

**Supplementary Table 1 Acute Gastrointestinal Injury grading system**

Grade	Definition	Examples
I (risk of developing GI dysfunction or failure )	The function of the GI tract is partially impaired, expressed as GI symptoms related to a known cause and perceived as transient.	Postoperative nausea and/or vomiting during the first days after abdominal surgery, postoperative absence of bowel sounds, diminished bowel motility in the early phase of shock.
II (GI dysfunction)	The GI tract is not able to perform digestion and absorption adequately to satisfy the nutrient and fluid requirements of the body. There are no changes in general condition of the patient related to GI problems.	Gastroparesis with high gastric residuals or reflux, paralysis of the lower GI tract, diarrhoea, IAH grade I (IAP 12–15 mmHg), visible blood in gastric content or stool. FI is present if at least 20 kcal/kg BW/day via enteral route cannot be reached within 72 h of feeding attempt.
III (GI failure)	Loss of GI function, where restoration of GI function is not achieved despite interventions and the general condition is not improving.	Despite treatment, FI is persisting—high gastric residuals, persisting GI paralysis, occurrence or worsening of bowel dilatation, progression of IAH to grade II (IAP 15–20 mmHg), low APP (below 60 mmHg). FI is present and possibly associated with persistence or worsening of MODS.
IV (GI failure with severe impact on distant organ function)	AGI has progressed to become directly and immediately life-threatening, with worsening of MODS and shock. Rationale	Bowel ischaemia with necrosis, GI bleeding leading to haemorrhagic shock, Ogilvie's syndrome, ACS requiring

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Situation when AGI has decompression.  
led to an acute critical  
deterioration of the  
general condition of the  
patient with distant  
organ dysfunction(s).

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AGI=Acute Gastrointestinal Injury; GI=gastrointestinal;  
IAH=intra-abdominal hypertension; FI= feeding intolerance;  
IAP=intra-abdominal pressure; APP=abdominal perfusion pressure;  
MODS=multiple organ dysfunction syndrome; ACS=abdominal compartment  
syndrome.

**Supplementary Table 2 Gastrointestinal Dysfunction Score**

0 (No risk)	1 (Increased risk)	2 (GI dysfunction)	3 (GI failure)	4 (Life threatening)
No symptoms or one of the following with oral intake	Two of the following	Three or more symptoms of score 1 or up to two of the following	Three or more of the following	One of the following
-Absent bowel sounds	-No oral intake	-Severe diarrhea	-Prokinetic use	-GI bleeding leading to hemorrhagic shock
-Vomiting	-Absent bowel sounds	-GI bleeding with transfusion	-GI paralysis/dynamic ileus	-Mesenteric ischemia
-GRV>200ml	-Vomiting	-IAP>20mmHg	-Abdominal distension	-ACS
-GI paralysis/dynamic ileus	-GRV>200ml		-Severe diarrhea	
-Abdominal distension	-GI paralysis/dynamic ileus		-GI bleeding with transfusion	
-Diarrhea(not severe)	-Abdominal distension		-IAP>20mmHg	
-GI bleeding without transfusion	-Diarrhea(not severe)			
-IAP 12-20mmHg	-GI bleeding without transfusion			
	-IAP 12-20mmHg			

If certain variables (e.g., GRV, IAP) have not been measured, the score can still be calculated by excluding these variables.

GRV=gastric residual volume; IAP=intra-abdominal pressure; ACS=abdominal compartment syndrome.

**Supplementary Table 3 Definition of gastrointestinal symptoms and signs**

Symptoms or signs	Definition
Absent bowel sounds	The normal frequency of bowel sounds typically ranges from 5 to 35 sounds per minute. Auscultation of bowel sounds should be conducted for at least one minute in two quadrants and should be repeated at least once within a narrow timeframe.
Vomiting	Visible regurgitation of gastric contents, regardless of the amount, constitutes an occurrence.
High GRV	A single GRV exceeding 200 ml.
GI paralysis/dynamic ileus	The absence of stool for three or more consecutive days, in the absence of mechanical obstruction, is significant. Bowel sounds may or may not be present during this period.
Diarrhea	Diarrhea is characterized by three or more loose or liquid stools per day, with a stool weight exceeding 200-250 g/day (or greater than 250 ml/day). Severe diarrhea is defined by a Bristol stool scale of 6-7, occurring five times per day or amounting to 1000 mL/day.
Bowel distension	Based on the patient's subjective feelings.
GI bleeding	Any bleeding into the GI tract lumen is confirmed by the macroscopic presence of blood in vomited fluids, gastric aspirate, or stool.
Bowel dilatation	Bowel dilatation is identified if the colonic diameter exceeds 6 cm (more than 9 cm for the cecum) or if the small bowel diameter exceeds 3 cm, diagnosed either on a plain abdominal X-ray or CT scan.
IAH	IAH is present if IAP is 12 mmHg or higher, confirmed by at least two measurements taken 1-6 hours apart, or if the average IAP for the day reaches 12 mmHg or higher, provided that at least four measurements are taken.
ACS	It is defined as a sustained increase in IAP above 20 mmHg, coupled with new-onset organ failure, based on at least two standardized measurements taken 1-6 hours apart.
APP	APP=MAP-IAP. Low APP was defined as APP less than 60 mmHg.

