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| **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 | *R*2\* (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. | | |

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| **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 mm2 / s | 10-6mm2/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. | | |

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| **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. | | | |