The second issue related to the timing of calculating Charlson Comorbidity Index. It is obvious that Charlson Comorbidity Index is significantly higher in the SS group than controls. If the index is calculated after first episode of SS, the index can be higher than that calculated before the first SS because SS can add organ dysfunctions. For example, SS with acute kidney injury may progress to chronic renal failure. Such renal failure adds to the Charlson Comorbidity Index and also contributes to the identification of next episode of SS. Therefore, the carry-over effect cannot be fully excluded. It is great that the authors used 90 days to exclude such effect, but some forms of organ dysfunction are not recoverable. Another example is chronic obstructive pulmonary disease (COPD) complicated with heart failure. Pulmonary infection can exacerbate COPD and heart failure, which is a prototype of SS. Such patients are prone to next episode exacerbated COPD and thus SS. So the linkage between different episodes of SS can be heterogeneous.

Dr. Li is the corresponding author.

The authors have disclosed that they do not have any potential conflicts of interest.

Zhongheng Zhang, MD, Department of Critical Care Medicine, Jinhua Municipal Central Hospital, Jinhua Hospital of Zhejiang University, Zhejiang, P. R. China; **Qian Li, MMed,** Department of Critical Care Medicine, Zhejiang Provincial People's Hospital, Zhejiang, P. R. China

REFERENCES

1. Shen HN, Lu CL, Yang HH: Risk of Recurrence After Surviving Severe Sepsis: A Matched Cohort Study. *Crit Care Med* 2016; 44:1833–1841
2. Shen HN, Lu CL, Yang HH: Epidemiologic trend of severe sepsis in Taiwan from 1997 through 2006. *Chest* 2010; 138:298–304
3. Singer M, Deutschman CS, Seymour CW, et al: The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA* 2016; 315:801–810
4. Zhang Z: Accessing critical care big data: A step by step approach. *J Thorac Dis* 2015; 7:238–242
5. Zhang Z, Chen L, Ni H: Antipyretic therapy in critically ill patients with sepsis: An interaction with body temperature. *PLoS One* 2015; 10:e0121919

DOI: 10.1097/CCM.0000000000001989

The authors reply:

We thank Drs. Zhang and Li (1) for their interest in our article on risk of recurrence after surviving severe sepsis (SS) (2). We agree with their comment that the "old definition" of SS (3) that requires two or more systemic inflammatory response syndrome (SIRS) criteria may exclude some patients with infection and organ failure. For example, Kaukonen et al (4) recently showed that among the ICU patients with infection and organ failure, 12.1% were SIRS-negative, and would be excluded if the old definition of SS was used. However, the mortality rate was significantly higher in SIRS-positive than in SIRS-negative patients (4). As stated previously (5), our validation was performed by chart reviews in 500 randomly selected patients from the claims data in a 1,200-bed teaching hospital in southern Taiwan because the National Health Insurance Research Database (NHIRD) does not have data regarding SIRS criteria and laboratory results (5). The contents of the hospital claims data were used for reimbursements and similar to those of the inpatient claims files of the NHIRD (5). We found that the proportion of patients with infection and organ failure (identified by chart reviews) but not coded with the diagnoses (in the claims data), that is, false negative, were higher than those without infection and organ failure but coded with the diagnoses, that is, false positive, which leads to a lower sensitivity (83.3%) than specificity (98.9%) of the diagnostic performance calculated against the old definition of SS (3, 5). It should be noted that the purpose, method, and setting of our validation are somewhat different from those by Kaukonen et al (4, 5). Regarding the timing of calculating Charlson comorbidity index, we believe that the "carry-over effect" does not exist because the index was calculated in the first-ever SS admission and the diagnostic codes for comorbidities and organ failures are different (5).

The authors have disclosed that they do not have any potential conflicts of interest.

Hsiu-Nien Shen, MD, PhD, Department of Intensive Care Medicine, Chi Mei Medical Center, Tainan, Taiwan, Department of Public Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan; **Chin-Li Lu, PhD,** Department of Public Health, College of Medicine, National Cheng Kung University, Tainan, Taiwan; **Hsi-Hsing Yang, MD, PhD,** Department of Intensive Care Medicine, Chi Mei Medical Center, Tainan, Taiwan

REFERENCES

1. Zhang Z, Li Q: Identifying Sepsis in Clinical Database With Sepsis-3 Definition. *Crit Care Med* 2016; 44:e1145–e1146
2. Shen HN, Lu CL, Yang HH: Risk of Recurrence After Surviving Severe Sepsis: A Matched Cohort Study. *Crit Care Med* 2016; 44:1833–1841
3. Bone RC, Balk RA, Cerra FB, et al: Definitions for sepsis and organ failure and guidelines for the use of innovative therapies in sepsis. The ACCP/SCCM Consensus Conference Committee. American College of Chest Physicians/Society of Critical Care Medicine. *Chest* 1992; 101:1644–1655
4. Kaukonen KM, Bailey M, Pilcher D, et al: Systemic inflammatory response syndrome criteria in defining severe sepsis. *N Engl J Med* 2015; 372:1629–1638
5. Shen HN, Lu CL, Yang HH: Epidemiologic trend of severe sepsis in Taiwan from 1997 through 2006. *Chest* 2010; 138:298–304

DOI: 10.1097/CCM.0000000000002029

One-Way, Positive-Pressure Speaking Valve During Mechanical Ventilation Via Tracheostomy Tube: Risks or Benefits?

