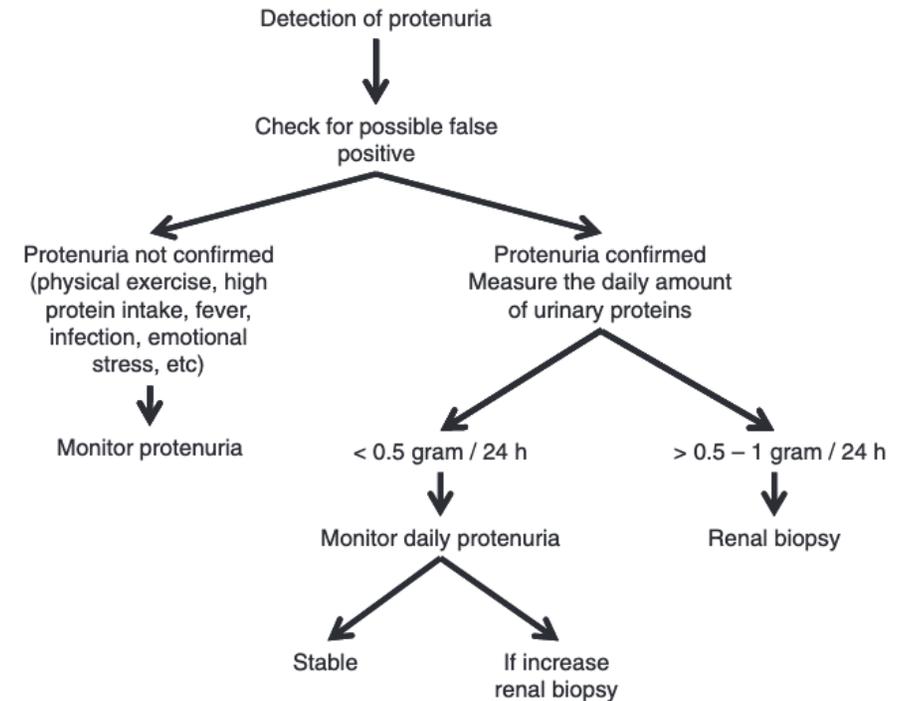
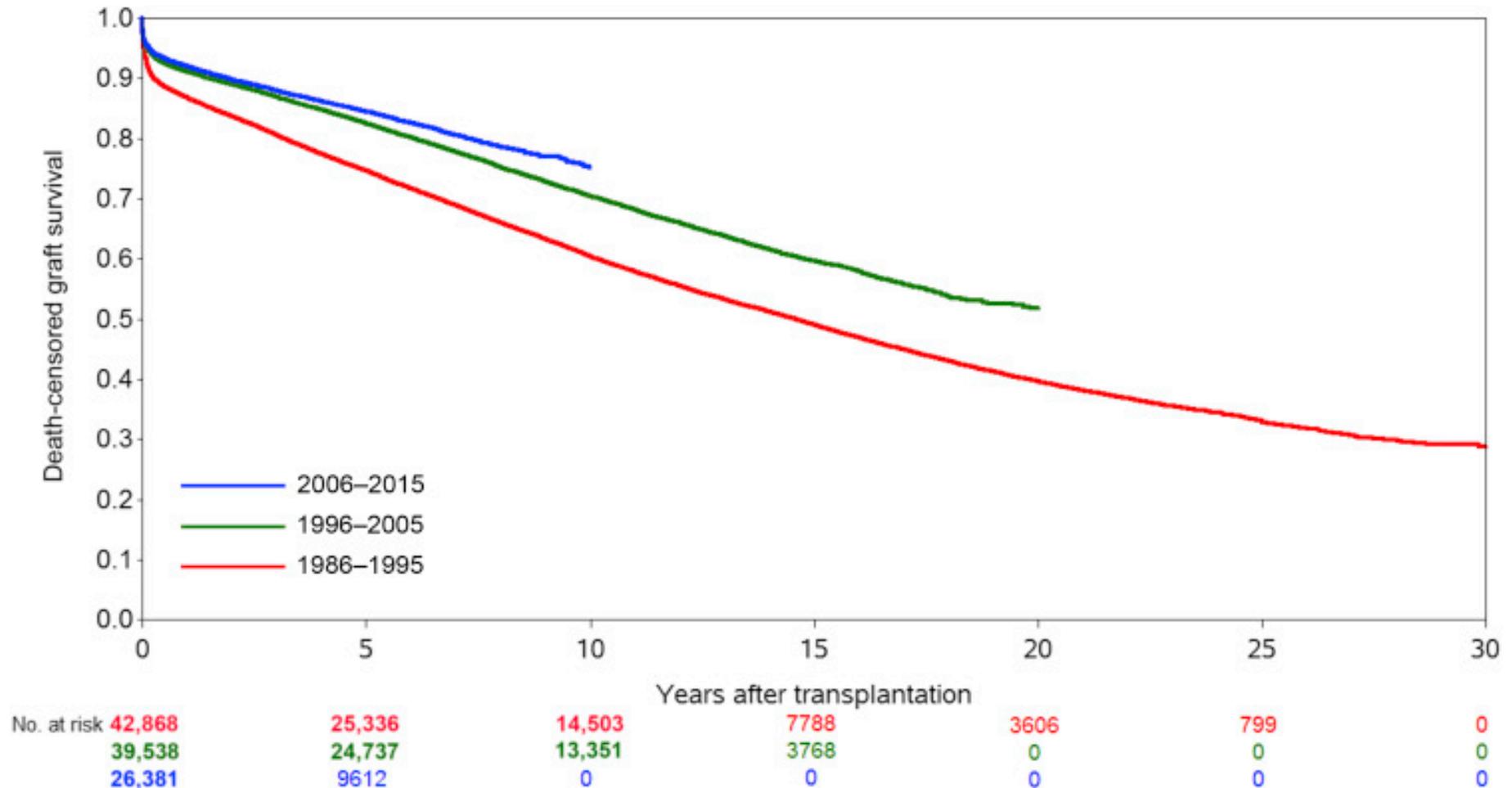


