Takeshi Wada1\*, Kazuma Yamakawa2, Daijiro Kabata3, Toshikazu Abe4,5, Hiroshi Ogura6, Atsushi Shiraishi7, Daizoh Saitoh8, Shigeki Kushimoto9, Seitaro Fujishima10, Toshihiko Mayumi11, Toru Hifumi12, Yasukazu Shiino13, Taka-aki Nakada14, Takehiko Tarui15, Yasuhiro Otomo16, Kohji Okamoto17, Yutaka Umemura18, Joji Kotani19, Yuichiro Sakamoto20, Junichi Sasaki21, Shin-ichiro Shiraishi22, Kiyotsugu Takuma23, Ryosuke Tsuruta24, Akiyoshi Hagiwara25, Tomohiko Masuno26, Naoshi Takeyama27, Norio Yamashita28, Hiroto Ikeda29, Masashi Ueyama30, Satoshi Fujimi18, Satoshi Gando1,31

1Division of Acute and Critical Care Medicine, Department of Anesthesiology and Critical Care Medicine, Hokkaido University Faculty of Medicine, Sapporo, Japan

2Department of Emergency Medicine, Osaka Medical and Pharmaceutical University, Takatsuki, Japan

3Department of Medical Statistics, Osaka City University Graduate School of Medicine, Japan

4Department of Emergency and Critical Care Medicine, Tsukuba Memorial Hospital, Tsukuba, Japan

5Health Services Research and Development Center, University of Tsukuba, Tsukuba, Japan

6Department of Traumatology and Acute Critical Medicine, Osaka University Graduate School of Medicine, Suita, Japan

7Emergency and Trauma Center, Kameda Medical Center, Kamogawa, Japan

8Division of Traumatology, Research Institute, National Defense Medical College, Tokorozawa, Japan

9Division of Emergency and Critical Care Medicine, Tohoku University Graduate School of Medicine, Sendai, Japan

10Center for General Medicine Education, Keio University School of Medicine, Tokyo, Japan

11Department of Emergency Medicine, School of Medicine, University of Occupational and Environmental Health, Kitakyushu, Japan

12Department of Emergency and Critical Care Medicine, St. Luke’s International Hospital, Tokyo, Japan

13Department of Acute Medicine, Kawasaki Medical School, Kurashiki, Japan

14Department of Emergency and Critical Care Medicine Chiba University Graduate School of Medicine, Chiba, Japan

15Department of Emergency Medical Care, Kyorin University Faculty of Health Sciences, Mitaka, Japan

16Trauma and Acute Critical Care Center, Medical Hospital, Tokyo Medical and Dental University, Tokyo, Japan

17Department of Surgery, Center for Gastroenterology and Liver Disease, Kitakyushu City Yahata Hospital, Kitakyushu, Japan

18Division of Trauma and Surgical Critical Care, Osaka General Medical Center, Osaka, Japan

19Division of Disaster and Emergency Medicine, Department of Surgery Related, Kobe University Graduate School of Medicine, Kobe, Japan

20Emergency and Critical Care Medicine, Saga University Hospital, Saga, Japan

21Department of Emergency and Critical Care Medicine, Keio University School of Medicine, Tokyo, Japan

22Department of Emergency and Critical Care Medicine, Aizu Chuo Hospital, Aizu, Japan

23Emergency & Critical Care Center, Kawasaki Municipal Hospital, Kawasaki, Japan

24Advanced Medical Emergency & Critical Care Center, Yamaguchi University Hospital, Ube, Japan

25Center Hospital of the National Center for Global Health and Medicine, Tokyo, Japan

26Department of Emergency and Critical Care Medicine, Nippon Medical School, Tokyo, Japan

27Advanced Critical Care Center, Aichi Medical University Hospital, Nagakute, Japan

28Department of Emergency & Critical Care Medicine, School of Medicine, Kurume University, Kurume, Japan

29Department of Emergency Medicine, Trauma and Resuscitation Center, Teikyo University School of Medicine, Tokyo, Japan

30Department of Trauma, Critical Care Medicine, and Burn Center, Japan; Community Healthcare Organization, Chukyo Hospital, Nagoya, Japan

31Department of Acute and Critical Care Medicine, Sapporo Higashi Tokushukai Hospital, Sapporo, Japan

**\*Correspondence**: Takeshi Wada, MD, PhD

Division of Acute and Critical Care Medicine, Department of Anesthesiology and Critical Care Medicine, Hokkaido University Faculty of Medicine, N15, W7, Kita-ku, Sapporo Japan.