To the Editor:

We read with great interest the randomized controlled trial by Freeman-Sanderson et al (1). The authors reported that an early use of one-way, positive-pressure speaking valve during mechanical ventilation via tracheostomy tube significantly hastened the return to phonation compared with cuff deflated tracheostomy tube with standard

speaking valve and off mechanical ventilation (1). Interestingly, the authors did not confirm the secondary outcomes, as tracheostomy cannulation, duration of mechanical ventilation, length of stay in ICU, length of stay in hospital, time to oral intake, safety, Visual Analogue Self-Esteem Scale (VASES) for aspects of communication-related and the EuroQol-5D questionnaire (1). Few issues come to mind.

First, the authors already reported in an observational study for tracheostomized and ventilated patients in ICU that the return of voice was associated with significant improvement in patient reported self-esteem, particularly in being understood by others, in cheerfulness and in quality of life (QOL). Interestingly, in the present study, the VASES and QOL did not differ between the groups despite an early return of voice in the interventional group (2).

Second, the authors included 30 patients with different diagnostic categories as neurology, cardiothoracic, respiratory, and general medical (1). Tracheostomy outcome may be confounded by patient characteristics and ICU events (3). The prognosis may differ according to the type of patients. Patients with neuromuscular disease and patients with chronic obstructive pulmonary disease may also have different outcomes (3). It is the time to investigate the outcome and the benefits from tracheostomy in ICU according to baseline pathology dividing the patients in specific subgroup!

Third, the authors did not find any improvement in duration of mechanical ventilation, length of ICU stay, and cardiopulmonary adverse events between the groups. The one-way, positive-pressure speaking valve during mechanical ventilation is associated to lung recruitment and improvement in end-expiratory lung volume (EELV) (4). An increase of EELV may cause a further recruitment or over-inflation of already aerated parts of the lung (4). Furthermore, the one-way, positive-pressure speaking valve during mechanical ventilation, compared with 5 cm H_2O of positive end-expiratory pressure (PEEP), had similar effects on airway pressure and tidal volume (5). In this article, the one-way, positive-pressure speaking valve was applied during pressure support ventilation via the tracheostomy tube with PEEP level less than or equal to 10 cm H_2O. It could be interesting to know which was the level of airway pressure and volume reached by the patients in this condition. Additionally, may the lack of significant improvement in the secondary endpoint be due to respiratory failure or fatigue in the patients included in this group?

We think that further prospective studies should investigate the addressed topics.

The authors have disclosed that they do not have any potential conflicts of interest.

Maria Vargas, MD, Giuseppe Servillo, MD, Department of Neurosciences, Reproductive and Odonthostomatological Sciences, University of Naples "Federico II", Naples, Italy

REFERENCES

1. Freeman-Sanderson AL, Togher L, Elkins MR, et al: Return of Voice for Ventilated Tracheostomy Patients in ICU: A Randomized Controlled Trial of Early-Targeted Intervention. *Crit Care Med* 2016; 44:1075–1081
2. Freeman-Sanderson AL, Togher L, Elkins MR, et al: Quality of life improves with return of voice in tracheostomy patients in intensive care: An observational study. *J Crit Care* 2016; 33:186–191
3. Clec'h C, Alberti C, Vincent F, et al: Tracheostomy does not improve the outcome of patients requiring prolonged mechanical ventilation: A propensity analysis. *Crit Care Med* 2007; 35:132–138
4. Sutt AL, Caruana LR, Dunster KR, et al: Speaking valves in tracheostomised ICU patients weaning off mechanical ventilation - do they facilitate lung recruitment? *Crit Care* 2016; 20:91–100
5. Prigent H, Garguilo M, Pascal S, et al: Speech effects of a speaking valve versus external PEEP in tracheostomized ventilator-dependent neuromuscular patients. *Intensive Care Med* 2010; 36:1681–1687

DOI: 10.1097/CCM.0000000000001991

The author replies:

I thank Vargas and Servillo (1) for their interest in our article. I agree that their hypotheses are possible; however, as noted in our article, our study was powered for the primary outcome of time to return to phonation. I concur that further research is required to investigate and confirm secondary outcomes including mechanical ventilation time, safety, and quality of life. A larger cohort of patients would also allow for subgroup analysis to detect possible differences and refine management for patients with varied clinical diagnoses. The ability for patients to speak, effectively communicate, and actively participate in their care within ICU should be a goal for all hospitals, and I would welcome further studies to build on current clinical knowledge and enable this goal.

Dr. Freeman-Sanderson has disclosed that she does not have any potential conflicts of interest.

Amy Freeman-Sanderson, PhD, BAppSc (Speech Pathology), Department of Speech Pathology, Royal Prince Alfred Hospital, Camperdown, NSW, Australia

REFERENCE

1. Vargas M, Servillo G: One-Way, Positive-Pressure Speaking Valve During Mechanical Ventilation Via Tracheostomy Tube: Risks or Benefits? *Crit Care Med* 2016; 44:e1146–e1147

DOI: 10.1097/CCM.0000000000002036

Expertise Matters

To the Editor:

Expertise matters. This is one of the fundamental lessons of modern critical care and lies at the core of a seeming paradox: patient outcomes from many critical diseases are improving whereas many large "one size fits all" clinical trials return with negative results. We strongly agree with most of the tenets put forth by Dr. Vincent (1) regarding the need for individualized care for critically ill patients. However, we are surprised at the proposition that subspecialty units are unnecessary and possibly detrimental. This has not been the experience with neurocritical care.

Multiple studies (although not large randomized trials) have found that neurocritical care units are of distinct value