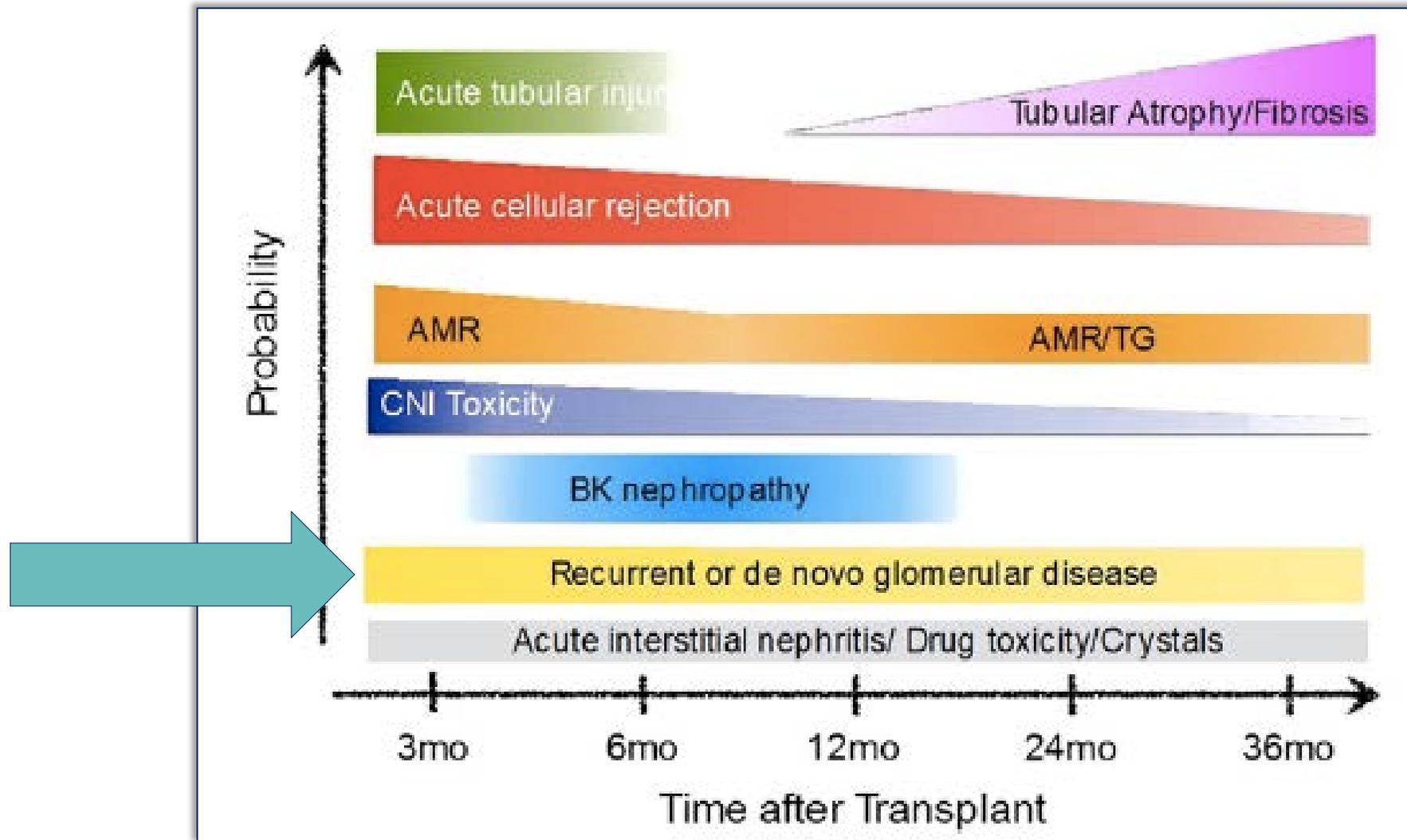
Figure 1 A diagnostic approach to posttransplant proteinuria.

