NephU™
Improving Awareness & Patient Outcomes

Predictors of Rapid Progression in Patients With Autosomal Dominant Polycystic Kidney Disease (ADPKD)

ADPKD is a rare and progressive disease and about 10% of all dialysis patients (ESRD) are affected by this disease.[1] While the definition of rapid progression of kidney failure has yet to be standardized, one definition is reaching kidney failure before the 75th percentile of the overall ADPKD population who would eventually reach kidney failure.[2]

Identifying patients with rapidly progressing disease can help optimize treatment strategies to help slow progression. However, due to genetic heterogeneity and other lifestyle and clinical factors, rapid progression may manifest differently in the ADPKD patient population. Below are some predictors that can help you identify patients at risk of rapid progression in this variable patient population.[2]

Validated Predictors of Rapid Progression

Early manifestations[2,3]

- Urologic events before age 35
- Hypertension before age 35
- Decreased eGFR
- Decreased ability to concentrate urine

Kidney size[2]

- Increased htTKV relative to age
- Increased htTKVΔ/year
- Mayo Imaging Classification: 1C, 1D, 1E
- Kidney length >16.5 cm (as seen on ultrasound) in patients <45 years of age

Comorbidities[4,5,6]

- Overweight/obesity (BMI >25 kg/m^2)
- Proteinuria and microalbuminuria
- Diabetes

PROPKD score[2]

- PROPKD score >6

Sex[2,3]

- Male

Lifestyle factors[2]

- Increased calorie and salt intake

Germline mutation[2]

- Truncating *PKD1* mutation

Family history[2]

- At least 1 relative with kidney failure by the age of 55

Different populations may be more predisposed to have different predictors of rapid progression; therefore, rapid progression may appear differently across different...

Ages — >55

In older patients with ADPKD, a pooled analysis of patients >55 years of age showed that aging related conditions (such as vascular disease) were more important at influencing progression of CKD than cystic growth[7]

Geographic locations

In the United States, the estimated annual prevalence of diagnosed ADPKD varied by region and from 0.69 per 10,000 in the West to 0.94 per 10,000 in the Northeast and South regions[8]

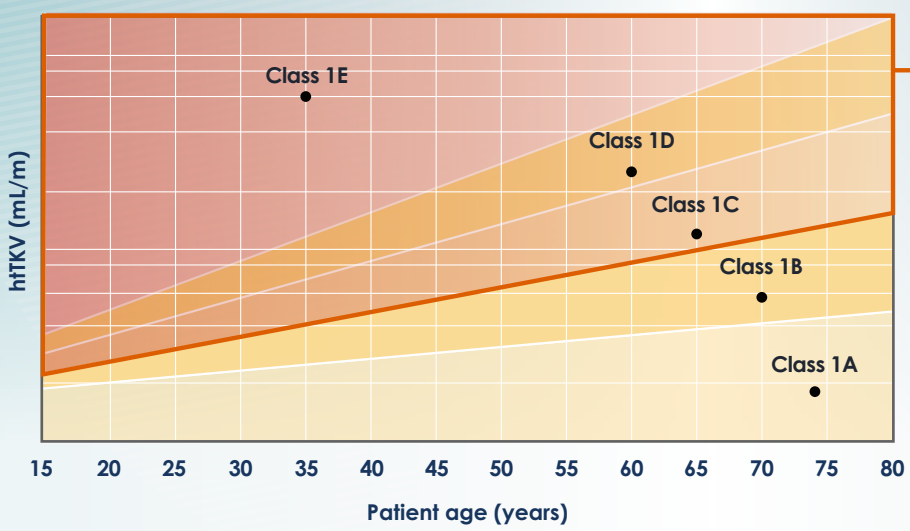
Races and social determinants of health

Non-Hispanic Black individuals with ADPKD were found to progress to ESKD more rapidly than non-Hispanic White individuals[9]

Predictors of Rapid Progression in Patients With ADPKD (Cont.)

Mayo Imaging Classification (MIC) is currently the recommended prediction model for identifying individuals at risk of rapid progression among patients with ADPKD.

With this prediction model, patients with typical ADPKD* can be subclassified into classes 1A through 1E according to htTKV relative to age, with 1E being the most severe form and 1A being the least severe.[10-12]



MIC 1C-1E are considered at risk for rapid progression!

Scan to access an online ADPKD simulator!

The Predicting Renal Outcome in Polycystic Kidney Disease (PROPKD) score can also aid with the identification of individuals at risk of rapidly progressive disease over 35 years of age, with a higher score indicating more severe disease.[3]

The PROPKD score provides an additional clinical framework to identify risk for progression, where either historical rate of decline in eGFR and/or MIC are equivocal or unavailable.

When you tally the points based on patient characteristics, a **PROPKD score >6** is considered at risk for rapid progression and **predicts ESKD onset before age 60[3]**

Risk Assessment Based on PROPKD Score

Variable	Points for PROPKD Score
Sex	
Female	0
Male	1
Hypertension before age 35 years	
No	0
Yes	2
≥1 urologic event before age 35 years	
No	0
Yes	2
Mutation	
PKD2	0
PKD1 nontruncating	2
PKD1 truncating	4

Determining the rate of disease progression in patients with ADPKD has substantial implications in the assessment of prognosis and treatment options[2]

*Typical morphology of ADPKD is defined by diffuse bilateral cystic involvement of the kidneys.

ADPKD, autosomal dominant polycystic kidney disease; BMI, body mass index; CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; ESKD, end-stage kidney disease; htTKV, height adjusted total kidney volume; MIC, Mayo Imaging Classification; PROPKD, Predicting Renal Outcome in Polycystic Kidney Disease.

References: 1. Galliani M, et al. *Int J Nephrol.* 2020;2020:9286728. **2.** Chebib FT, Torres VE. *Am J Kidney Dis.* 2021;78(2):282-292. **3.** Cornec-Le Gall E, et al. *J Am Soc Nephrol.* 2016;27(3):942-951. **4.** Nowak KL, et al. *J Am Soc Nephrol.* 2018;29(2):571-578. **5.** Chapman. *J Am Soc Neph.* 2007:1399-1407. **6.** Reed B, et al. *Nephrol Dial Transplant.* 2012;27(7):2862-2865 . **7.** Chebib FT, et al. *Kidney Med.* 2023;5(6):100639. **8.** Willey C, et al. *Curr Med Res Opin.* 2021;37(7):1155-1162. **9.** Murphy EL, et al. *BMC Nephrol.* 2019;20(1):55. **10.** Irazabal MV, et al. *J Am Soc Nephrol.* 2015;26(1):160-172. **11.** Soroka S, et al. *Can J Kidney Health Dis.* 2017;4:2054358117695784. **12.** Park HC, et al. *Kidney Res Clin Pract.* 2022;41(4):432-441.