Supplementary Figure 1:

Study design. A: Algorithm for individual goal directed fluid therapy (IGDT). B: High volume fluid therapy (HVFT) algorithm.
Supplementary Figure 2:

**Time line:** The donor was anaesthetized upon arrival at the facilities and baseline biopsies and baseline measurements with the optic probes were performed. The donor is a model of a donation after brain death (DBD) in humans and the kidneys for transplantation were removed after a minimum of 4 hours of brain death, followed by termination of the donor. The kidneys were cold stored for a minimum of 18 hours at 4°C, hereafter end-to-end anastomoses were performed to the vessels of the left native kidney of the recipient pig (both native kidneys were removed before insertion of the donor kidney). Reperfusion was timed as $t=0$, and the pigs were observed for 10 hours after reperfusion, with the first hour being the intervention time period. At the experiment end-point, the transplanted kidneys were removed and tissue samples were taken and treated with exactly the same protocol. The pigs were then terminated.
Supplementary Figure 3:
Indexed parameters. A: SV indexed, by estimated surface area. B: GFR indexed, by estimated surface area. C: Diuresis indexed, by weight.
**Supplementary Table 1: Primer sequences for PCR**

| Gene          | Forward Primer                             | Reverse Primer                        |
|---------------|--------------------------------------------|---------------------------------------|
| COX-2         | CAACACGGATTGCCTGCTGA                       | AAATGAGGATGACCAGTCGTT                 |
| TNFα          | GGCTGCCTGGATGCAGTT                         | CAGGTGGAGCAACACCTACAGTT               |
| MCP-1         | ACTTGGCCACATGCCTTCT                        | TTTTGTTTCACCATCCTTGCA                 |
| IL-6          | AGACAAAGCCACCACCCCTAA                      | CTCGTTCTGTGCAGCTGCTTATC              |
| HO1           | CTTACTTTCCTGTCAATGTCG                      | CAGCTGAATGTTGACAGG                   |
| β-actin       | CATCACCATTGGAATTCGAG                   | CAGCTGAATGTTGACAGG                   |

COX2: Cyclooxygenase-2, TNFα: Tumor Necrosis Factor α, MCP-1: Monocyte Chemoattractant Protein-1, IL6: Interleukin 6, HO1: Heme Oxygenase 1
Supplementary table 2. Baseline values measured before surgery.

| Baseline values                      | Donors (n=14) | HVFT–NE (n=7) | HVFT+NE (n=7) | IGDT–NE (n=7) | IGDT+NE (n=7) |
|--------------------------------------|---------------|---------------|---------------|---------------|---------------|
| Animal weight (kg)                   | 57.7 ± 3.1    | 54.2 ± 5.6    | 56.0 ± 1.3    | 56.3 ± 5.4    | 56.3 ± 1.5    |
| Pulse rate (bpm)                     | 61 ± 14       | 63 ± 13       | 48 ± 12       | 58 ± 8        | 60 ± 16       |
| MAP (mmHg)                           | 74 ± 14       | 73 ± 17       | 67 ± 19       | 71 ± 11       | 71 ± 13       |
| CVP (mmHg)                           | 3 ± 2         | 3 ± 2         | 5 ± 5         | 2 ± 2         | 3 ± 2         |
| SVV (%)                              | 11 ± 3        | 12 ± 2        | 9 ± 7         | 12 ± 7        | 13 ± 7        |
| Temp. (°C)                           | 37.0 ± 0.6    | 36.8 ± 1.0    | 37.4 ± 0.6    | 37.3 ± 1.0    | 36.7 ± 0.8    |
| paO₂ (kPa)                           | 27.3 ± 9.5    | 26.6 ± 10     | 39.9 ± 25     | 20.7 ± 2.7    | 25.7 ± 9.3    |
| paCO₂ (kPa)                          | 4.9 ± 0.4     | 5.0 ± 0.6     | 4.8 ± 0.5     | 4.8 ± 0.7     | 5.1 ± 0.6     |
| pH                                   | 7.47 ± 0.05   | 7.47 ± 0.06   | 7.46 ± 0.08   | 7.50 ± 0.05   | 7.49 ± 0.04   |
| Glucose (mmol/L)                     | 5.8 ± 1.6     | 4.7 ± 0.9     | 4.8 ± 0.8     | 4.9 ± 0.5     | 4.8 ± 0.5     |
| Lactate (mmol/L)                     | 2.1 ± 1.3     | 2.5 ± 1.4     | 1.7 ± 0.5     | 1.6 ± 0.8     | 1.7 ± 0.5     |
| Creatinine (µmol/L)                  | 123 ± 19      | 118 ± 12      | 138 ± 16      | 111 ± 20      |
| Urea (mmol/L)                        | 2.0 ± 1.1     | 1.1 ± 0.24    | 1.5 ± 0.86    | 1.5 ± 0.62    |

MAP: mean arterial blood pressure, CVP: central venous pressure, SVV: stroke volume variation. Values of paO₂, paCO₂, pH, glucose, lactate, creatinine and carbamide are measured in arterial blood.
Supplementary table 3. Values measured periodically through the experiment.