Nephrotic syndrome & transplant

Kidney transplants fail over time.



Why do kidney transplants fail?



Who is at risk for nephrotic syndrome post-transplant?

Patients who:

- Have nephrotic syndrome prior to kidney transplant due to a kidney disease such as FSGS
- Have a disease that affects the kidneys such as lupus or diabetes
- Take certain medicines like nonsteroidal anti-inflammatory drugs (NSAIDs) or antibiotics
- Have an infection such as HIV, hepatitis B and C, or malaria

What is FSGS?

- Focal segmental glomerulosclerosis (FSGS)
- Scarring the kidneys' filters, which makes it hard for kidneys to filter out waste and can lead to kidney failure.
- A primary cause of nephrotic syndrome
- Requires kidney biopsy for diagnosis

Recurrence of Focal Segmental Glomerulosclerosis after Kidney Transplantation in Adults



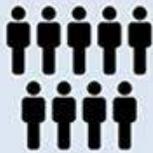
Post-Transplant
Glomerular Disease
Project (TANGO)



Observational
Multicenter
International



2005 to 2015



Kidney transplant
recipients
n = 11,742

Risk Factors for recurrence



Old age

Hazard Ratio

1.37

per decade
(1.09-1.56)



White race

2.14

(1.08-4.22)



BMI

0.89

per Kg/m²
(0.83-0.95)

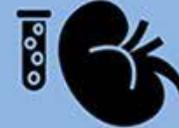


Native kidney
nephrectomy

2.76

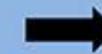
(1.16-6.57)

Recurrence of FSGS



Recurrent FSGS

32%
(*n* = 57)



Graft loss

Median IQR: 5 years

39%
(22 of 57)

Response to treatment of recurrent FSGS



Plasmapheresis ±
Rituximab were the
most frequent
treatments

81%
(*n* = 61)

21%
(*n* = 13)

Complete
Remission

36%
(*n* = 22)

