

## Supplementary Data

SUPPLEMENTARY TABLE S1. MODEL SELECTION FOR ESTIMATED 6-MONTH GLOMERULAR FILTRATION RATE

| <i>Model name</i>    | <i>Formulas to predict post operative GFR<br/>Formula:<br/>postgfr ~ [...]</i>  | <i>R<sup>2</sup></i> | <i>AIC</i> | <i>RMSE training</i> | <i>RMSE crossvalidation</i> | <i>RMSE testing</i> | <i>AUC (GFR &lt;60) internal data</i> | <i>RMSE external validation</i> | <i>AUC (GFR &lt;60) externalvalidation</i> |
|----------------------|---|----------------------|------------|----------------------|-----------------------------|---------------------|---------------------------------------|---------------------------------|--|
| Null                 | age + gender + race + hypertension + diabetes   | 0.31                 | 772.75     | 18.73                | 20.61                       | 21.46               | 0.81                                  | 21.05                           | 0.71                                       |
| Base                 | Null + preoperative GFR   | 0.57                 | 734.04     | 14.82                | 16.58                       | 19.56               | 0.92                                  | 16.82                           | 0.90                                       |
| Surgery              | Base + surgery (radical vs. partial)  | 0.63                 | 723.21     | 13.77                | 15.59                       | 19.77               | 0.94                                  | 15.58                           | 0.91                                       |
| Volume               | Surgery + contravol + ipsivol + tumorvol + (ipsivol + tumorvol) x surgery   | 0.71                 | 711.80     | 12.18                | 15.27                       | 17.18               | 0.95                                  | 15.80                           | 0.88                                       |
| Nephrometry          | Surgery + nephrometry score + (nephrometry score) x surgery   | 0.66                 | 719.86     | 13.20                | 15.32                       | 19.10               | 0.93                                  | -                               | -  |
| Designed             | Volume + nephrometry score + (nephrometry score) x surgery  | 0.71                 | 714.54     | 12.09                | 15.33                       | 17.61               | 0.95                                  | -                               | -  |
| Separate             | Base + contralateral volume + ipsilateral volume + tumor volume   | 0.75                 | -          | 11.30                | 16.26                       | 17.78               | 0.96                                  | 16.24                           | 0.71                                       |
| Margin               | Volume + margin volume  | 0.76                 | 700.12     | 11.13                | 13.96                       | 16.78               | 0.96                                  | -                               | -  |
| Quadratic            | Volume + ipsilateral volume <sup>2</sup>  | 0.74                 | 702.80     | 11.43                | 13.87                       | 15.91               | 0.95                                  | 15.39                           | 0.89                                       |
| Separate (quadratic) | Base+ contralateral volume <sup>2</sup> + ipsilateral volume <sup>2</sup> + tumor volume <sup>2</sup>   | 0.78                 | -          | 10.58                | 16.41                       | 17.31               | 0.96                                  | 15.50                           | 0.74                                       |
| Margin (quadratic)   | Quadratic + margin volume <sup>2</sup>  | 0.79                 | 689.80     | 10.37                | 12.70                       | 16.07               | 0.96                                  | -                               | -  |
| Quadratic (full)     | Quadratic + contralateral volume <sup>2</sup> + tumor volume <sup>2</sup> + (ipsilateral volume <sup>2</sup> + tumor volume <sup>2</sup> ) x surgery        | 0.78                 | 698.65     | 10.66                | 15.32                       | 17.83               | 0.96                                  | 15.33                           | 0.89                                       |
| Complete             | (preoperative GFR + contralateral volume + ipsilateral volume + tumor volume + nephrometry score + age + gender + race + hypertension + diabetes) x surgery | 0.75                 | 718.03     | 11.25                | 16.48                       | 17.78               | 0.96                                  | -                               | -  |

GFR = glomerular filtration rate; AIC = Akaike information criterion; RMSE = root mean square error; AUC = area under the curve.