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# Inclusion of echocardiographic measure of right ventricular function in the non-invasive French pulmonary arterial hypertension risk stratification method

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**Background:** Although preserved right ventricular (RV) function is consistently associated with better survival in pulmonary arterial hypertension (PAH), the French risk assessment method has not yet considered echocardiographic criteria of RV function.

**Purpose:** In the present study, we tested the value of tricuspid annular plane systolic excursion (TAPSE) measured by echocardiography for non-invasive PAH risk assessment.

**Methods:** We retrospectively studied a cohort of 306 incident PAH patients treated in two French expert centers who underwent follow-up TAPSE measurement from echocardiographic apical 4-chamber view in addition to previously validated invasive and non-invasive risk stratification variables. The primary composite outcome was 3-year lung transplantation free survival after follow-up assessment.

**Results:** At re-evaluation, 66% of patients were in NYHA functional class I-II and mean pulmonary arterial pressure, cardiac index, N-Terminal pro brain natriuretic peptide (NTproBNP), and 6-minute walk distance (6MWD) were $40\pm16$ mmHg, $3.5\pm1.1$ L/min/m$^2$, 270 [interquartile range (IQR) 896] ng/L and 401 (IQR 213) meters, respectively. The primary outcome occurred in 58 (19%) patients. In multivariable Cox regression analysis, NYHA functional class I-II (p=0.02), NTproBNP $<300$ ng/L or BNP $<50$ ng/L (p=0.02), 6MWD $>440$m (p=0.049) and TAPSE$\geq17$ mm (p=0.02) were associated with lung transplantation free survival. TAPSE provided similar information over 6MWD when both were used alternatively to stratify PAH patients at low risk (log-rank$<0.001$); Harrell's c-index 0.73.

**Conclusion:** Three dichotomized low-risk criteria (TAPSE, 6MWD and NT-proBNP or BNP plasma levels) allow non-invasive risk assessment in PAH.

3-years transplant-free survival