Partial
Remission

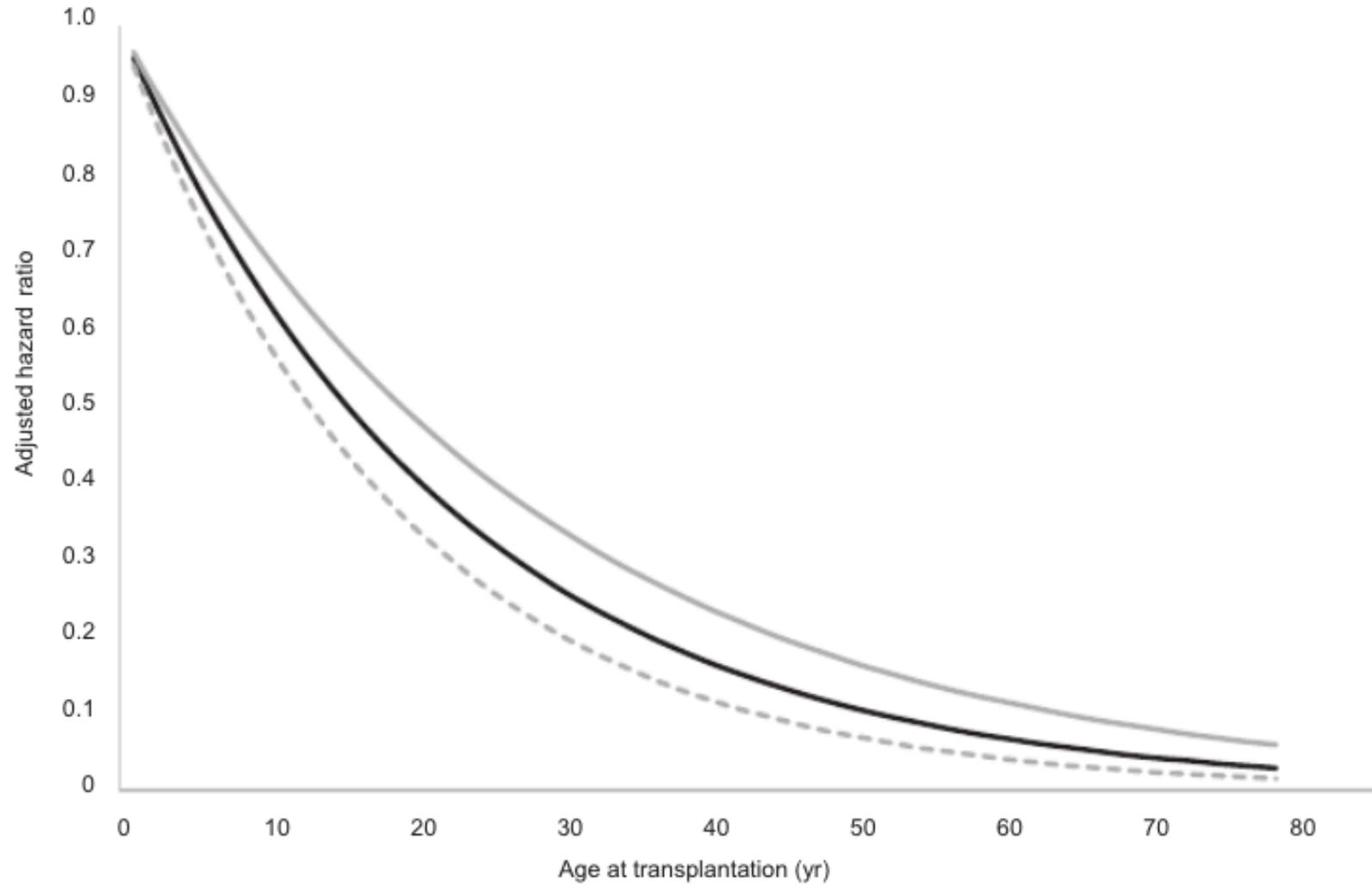
43%
(*n* = 26)

No
Response

Conclusions: Idiopathic FSGS recurs post-transplant in one-third of cases, increases by five-fold the risk of graft loss. Response to treatment significantly improves outcomes but is achieved in only half of the cases.

