



Supplementary materials

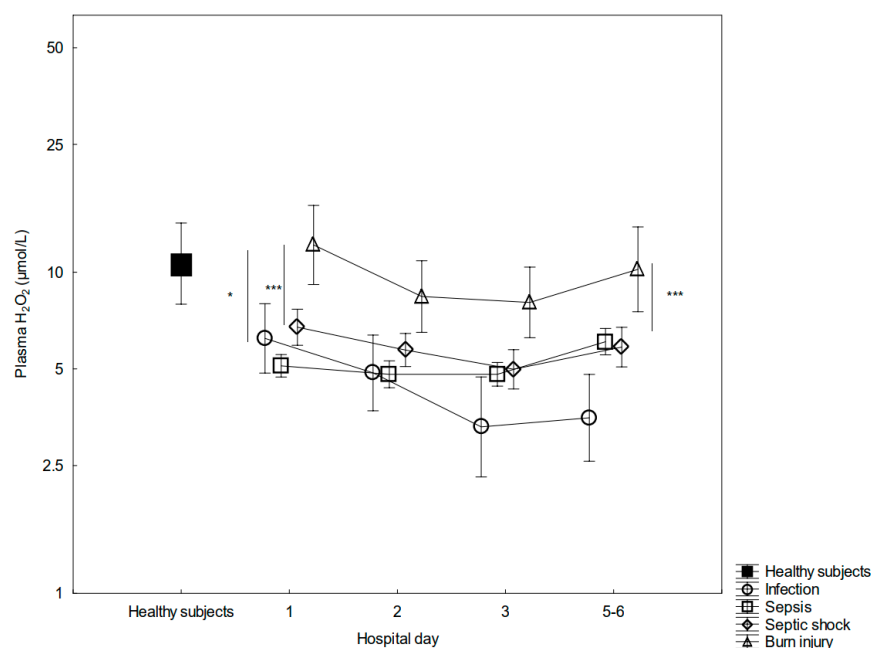


Figure S1. Concentrations of plasma H_2O_2 from admission (Day 1) to Day 5-6 in the ICU, stratified by sepsis ($n = 37$), septic shock ($n = 23$), infection ($n = 4$) and major burn injury ($n = 18$). H_2O_2 concentrations in plasma from healthy subjects ($n = 23$) at one timepoint. ANOVA III for repeated measures was used to assess differences over time. Mean \pm SEM. * $p < 0.05$, *** $p < 0.001$.

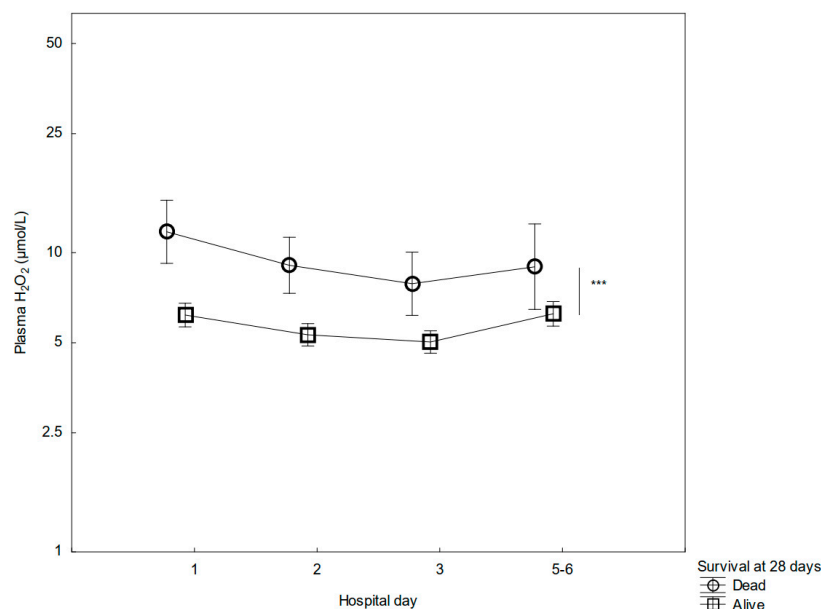


Figure S2. Concentrations of plasma H_2O_2 from admission (Day 1) to Day 5-6 in the ICU, stratified by survivors ($n = 71$) and non-survivors ($n = 11$). ANOVA III for repeated