| Time | Plasma pH | pO2 | pCO2 | ctHB | Lactate | Plasma Na⁺ | Plasma K⁺ |
|------|-----------|-----|------|------|---------|------------|-----------|
|      | HVTF      | IGDT| HVTF | IGDT | HVTF    | IGDT       | HVTF      | IGDT     |
|      | 0         | 60  | 120  | 180  | 240     | 300        | 360       | 420      | 480     | 540    | 600    |
| pH   | 7.49      | 7.48| 7.48 | 7.49 | 7.49    | 7.49       | 7.50      | 7.50     | 7.50    | 7.50   | 7.50   |
|      | (0.04)    | (0.09)| (0.06)| (0.06)| (0.05)  | (0.05)     | (0.05)    | (0.05)  | (0.05)  | (0.05) | (0.05) |
| O₂   | 7.50      | 7.50| 7.51 | 7.50 | 7.50    | 7.50       | 7.50      | 7.50     | 7.50    | 7.50   | 7.50   |
|      | (0.02)    | (0.04)| (0.03)| (0.02)| (0.02)  | (0.02)     | (0.02)    | (0.02)  | (0.02)  | (0.02) | (0.02) |
| CO₂  | 20.85     | 21.68| 19.69| 20.07| 19.53   | 19.37      | 18.78     | 18.98    | 18.95   | 19.08  | 18.78  |
|      | (2.50)    | (3.97)| (2.03)| (2.72)| (2.32)  | (2.54)     | (2.32)    | (2.21)  | (2.39)  | (2.16) | (1.99) |
| cHB  | 4.80      | 4.88| 4.90 | 4.81 | 4.88    | 4.89       | 4.92      | 4.91     | 4.91    | 4.67   | 4.80   |
|      | (0.35)    | (0.46)| (0.31)| (0.32)| (0.31)  | (0.35)     | (0.43)    | (0.36)  | (0.36)  | (0.42) | (0.42) |
| Lactate | 5.77   | 5.65| 6.04 | 6.00 | 5.98    | 5.60       | 5.60      | 5.80     | 5.80    | 5.66   | 5.66   |
|      | (0.09)    | (0.29)| (1.26)| (0.71)| (0.63)  | (0.00)     | (0.43)    | (0.25)  | (0.16)  | (0.32) | (0.58) |
| Na⁺  | 6.20      | 6.16| 6.23 | 6.20 | 6.40    | 6.64       | 6.52      | 6.30     | 5.67    | 5.60   | 5.85   |
|      | (0.40)    | (0.59)| (0.64)| (0.53)| (0.54)  | (0.66)     | (0.81)    | (0.75)  | (0.53)  | (0.61) | (0.74) |
| K⁺   | 1.29      | 1.68| 1.42 | 1.18 | 1.02    | 0.94       | 0.91      | 0.91     | 0.91    | 0.91   | 0.91   |
|      | (1.29)    | (1.73)| (1.41)| (0.82)| (0.51)  | (0.33)     | (0.24)    | (0.17)  | (0.17)  | (0.10) | (0.10) |
|      | 1.29      | 1.28| 1.21 | 1.18 | 1.06    | 0.95       | 0.91      | 0.91     | 0.91    | 0.91   | 0.91   |
|      | (0.45)    | (0.52)| (0.64)| (0.63)| (0.50)  | (0.31)     | (0.31)    | (0.18)  | (0.17)  | (0.15) | (0.16) |
| O₂   | 131.71    | 132.85| 132.64| 132.46| 132.87  | 133.43     | 124.56    | 133.15   | 134.00  | 133.77 | 133.54 |
|      | (2.68)    | (2.35)| (1.84)| (1.91)| (1.71)  | (1.80)     | (32.99)   | (1.79)   | (2.86)  | (1.85) | (1.91) |
| Na⁺  | 131.69    | 132.62| 132.79| 132.62| 132.36  | 132.93     | 133.14    | 133.43   | 132.93  | 132.92 | 133.00 |
|      | (1.49)    | (1.69)| (1.52)| (0.84)| (1.17)  | (1.22)     | (1.36)    | (1.29)   | (1.28)  | (1.49) | (1.41) |
| K⁺   | 4.91      | 4.55| 4.73 | 4.81 | 4.94    | 5.01       | 4.99      | 4.99     | 4.78    | 4.85   | 4.81   |
|      | (0.66)    | (0.28)| (0.26)| (0.31)| (0.37)  | (0.38)     | (0.39)    | (0.39)  | (0.76)  | (0.38) | (0.32) |
|      | 4.95      | 4.52| 4.75 | 5.09 | 5.32    | 5.44       | 5.40      | 5.36     | 5.21    | 5.19   | 5.12   |
|      | (0.72)    | (0.33)| (0.49)| (0.68)| (0.88)  | (1.05)     | (1.00)    | (0.97)  | (0.89)  | (0.74) | (0.57) |

Values of pH, pO₂, pCO₂, ctHB, Lactate, Plasma Na⁺ and Plasma K⁺ arranged by treatment groups, SD in parenthesis.