Measurements of GRV and IAP were performed using a nasogastric tube and an indwelling bladder catheter, respectively.

GI= Gastrointestinal; GRV=gastric residual volume; IAH=intra-abdominal hypertension; IAP=intra-abdominal pressure; ACS= abdominal compartment syndrome; APP= abdominal perfusion pressure; MAP=mean arterial

pressure.

**Supplementary Table 4 Characteristics of the patients according to the severity of gastrointestinal dysfunction score and acute gastrointestinal injury grade**

Variables	GIDS <sup>a</sup>		P	AGI grade <sup>a</sup>		P
	0-1 (n=74)	2-4 (n=104)		0-II (n=105)	III-IV (n=73)	
Acute kidney injure, n (%)	33 (44.59)	60 (57.69)	0.085	47 (44.76)	46 (63.01)	<b>0.016</b>
Platelet <sup>b</sup> , ×10 <sup>9</sup> /L	179.00 (119.00, 244.00)	134.50 (71.25, 209.75)	<b>0.008</b>	179.00 (110.00, 246.00)	123.00 (49.00, 181.00)	<b>&lt;.001</b>
C-reactive protein <sup>b</sup> , mg/L	54.74 (14.46, 141.19)	75.69 (35.64, 137.93)	0.120	54.43 (16.42, 134.66)	86.80 (48.80, 138.20)	<b>0.043</b>
Albumin <sup>b</sup> , g/L	29.80 (26.07, 32.98)	27.30 (24.43, 29.33)	<b>0.003</b>	28.90 (25.70, 32.90)	27.10 (23.70, 29.00)	<b>0.001</b>
Serum lactate <sup>b</sup> , mmol/L	1.50 (0.93, 2.30)	1.90 (1.28, 3.52)	<b>0.013</b>	1.60 (1.00, 2.40)	1.90 (1.30, 4.30)	<b>0.005</b>
Procalcitonin <sup>b</sup> , ng/mL	0.49 (0.18, 1.80)	0.82 (0.31, 3.08)	<b>0.040</b>	0.50 (0.16, 1.92)	1.09 (0.50, 3.59)	<b>0.002</b>
SOFA score <sup>a</sup> , points	8.00 (6.00, 11.75)	13.00 (9.00, 16.00)	<b>&lt;.001</b>	8.00 (6.00, 12.00)	14.00 (11.00, 16.00)	<b>&lt;.001</b>
APACHE II score <sup>a</sup> , points	20.00 (15.00, 24.00)	24.00 (20.00, 30.00)	<b>&lt;.001</b>	20.00 (15.00, 24.00)	26.00 (22.00, 31.00)	<b>&lt;.001</b>
Outcome						
Mortality during 28 days, n (%)	11 (14.86)	74 (71.15)	<b>&lt;.001</b>	26 (24.76)	59 (80.82)	<b>&lt;.001</b>
Duration of MV, d	10.00 (0.00, 34.00)	12.00 (6.75, 20.25)	0.519	15.00 (0.00, 33.00)	10.00 (5.00, 16.00)	0.385
ICU LOS, d	25.50 (11.00, 52.50)	16.00 (9.00, 22.00)	<b>0.006</b>	25.00 (13.00, 45.00)	12.00 (8.00, 18.00)	<b>&lt;.001</b>

<sup>a</sup> Maximum values during the first week of ICU admission; <sup>b</sup> Assessed within 24h of ICU admission. GI= gastrointestinal; EN= enteral nutrition; SOFA= Sequential Organ Failure Assessment; APACHE II = Acute Physiology and Chronic Health Evaluation II; AGI= Acute Gastrointestinal Injury; GIDS=

Gastrointestinal Dysfunction Score; MV= mechanical ventilation; LOS= length of stay.