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## **REPLY: assessment of right heart function in secondary tricuspid regurgitation**

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practice. However, these results contradict the GUIDE-IT (Guiding Evidence Based Therapy Using Biomarker Intensified Treatment in Heart Failure) randomized trial, which found no reduction in events with natriuretic peptide-guided therapy and may be confounded (2). Neither our data nor GUIDE-IT findings support a conclusion that natriuretic peptide measurement is underutilized in clinical practice. Rather, natriuretic peptides should be used by physicians together with history and physical examination to determine appropriate management.

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The authors attest they are in compliance with human studies committees and animal welfare regulations of the authors' institutions and Food and Drug Administration guidelines, including patient consent where appropriate. For more information, visit the *JACC: Heart Failure* [author instructions page](#).

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## Assessment of Right Heart Function in Secondary Tricuspid Regurgitation



Dietz et al. (1) explored the prognostic value of staging right-heart failure (RHF) in a retrospective analysis of patients with significant secondary tricuspid regurgitation (TR). Advanced stage RHF, defined as tricuspid annular plane systolic excursion (TAPSE) <17 mm accompanied by symptoms of RHF

and higher right ventricular systolic pressure (RVSP) were among the independent predictors of mortality (1). In a previous analysis of patients with significant secondary TR, the authors showed that TAPSE was independently associated with all-cause mortality whereas right ventricular size and fractional area changes were not (2).

With the emerging focus on transcatheter interventions for secondary TR, there will be an increasing demand for optimizing patient selection and timing of intervention (3). Comprehensive yet easily accessible markers that improve detection of right-heart dysfunction will be needed. Estimation of right ventricular-pulmonary artery coupling by the TAPSE-to-RVSP ratio provides more physiological information about right-heart function (4). Additional data supporting the prognostic value of the TAPSE/RVSP ratio are needed (4,5). Dietz et al. (1) should consider exploring the prognostic significance of the TAPSE/RVSP ratio and determining its impact on staging of RHF in patients with secondary TR.

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## REPLY: Assessment of Right Heart Function in Secondary Tricuspid Regurgitation



We thank Dr. Mehmood for his interest in our paper describing the prognostic impact of staging right heart failure in patients with secondary tricuspid

regurgitation (TR) (1). We appreciate his suggestion to assess the prognostic significance of right ventricular-pulmonary artery (RV-PA) coupling in patients with secondary TR. In our study, right ventricular (RV) dysfunction was defined by tricuspid annular plane systolic excursion (TAPSE) <17 mm without correction for RV systolic pressure (RVSP). RVSP was significantly higher in stage 4 of right heart failure than in stages 1 and 2 ( $38 \pm 17$  mm Hg vs.  $31 \pm 12$  mm Hg and  $32 \pm 12$  mm Hg, respectively), and RVSP was independently associated with all-cause mortality in multivariate Cox regression analysis. We therefore agree with Dr. Mehmood that RV-PA coupling may be of prognostic influence in patients with secondary TR and that data for RV-PA coupling may be of added value in the search for optimal timing of intervention of the tricuspid valve.

The TAPSE/PASP (pulmonary artery systolic pressure) ratio proposed by Guazzi et al. (2) as an index of the length-force relationship to more effectively assess RV function, showed that heart failure patients with a TAPSE/PASP ratio <0.36 had worse outcome than patients with a ratio  $\geq 0.36$ . In patients with secondary TR, most of whom have left ventricular dysfunction, one could hypothesize that the TAPSE/PASP ratio may likewise be associated with outcomes. However, we did not include it in our study because we used the staging of right heart failure as proposed by Gorter et al. (3), which does not contain this parameter. How to include the TAPSE/PASP ratio in a staging algorithm of right-heart failure and how this relates to outcomes would be an interesting hypothesis for future studies.

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## Temporary Mechanical Circulatory Support as a Bridge to Transplant



### Return of the Intra-Aortic Balloon Pump

In October of 2018, the United Network for Organ Sharing put forth a revised donor heart allocation system with the intent of prioritizing patients in critical condition. Prior to this iteration, critically ill patients and hemodynamically stable patients supported by durable left ventricular assist devices (LVAD) were assigned the same priority for transplantation. In recent analysis from Jawitz et al. (1), it appears that the new allocation system has achieved its goal with midterm survival comparable to that of the old allocation system and reduced waitlist times for those in most urgent need (1). The rate of temporary mechanical circulatory support (MCS) as a bridge to transplantation has been 3-fold increased to 44.5%, whereas durable LVAD implantation has fallen by one-half to 21.2%. Of the patients who have received transplants under the new system, 33.0% received intra-aortic balloon pumps (IABP), whereas 12.4% received extracorporeal membrane oxygenation (ECMO) or a temporary ventricular assist device. By deduction, 34.3% of patients did not receive pre-transplantation MCS.

Based on these data, approximately 90% of patients who have received a transplant in this era were given a bridge to transplantation using a durable LVAD or an IABP or did not receive a bridge to transplantation. Approximately equal proportions of patients received IABP or no pre-transplantation MCS. Compared to the old allocation system, the use of IABP has risen 24.1%, far outpacing the increase in