measures was used to assess differences over time. Mean \pm SEM. *** $p < 0.001$

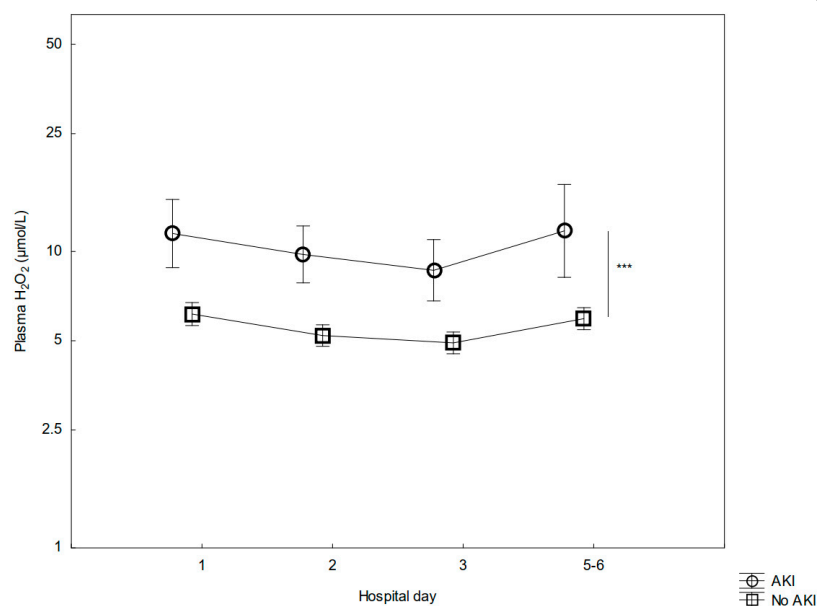


Figure S3. Concentrations of plasma H_2O_2 from admission (Day 1) to Day 5-6 in the ICU, stratified by patients with acute kidney injury (AKI) ($n = 12$) and without AKI ($n = 70$). ANOVA III for repeated measures was used to assess differences over time. Mean \pm SEM. *** $p < 0.001$.

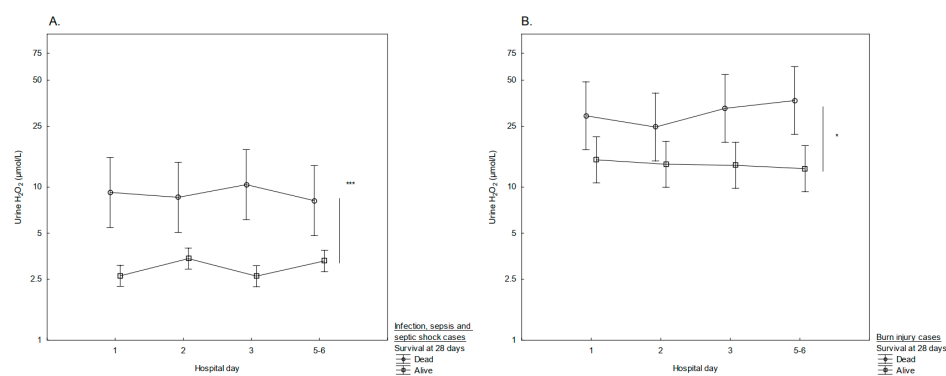


Figure S4. Concentrations of urine H_2O_2 from admission (Day 1) to Day 5-6 in the ICU, stratified by survivors and non-survivors in (A.) patients with infection, sepsis and septic shock and in (B.) patients with major burn injuries. ANOVA III for repeated measures was used to assess differences over time. Mean \pm SEM. * $p < 0.05$, *** $p < 0.001$

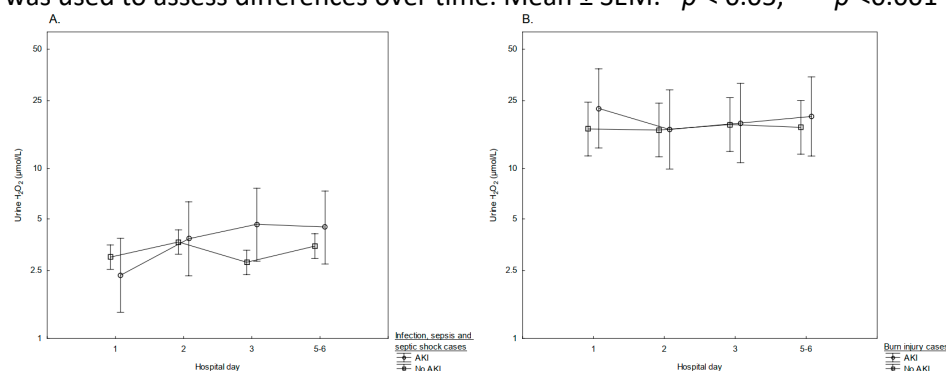


Figure S5. Concentrations of urine H₂O₂ from admission (Day 1) to Day 5-6 in the ICU, stratified by patients with acute kidney injury (AKI) and without AKI in (A.) patients with infection, sepsis and septic shock and in (B.) patients with major burn injuries. ANOVA III for repeated measures was used to assess differences over time. Mean \pm SEM. *** $p < 0.001$.

