[Clinic name]

[Internal coding]

[Contact information]

RADIOLOGY REQUEST FORM: TOTAL KIDNEY VOLUME (TKV)

Patient Information

Date of Birth: _____

Patient Name: _____

Sex: _____ Height: _____ Weight: _____ Phone Number: _____

Referring Doctor: _____

Appointment Information

Date: _____

Time: _____

☐ **MRI** ☐ **CT**

Measurements needed to determine TKV:

Measure both the left and right kidneys, cyst edge to cyst edge, and review image to determine typical* or atypical† PKD (if typical, calculate TKV)

Left kidney dimensions (mm):	Right kidney dimensions (mm):
Maximal kidney length on the coronal plane _____	Maximal kidney length on the coronal plane _____
Maximal kidney width on the transverse (axial) plane _____	Maximal kidney width on the transverse (axial) plane _____
Maximal kidney depth on the transverse (axial) plane _____	Maximal kidney depth on the transverse (axial) plane _____

TKV (mL): _____

T-weighted imaging is preferred for better visualization of cysts.[1]

Radiologist's contact information

Name: _____

Email: _____

Telephone: _____

Fax: _____

Doctor's Signature: _____

Date of Request: _____

*Bilateral and diffuse distribution, with mild, moderate, or severe replacement of kidney tissue by cysts, where all cysts contribute similarly to TKV.[2]

†Unilateral, segmental, asymmetric, or lopsided presentation, or a bilateral presentation with acquired unilateral atrophy and significant renal enlargement or bilateral kidney atrophy without significant renal enlargement.[2]

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There are 2 techniques to addressing a TKV order:

Determine raw maximal bilateral kidney dimensions:

- Trace kidney outline onto cross-sectional images
- Multiply all traced areas by slice thickness
- Combine slice volumes

Calculate a TKV Measurement (if not provided)

Use the ellipsoid formula to calculate TKV based on the maximal bilateral kidney dimensions[2]

Calculate a TKV measurement (if not provided) using the ellipsoid formula based on the maximal bilateral kidney dimensions

- **TKV–**using the ellipsoid formula

LEFT KIDNEY		RIGHT KIDNEY		
$\frac{\pi}{6}$ x (LxWxD)	+	$\frac{\pi}{6}$ x (LxWxD)	=	TKV (mL)

- **Calculate htTKV**

$$\frac{\text{TKV}}{\text{height (m)}} = \text{htTKV (mL/m)}$$

OR

Electronically calculate TKV and htTKV using the QxMD calculator.

Scan the QR code or visit QxMD.com.

L=length; W=width; D=depth.
Units for kidney dimensions are in mm. To get kidney volume in mL, multiply by 0.001.
TKV in mL and height in m for a htTKV in mL/m.

References: 1. Zhang W, Blumenfeld JD, Prince MR. MRI in autosomal dominant polycystic kidney disease. *J Magn Reson Imaging.* 2019;50(1):41-51. **2.** Magistroni R, Corsi C, Martí T, Torra R. A review of the imaging techniques for measuring kidney and cyst volume in establishing autosomal dominant polycystic kidney disease progression. *Am J Nephrol.* 2018;48(1):67-78. doi:10.1159/000491022

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