Table S1 Variations in vitamin C dose in the control and vitamin C groups

| Trial year, title                                                                 | Participants                                                                 | Vitamin C group                                                                 | Control group |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------|---------------|
| Mochalkin 1970, Ascorbic acid in the complex therapy of acute pneumonia (33)    | 70 in control group, 39 in low vitamin C group and 31 in high vitamin C group | High vitamin C: 0.5 to 1.6 G/day; Low vitamin C: 0.25 to 0.8 G/day               | –             |
| Hunt 1994, The clinical effects of vitamin C supplementation in elderly hospitalised patients with acute respiratory infections (32) | 28 vitamin C; 29 placebo, Hospitalised for acute bronchitis (n=40) or pneumonia (n=17) | Vitamin C 0.2 G/day                                                              | –             |
| Tanaka 2000, Reduction of resuscitation fluid volumes in severely burned patients using ascorbic acid administration: a randomized, prospective study (47) | 37 consecutive patients with burns over 30% of their total body surface area who were admitted to the ICU within 2 h after the injury | Intravenous vitamin C (66 mg/kg/h)                                               | –             |
| Flower 2014, Phase I safety trial of intravenous ascorbic acid in patients with severe sepsis (11) | 24 patients with severe sepsis, 8 in placebo group, 8 in low ascorbic acid group, 8 in high ascorbic acid group | High vitamin C: 200 mg/kg/24 h; Low vitamin C: 50 mg/kg/24 h; 5% dextrose/water | –             |
| Marik 2017, Hydrocortisone, Vitamin C, and Thiamine for the Treatment of Severe Sepsis and Septic Shock (8) | 47 patients in both treatment and control groups | Vitamin C: 1.5 g every 6 h for 4 days or until ICU discharge                     | –             |
| Kim 2018, Combined vitamin C, hydrocortisone, and thiamine therapy for patients with severe pneumonia who were admitted to the intensive care unit: Propensity score-based analysis of a before-after cohort study (16) | 99 patients with severe pneumonia, 53 patients in vitamin C group, 46 patients in control group | Vitamin C: 6 g/day                                                               | –             |

Table S2 Virus strain identified in sputum culture and viral polymerase chain reaction

| Virus strain                             | Total (n=201) (%) | Vitamin C (n=35) (%) | Non vitamin C (n=166) (%) | P value |
|------------------------------------------|-------------------|----------------------|---------------------------|---------|
| Rhinovirus                               | 34 (16.9)         | 10 (28.6)            | 24 (14.5)                 | 0.04    |
| Parainfluenza virus                      | 19 (9.5)          | 2 (5.7)              | 17 (10.2)                 | 0.41    |
| Influenza virus                          | 66 (32.8)         | 10 (28.6)            | 56 (33.7)                 | 0.55    |
| Metapneumovirus                          | 16 (8.0)          | 1 (2.9)              | 15 (9.0)                  | 0.22    |
| Respiratory syncytial virus              | 20 (10.0)         | 6 (17.1)             | 14 (8.4)                  | 0.12    |
| Cytomegalovirus                          | 8 (4.0)           | 3 (8.6)              | 5 (3.0)                   | 0.13    |
| Corona virus                             | 21 (10.4)         | 3 (8.6)              | 18 (10.8)                 | 0.69    |
| Adenovirus                               | 15 (7.5)          | 5 (14.3)             | 10 (6.0)                  | 0.09    |
| Herpes simplex virus                     | 9 (4.5)           | 3 (8.6)              | 6 (3.6)                   | 0.20    |
| Bocavirus                                | 6 (3.0)           | 1 (2.9)              | 5 (3.0)                   | 0.96    |
Table S3  Virus strain identified in sputum culture and viral polymerase chain reaction in matched patients

| Virus Strain                | Vitamin C (n=35) (%) | Non vitamin C (n=35) (%) | P value |
|-----------------------------|----------------------|--------------------------|---------|
| Rhinovirus                  | 10 (28.6)            | 4 (11.4)                 | 0.07    |
| Parainfluenza virus         | 2 (5.7)              | 5 (14.3)                 | 0.23    |
| Influenza virus             | 10 (28.6)            | 8 (22.9)                 | 0.58    |
| Metapneumovirus             | 1 (2.9)              | 5 (14.3)                 | 0.09    |
| Respiratory syncytial virus | 6 (17.1)             | 3 (8.6)                  | 0.28    |
| Cytomegalovirus             | 3 (8.6)              | 2 (5.7)                  | 0.64    |
| Influenza virus             | 10 (28.6)            | 8 (22.9)                 | 0.58    |
| Respiratory syncytial virus | 6 (17.1)             | 3 (8.6)                  | 0.28    |
| Cytomegalovirus             | 3 (8.6)              | 2 (5.7)                  | 0.64    |
| Corona virus                | 5 (14.3)             | 4 (11.4)                 | >0.99   |
| Herpes simplex virus        | 3 (8.6)              | 0 (0)                    | 0.08    |
| Bocavirus                   | 1 (2.9)              | 2 (5.7)                  | 0.56    |

Table S4  Serial change of SOFA score and renal SOFA score in the matched group during 7 days

|                      | Total (n=70) | Vitamin C (n=35) | Non vitamin C (n=35) | P value |
|----------------------|--------------|------------------|----------------------|---------|
| SOFA score           |              |                  |                      |         |
| D1                   | 10.0±3.7     | 9.7±3.5          | 10.3±3.8             | 0.46    |
| D3                   | 9.5±4.1      | 8.9±3.7          | 10.2±4.5             | 0.17    |
| D7                   | 9.2±4.5      | 8.6±4.8          | 9.7±4.2              | 0.37    |
| Renal score (SOFA)   |              |                  |                      |         |
| D1                   | 0.7±1.2      | 0.7±1.2          | 0.8±1.1              | 0.84    |
| D3                   | 0.7±1.0      | 0.6±1.1          | 0.7±1.0              | 0.62    |
| D7                   | 0.7±1.1      | 0.8±1.1          | 0.7±1.0              | 0.60    |

Data are presented as mean ± standard deviation, unless otherwise indicated. SOFA, sequential organ failure assessment.

References

47. Tanaka H, Matsuda T, Miyagantani Y, et al. Reduction of resuscitation fluid volumes in severely burned patients using ascorbic acid administration: a randomized, prospective study. Arch Surg 2000;135:326-31.