	CRP	Blood Platelets	Plasma Creatinine	IL-6	NGAL	Plasma Lactate	PaO ₂	Base Excess	WBC	
	0.11	0.20	-0.06	0.26	-0.01	0.18	0.37	0.05	0.04	Urine H ₂ O ₂
		-0.04	0.09	0.33	0.24	-0.02	0.13	-0.01	-0.11	CRP
			-0.18	-0.13	-0.10	0.03	0.18	0.26	0.31	Blood Platelets
				0.15	0.71	0.29	0.04	-0.50	0.18	Plasma Creatinine
					0.31	0.36	0.27	-0.26	0.06	IL-6
						0.45	0.21	-0.52	0.44	NGAL
							0.29	-0.45	0.31	Plasma Lactate
								-0.26	0.07	PaO ₂
									-0.12	Base Excess

Figure S6. Heatmap showing associations between urine H₂O₂ and variables of organ failure, inflammation and hypoperfusion assessed with Spearman's rank-order correlation test. Correlations coefficients are presented as rho. CRP: C-reactive protein, IL-6: Interleukin 6, NGAL: neutrophil gelatinase-associated lipocalin, PaO₂: Arterial oxygen tension

Table S1. Clinically significant microbiological findings in blood, urine, nasopharynx or the site of infection.

	Number of cultures	% of the cohort
<i>S. Aureus</i>	5	6
<i>Streptococcus species</i>	15	18
<i>S. Pneumoniae</i>	10	12
<i>S. Viridans</i>	1	1
<i>S. anginosus</i>	1	1
<i>Group A Streptococcus</i>	1	1
<i>Group G Streptococci</i>	2	2

<i>E. coli</i>	17	21
<i>E. coli (ESBL)</i>	2	2
<i>H. influenzae</i>	2	2
<i>K. pneumoniae</i>	1	1
<i>K. variicola</i>	1	1
<i>M. catarrhalis</i>	1	1
<i>P. aeruginosa</i>	1	1
<i>P. mirabilis</i>	2	2
Negative cultures	35	43

Table S2. Clinical parameters. Data are presented as median (IQR) unless otherwise stated

	ALL PATIENTS (N=82)	SEPTIC SHOCK (N = 23, 28%)	SEPSIS (N = 37, 45%)	INFECTION (N = 4, 5%)	BURN INJURY (N = 18, 22%)
PLASMA CRP [MG/L]					
DAY 1	167 (87-253)	216 (152-279)	229 (152-314)	55 (48-109)	19 (8-93)
DAY 2	235 (158-306)	300 (232-316)	239 (205-304)	222 (164-265)	100 (58-176)
DAY 3	193 (145-286)	254 (158-299)	194 (144-249)	172 (146-187)	175 (123-294)
DAY 5-6	105 (60-205)	96 (66-116)	84 (40-155)	93 (73-123)	264 (152-314)
PLASMA PCT [μG/L]					
DAY 1	17 (2-60)	60 (34-98)	17 (3-51)	2 (2-8)	2 (0-4)
BLOOD PLT [X10¹²]					
DAY 1	166 (98-236)	109 (78-180)	159 (101-215)	210 (182-272)	250 (147-385)
DAY 2	130 (76-189)	95 (57-148)	143 (81-187)	182 (133-245)	123 (85-233)
DAY 3	120 (68-183)	91 (57-144)	141 (89-194)	183 (143-228)	106 (59-158)
DAY 5-6	153 (79-228)	112 (69-203)	199 (122-239)	192 (157-246)	107 (67-160)
PLASMA CREATININE [μMOL/L]					
DAY 1	104 (76-174)	141 (103-187)	98 (74-206)	69 (52-85)	99 (75-141)
DAY 2	91 (71-167)	132 (81-185)	89 (67-185)	62 (52-73)	103 (74-124)
DAY 3	85 (69-154)	110 (78-197)	82 (65-139)	60 (47-76)	84 (66-140)
DAY 5-6	82 (64-153)	96 (74-181)	77 (63-140)	62 (47-80)	85 (69-157)
PLASMA IL-6 [ng/L]					
DAY 1	234 (109-673)	786 (261-3658)	186 (97-310)	67 (58-359)	173 (120-320)
DAY 2	141 (85-363)	169 (108-409)	97 (51-175)	73 (37-161)	324 (161-597)
DAY 3	105 (48-303)	94 (51-401)	74 (22-129)	53 (38-74)	425 (172-1461)
DAY 5-6	63 (27-174)	47 (34-165)	35 (15-96)	30 (13-63)	259 (142-967)
PLASMA NGAL [μG/L]					
DAY 1	433 (226-860)	1032 (577-1386)	393 (213-680)	220 (191-228)	257 (174-334)
DAY 2	373 (230-653)	720 (459-1183)	350 (229-488)	152 (103-237)	278 (197-376)
DAY 3	345 (215-569)	631 (352-904)	304 (206-466)	125 (83-208)	302 (225-499)
DAY 5-6	328 (215-526)	395 (291-669)	260 (206-430)	121 (81-192)	320 (197-651)

