Supplementary Table 1. a. BOLD protocol comparison

BOLD MRI	Recommendation	agree with consensus*
Preparation	normal hydration (100 ml water), 4 h fasting from food	yes
Field strength	1.5 T or 3.0 T, 3*T* preferred if available	yes
Sequence	2D mGRE	yes
Orientation	coronal oblique to kidneys	yes
In-plane resolution	2–3 mm	yes
Slice thickness	3–5 mm	yes
Coverage	3–5 slices centered on renal hilum	yes
Parallel imaging factor	2	not used
Fat suppression	yes	yes
TR (ms)	60–75 ms	yes
TE (ms)	8–16 echoes, up to 50 ms (~T2* cortex) at 3T with choice of in phase for fat-water	the longest TE<50ms, TEs were not in-phase
Averages	1	yes
Breathing mode	breath hold	yes
Image quality control	recommended	yes
ROI placement	manual	yes
Cortical ROI	1 stripe/slice; > 3 slices	yes
Medullary ROI	3 samples/slice; > 3 slices	yes
Fitting	monoexponential or log-linear	yes
Reporting	cortex and medulla	yes
Reported metric	$R2^*$ (s^{-1})	yes
Metric statistics reporting	mean, median, standard deviation, ROI size	yes
Map format	color or grayscale quantitative map	yes

*Consensus-based technical recommendations for clinical translation of renal BOLD MRI. MAGMA. 2020. 33:199-215. Note: only items related to our protocol were compared.

Supplementary Table 1. b. DWI protocol comparison

DWI MRI	Recommendations	agree with consensus*
Preparation	normal hydration	yes
Field strength	1.5 T or 3.0 T	yes
Sequence	single shot EPI	yes
Orientation	oblique coronal	yes
Matrix	>128	yes
In-plane resolution	2-3 mm	yes
Slice thickness	>4 mm	yes
Coverage	full kidney	5 slices centered on renal hilum
Parallel imaging factor	2	yes
Fat suppression	SPAIR	yes
TR (s)	4	TR=3s
TE (ms)	min (< 100)	yes
Averages	3	yes
Breathing mode	respiratory gated (or free breathing with post-hoc motion correction)	free breathing (no post-hoc correction)
Cardiac gating	no	yes
Diffusion gradients	monopolar	bipolar
# b-values	4	yes
Suggested b-values	0, 100, 200, 800	used different combination
# directions	3	yes
Time (min)	2	<4 min
Distortion correction	recommended	yes
Registration	recommended, unilateral if possible	yes
Image quality control	recommended	yes
ROI placement	b=0 image	placed on ADC map directly
Cortical ROI	1 stripe / slice; > 3 slices	yes
Medullary ROI	3 samples / slice; > 3 slices	yes
Reporting	cortex and Medulla	Only report cortex because limited differences
Metric statistics reporting	mean, Median, Standard deviation, ROI size	yes
Diffusion units	10^{-3} mm^2 / s	10^{-6}mm^2/s
Map format	colormap, fused with anatomy if possible	grayscale map

*Consensus-based technical recommendations for clinical translation of renal diffusion-weighted MRI. MAGMA. 2020. 33:177–195. Note: only items related to our protocol were compared.

Supplementary Table 1. c. ASL protocol comparison

ASL MRI	Recommendations	agree with consensus*
1. Patient preparation	normal hydration	yes
2.1 field strengths	1.5 T and 3 T	yes
2.2 transmitter coil	body coil	yes
2.3 receive coils	body phased-array coils	yes
3. Labeling strategy	both PASL:FAIR and PCASL	yes
3.2 time point acquisitions	single time point acquisitions	yes
4. FAIR labeling parameters	FAIR labeling parameters	yes
4.1 optimize the inversion slice profile	FOCI pulse should be used	yes
4.2 selective slab	carefully positioned, excluding the aorta	yes
4.3 selective inversion slab thickness	should equal to the imaging slab thickness	yes
4.4 single-TI acquisitions	an inversion time of 1.8–2.0 s	yes
4.7 ASL pairs in single-TI acquisition	minimum of 20 ASL pairs	yes
6.4 readout sequence	2D single-slice acquisition scheme, SE-EPI, bSSFP and single-shot RARE	True FISP
6.7 Orientation	coronal oblique slices (along the major axis of the kidneys)	yes
6.8 slice thickness	2D acquisitions is 4-8 mm	yes
6.10 in-plane resolution	2-4 mm	yes
6.11 Undersampling methods	partial Fourier and parallel imaging at moderate acceleration factors (up to R=2) may be used	standard partial Fourier; no IPAT
6.12 TR (including labeling + readout)	4–6s	yes
7.1 Pre and post-inversion saturations	Recommended for FAIR labeling schemes	not used
7.2 Background-suppression	recommended	not used
7.3 Breath-hold scans	not recommended	yes
7.4 free breathing scan	preferred	yes
7.5 Respiratory triggering	minimize the effects of kidney motion at the expense of scan	not used
7.6 Fat suppression	recommended for renal ASL	yes
8.1 Retrospective image registration	highly recommended	yes
8.2 Outlier rejection	recommended	yes
9.1 M0 acquisition	mandatory	yes
9.2 compartment model	single-compartment model with assumed blood T1	yes
9.4 Tissue-blood partition coefficient	0.9 mL/g	80mL/100mg
9.5 Assumed blood T1	at 3 T = 1.65 s	1.15 s
9.7 Labeling efficiency PASL	PASL = 95% (neglecting background suppression loss)	yes
9.10 Regions of interest selection	should be performed manually on the ASL M0 image	manually on perfusion map
10. Data analysis/reporting	cortical renal blood flow values, not medulla or whole-kidney, separately for left and right kidney	yes

*Consensus-based technical recommendations for clinical translation of renal ASL MRI. MAGMA. 2020. 33:141–161. Note: only items related to our protocol were compared.