Tel: +81-11-706-7377

Fax: +81-11-706-7378

E-mail: twada1@med.hokudai.ac.jp

Supplementary Table 1. Scoring system for disseminated intravascular coagulation (DIC) by the Japanese Association for Acute Medicine (JAAM)

----------------------------------------------------------------------------------------------------------------

1. Clinical conditions that may be associated with DIC

 1) Sepsis/severe infection (any micro-organism)

 2) Trauma/burn/surgery

 3) Vascular abnormalities

 - large vascular aneurysms

 - giant hemangioma

 - vasculitis

 4) Severe toxic or immunological reactions

 - snakebite

 - recreational drugs

 - transfusion reactions

 - transplant rejection

 5) Malignancy (except bone marrow suppression)

 6) Obstetric calamities

 7) Conditions that may be associated with SIRS

 - organ destruction (e.g. severe pancreatitis)

 - severe hepatic failure

 - ischemia/hypoxia/shock

 - heat stroke/malignant syndrome

 - fat embolism

 - rhabdomyolysis

 - other

 8) Other

-----------------------------------------------------------------------------------------------------------

2. Clinical conditions that should be carefully ruled out

 A. Thrombocytopenia

 1) Dilution and abnormal distribution

 Massive blood loss and transfusion, massive infusion

 2) Increased platelet destruction

 ITP, TTP/HUS, HIT, drugs, viral infection, alloimmune destruction, APS, HELLP, extracorporeal circulation

 3) Decreased platelet production

 Viral infection, drugs, radiation, nutritional deficiency (vitamin B12, folic acid), disorders of hematopoiesis, liver disease, HPS

 4) Spurious decrease

 EDTA-dependent agglutinins, insufficient anticoagulation of blood samples

 5) Other

 Hypothermia, artificial devices in the vessel

 B. Prolonged prothrombin time

 Anticoagulation therapy, anticoagulant in blood samples, vitamin K deficiency, liver cirrhosis, massive blood loss and transfusion

 C. Elevated FDP

 Thrombosis, hemostasis and wound healing, hematoma, pleural effusion, ascites, anticoagulant in blood samples, antifibrinolytic therapy

 D. Other

---------------------------------------------------------------------------------------------------------------

3. The diagnostic algorithm for SIRS

 1) Temperature > 38 ℃ or < 36 ℃

 2) Heart rate > 90 beats/min

 3) Respiratory rate > 20 breaths/min or PaCO2 < 32 torr (< 4.3 kPa)

 4) White blood cell > 12,000 cells/mm3, < 4,000 cells/mm3, or 10% immature (band) forms

---------------------------------------------------------------------------------------------------------------

4. The diagnostic algorithm

 Score

SIRS criteria

 ≥3 1

 0-2 0

Platelet counts (109/L)

 <80 or more than 50% decrease within 24 h 3

 ≥80 <120 or more than 30% decrease within 24 h 1

 ≥120 0

Prothrombin time (value of patient/normal value)

 ≥1.2 1

 <1.2 0

Fibrin/fibrinogen degradation products (mg/L)

 ≥25 3

 ≥10 <25 1

 <10 0

Diagnosis

 Four points or more DIC

-----------------------------------------------------------------------------------------------------------------

SIRS, systemic inflammatory response syndrome; ITP, idiopathic thrombocytopenic purpura; TTP, thrombotic thrombocytopenic purpura; HUS, hemolytic uremic syndrome; HIT, heparin-induced thrombocytopenia; APS, antiphospholipid syndrome; HELLP, hemolysis, elevated liver enzymes, and low platelet; HPS, hemophagocytic syndrome; EDTA, ethylenediaminetetraacetic acid; FDP, fibrin/fibrinogen degradation products.