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3 **Time course of plasma urea and urinary urea excretion in patients with a prolonged ICU stay**

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7 SUPPLEMENTARY DATA

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9 Survival

10 In this cohort the plasma urea, UCE, pUCR and uUCR were correlated with survival (table S1, figure
11 S1). The UUE was not significantly different between survivors and non-survivors.

	Survivors (N = 536)	Non-survivors (N = 102)	<i>p</i>
Plasma urea, mean $\pm$ SD (95%CI) (mmol/L)			
Day 1	9.6 $\pm$ 5.9 (9.1-10.1)	10.4 $\pm$ 6.8 (9.1-11.8)	0.106
Peak (day 11)	11.8 $\pm$ 7.5 (11.0-12.5)	15.5 $\pm$ 8.9 (13.6-17.4)	<0.001
Day 30	9.9 $\pm$ 6.1 (9.2-10.7)	13.4 $\pm$ 9.0 (10.7-16.0)	0.008
UUE, mean $\pm$ SD (95%CI) (mmol/day)			
Day 1	291.0 $\pm$ 188.7 (269.4-312.5)	297.7 $\pm$ 187.4 (247.5-347.8)	0.404
Peak	586.8 $\pm$ 311.0 (546.0-527.6) (day 13)	686.7 $\pm$ 337.6 (589.7-783.6) (day 11)	0.091 (day 12)
Day 30	461.3 $\pm$ 239.2 (416.6-506.1)	397.5 $\pm$ 189.4 (311.2-483.7)	0.125
UCE, mean $\pm$ SD (95%CI) (mmol/day)			
Day 1	9.6 $\pm$ 7.6 (8.9-10.4)	8.7 $\pm$ 4.9 (7.6-9.8)	0.141
Peak (day 4)	10.8 $\pm$ 5.1 (10.3-11.3) (day 4)	10.0 $\pm$ 6.1 (8.7-11.3) (day 2)	0.038
Day 30	7.5 $\pm$ 3.3 (7.0-8.0)	5.9 $\pm$ 3.3 (4.6-7.3)	0.012
pUCR, mean $\pm$ SD (95%CI)			
Day 1	105.3 $\pm$ 59.8 (100.1-110.5)	111.8 $\pm$ 59.7 (99.6-123.9)	0.166
Day 7	149.4 $\pm$ 72.8 (142.7-156.0)	177.1 $\pm$ 58.5 (164.6-189.7)	<0.001
Day 30	158.8 $\pm$ 90.1 (147.7-169.9)	192.5 $\pm$ 92.2 (165.1-219.8)	0.010
uUCR, mean $\pm$ SD (95%CI)			
Day 1	35.1 $\pm$ 21.7 (32.6-37.6)	35.9 $\pm$ 24.1 (29.5-42.4)	0.402
Day 7	56.9 $\pm$ 22.3 (54.1-59.7)	67.9 $\pm$ 23.5 (61.7-74.2)	<0.001
Day 30	69.9 $\pm$ 37.8 (62.8-77.0)	68.9 $\pm$ 26.0 (57.0-80.7)	0.453

12 Table S 1

Survivors and non-survivors:

Plasma urea

Survivors had a lower mean plasma urea over the course of the ICU admission than non-survivors (see table). In both groups there is an increase in plasma urea in the first 10 days. In the survivors there was a steady decline after day 10 as in the overall group. In the non-survivors there is an initial decline, but plasma urea increases at end of admission (figure S1).

Urinary urea excretion and urinary creatinine excretion

There was no significant difference in UUE between survivors and non-survivors. They had a similar course, again with the peak UUE around day 11, see table S1 and figure S2. The decline after day 11 was comparable between survivors and non-survivors.

Urinary creatinine excretion was significantly higher in survivors than in non-survivors, with a similar decline during ICU stay.

pUCR and uUCR

Non-survivors had an overall higher pUCR than survivors (see figure S3 and table S1).

The pUCR in non-survivors showed a steady increase over the course of the ICU admission with a significant increase from day 7. The pUCR in survivors had a similar course on a lower level.

As an increased UCR could be a marker for catabolism this could represent ongoing catabolism in the non-survivors or more pronounced decline in plasma creatinine.

FIGURES AND TABLES

Table S1 – Overview of data on plasma urea, UUE, UCE, pUCR and uUCR in survivors and non-survivors. UUE = urinary urea excretion; UCE = urinary creatinine excretion; pUCR = plasma urea-to-creatinine ratio; uUCR = urinary urea-to-creatinine ratio

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42 Figure S1 – Mean plasma urea in survivors and non-survivors over the course of ICU admission

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44 Figure S2 – Mean urinary urea excretion (A) and mean urinary creatinine excretion (B) in survivors
45 and non-survivors over the course of ICU admission

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47 Figure S3 - Mean pUCR (A) and mean uUCR (B) in survivors and non-survivors over the course of
48 ICU admission. pUCR = plasma urea-to-creatinine ratio; uUCR = urinary urea-to-creatinine ratio

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50 Figure S4 – Course of plasma urea (A) and urinary urea excretion (B) in groups categorized by the
51 development of AKI stage 1 or 2 during ICU admission and normal renal function during ICU
52 admission (mean and 95%CI).

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