PLASMA LACTATE [MMOL/L]					
DAY 1	2.3 (1.5-3.4)	3.5 (2.4-5.2)	1.7 (1.2-2.5)	2.8 (2.6-2.8)	2.2 (1.6-3.5)
DAY 2	1.7 (1.3-2.2)	2.0 (1.5-2.9)	1.5 (0.9-1.8)	1.0 (0.8-1.3)	2.0 (1.8-3.6)
DAY 3	1.4 (1.0-2.0)	1.6 (1.3-2.2)	1.2 (0.9-1.4)	0.9 (0.9-1.0)	2.0 (1.3-4.8)
DAY 5-6	1.3 (0.9-1.7)	1.4 (1.1-1.8)	1.1 (0.8-1.5)	2.0 (1.7-2.2)	1.3 (1.0-1.5)
BLOOD PaO₂ [kPA]					
DAY 1	10.1 (7.5-12.8)	10.1 (9.3-12.7)	9.2 (7.0-11.0)	6.6 (4.2-10.5)	14.0 (10.5-23.9)
DAY 2	9.4 (8.2-11.2)	9.9 (9.2-11.1)	8.5 (6.2-10.2)	9.0 (6.1-10.1)	10.6 (9.1-13.6)
DAY 3	8.9 (7.1-10.9)	9.2 (7.6-10.8)	7.8 (6.3-9.3)	11.4 (8.2-16.3)	11.0 (10.2-12.0)
DAY 5-6	8.8 (6.4-10.7)	9.1 (6.9-11.2)	7.2 (5.7-8.8)	7.7 (6.3-9.1)	11.5 (10.1-13.0)
BLOOD BASE EXCESS [MMOL/L]					
DAY 1	-1.8 (-4.8-1.05)	-5.0 (-7.2- -1.4)	-0.8 (-3.4-2.5)	1.4 (0.0-2.7)	-2.2 (-6.0-1.0)
DAY 2	-0.5 (-2.5-2.5)	-1.9 (-3.5- -0.4)	0.6 (-2.0-2.6)	0.5 (0.5-1.5)	1.0 (-2.5-2.6)
DAY 3	1 (-2.175-3.775)	-0.2 (-3.8-2.7)	1.2 (-1.7-4.1)	0.3 (-0.5-0.8)	3.0 (0.6-4.8)
DAY 5-6	3.1 (0.8-6.2)	2.0 (0.5-5.6)	3.8 (1.3-6.1)	1.2 (0.4-1.9)	5.7 (4.0-6.6)
WBC X10⁹/L					
DAY 1	15.8 (11.0-21.5)	16.2 (6.0-21.5)	16.2 (11.1-20.6)	17.1 (11.2-20.6)	13.8 (12.4-29.8)
DAY 2	13.3 (8.5-19.3)	18.6 (13.5-24.3)	11.6 (8.4-17.0)	10.5 (5.2-15.2)	11.8 (6.7-13.5)
DAY 3	10.6 (6.0-18.0)	18.3 (12.2-22.0)	9.6 (7.0-14.3)	7.7 (6.0-9.0)	5.6 (4.4-11.1)
DAY 5-6	9.8 (6.0-14.3)	13.9 (9.9-17.3)	9.0 (6.3-12.7)	8.5 (7.2-9.3)	6.7 (4.9-12.2)

CRP; C-reactive protein, PCT; pro-calcitonin, PLT; platelets, IL; interleukin; NGAL; neutrophil gelatinase associated lipocalin, PaO₂; partial pressure of oxygen, WBC; white blood cell count.