Audrey Uffing, Maria José Pérez-Sáez, Marilda Mazzali, et al. **Recurrence of Focal Segmental Glomerulosclerosis after Kidney Transplantation in Adults.** CJASN doi: 10.2215/CJN.08970719. Visual Abstract by Edgar Lerma, MD, FACP, FASN

Risk of recurrence decreases with age



--- Lower 95% CI — Point estimate — Upper 95% CI

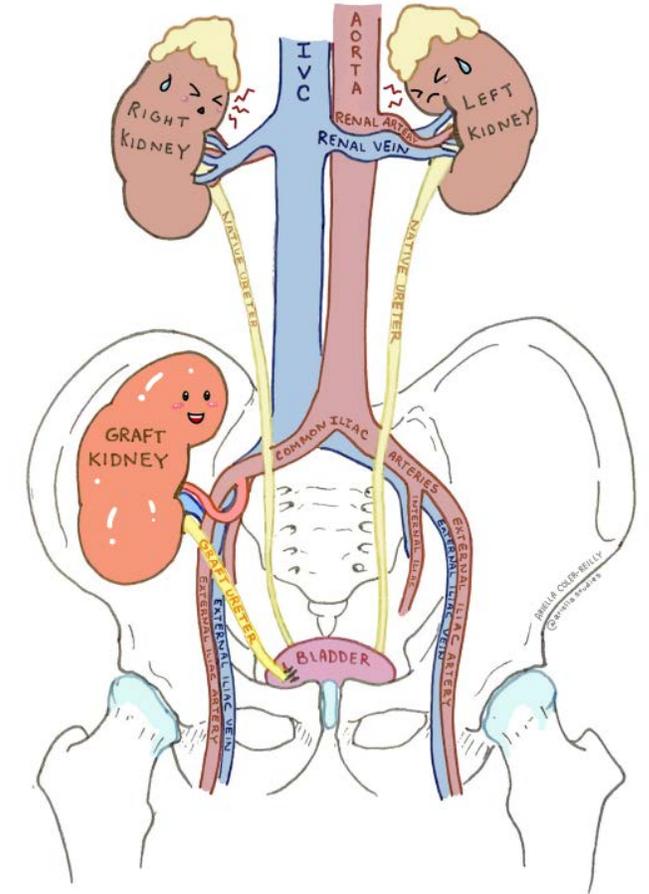


Why is it important to treat nephrotic syndrome?

- Nephrotic syndrome can lead to other problems such as:
 - Blood clots
 - Infections
 - Heart attack or a stroke
 - Anemia
 - Heart disease
 - High blood pressure
 - Fluid buildup
 - Acute kidney injury
 - End-stage renal disease (ESRD) or kidney failure
 - **Causing your new kidney transplant to fail**

Protect your transplant!

- If you had nephrotic syndrome before your transplant, you may be at risk to develop it again after transplant.
- Continue regular follow up with your kidney transplant team.
- Get blood and urine tests to look for early signs of kidney injury and nephrotic syndrome.



How can I treat nephrotic syndrome?

- Take certain medicines to treat the symptoms and keep the damage to your kidneys from getting worse
 - Blood pressure and cholesterol control medicine can help prevent heart attack or stroke.
 - Medicine to help your body get rid of extra water can help control your blood pressure and can reduce swelling.
- Changing how you eat may also help you manage your symptoms. A dietitian may recommend you change the amount of protein, salt, and fat that you eat.

Key Takeaways

- Nephrotic syndrome is caused by primary or secondary diseases that harm the filters in your kidneys.
- Nephrotic syndrome can happen even after a transplant and harm your new kidney.
- Close follow up with your transplant nephrology team is necessary to look for early signs of kidney injury and nephrotic syndrome.

Live Q&A

Submit your questions now!

Is nephrotic syndrome preventable?

What is the difference between nephrotic syndrome and nephritic syndrome?

Are there any new treatments in the works or clinical trials for nephrotic syndrome?

What are the differences between childhood nephrotic syndrome and adulthood nephrotic syndrome?

Live Q&A

Submit your questions now!

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**Christian W. Mende, MD, FACP,
FACN, FASN, FASH, FAHA**

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