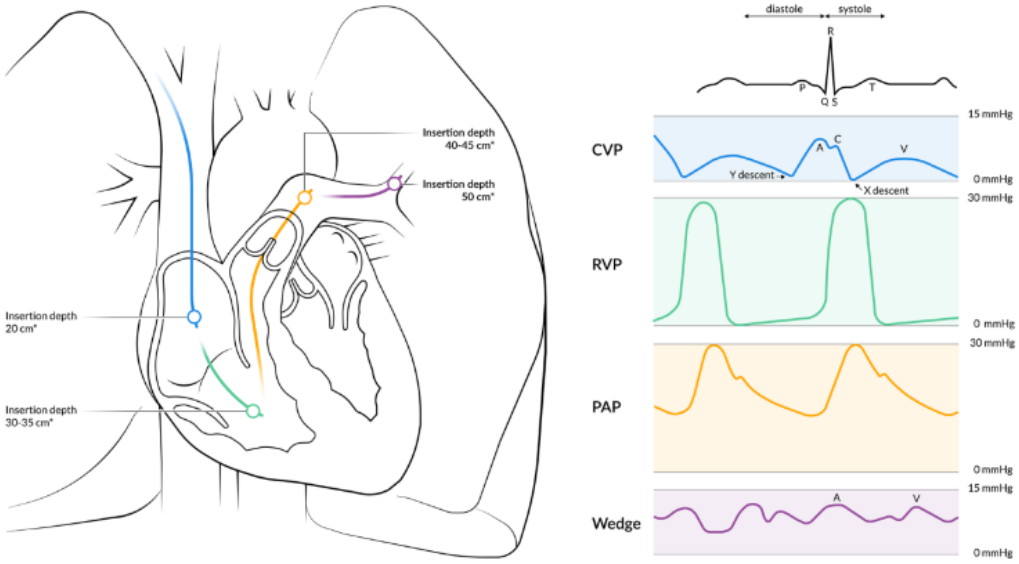

Fig. 1 Placement of the PAC guided by the characteristics of normal vascular pressures and waveforms . *For placement in the left internal jugular vein or left subclavian vein one should add 5 cm to each of the landmarks . *CVP* central venous pressure, *PAC* pulmonary artery catheter, *PAP* pulmonary artery pressure, *RVP* right ventricular pressure

Table 1 Hemodynamic variables obtained from the pulmonary artery catheter

Variable	Abbreviation	Equation	Normal range
Mixed venous oxygen saturation	SvO_2	n.a	60–80%
Cardiac output	CO	HR × SV/1000	4.0–8.0 L min^{-1}
Cardiac index	CI	CO/BSA	2.5–4.0 L min^{-1} m^{-2}
Cardiac power index	CPI	(MAP-CVP) × CI/451	0.5–0.7 W m^{-2}, population specific
Central venous Pressure	CVP	n.a	2–6 mmHg
Stroke volume	SV	CO/HR × 1000	60–100 mL
Stroke volume Index	SVi	CI/HR × 1000	33–47 mL m^{-2}
Stroke volume variation	SVV	(SVmax-SVmin)/SVmean × 100	10–15%
Systemic vascular resistance	SVR	80 × (MAP − CVP)/CO	800–1200 dynes sec cm^{-5}
Systemic to pulmonary pressure ratio	MAP/MPAP	MAP / MPAP	4.0 ± 1.4 in uncomplicated cardiac surgey
Pulmonary artery systolic pressure	PASP	n.a	15–30 mmHg
Pulmonary artery diastolic pressure	PADP	n.a	8–15 mmHg
Pulmonary artery wedge pressue	PAWP	n.a	6–12 mmHg
Pulmonary vascular resistance	PVR	80 × (MPAP − PAWP)/CO	< 250 dynes sec cm^{-5}
Pulmonary artery pulsatility index	PAPI	(PASP − PADP)/CVP	population specific
LV stroke work index	LVSWi	SVi × (MAP − PAWP) × 0.0136	50–62 mmHg ml m^{-2}
RV stroke work index	RVSWi	SVi × (MPAP − CVP) × 0.0136	5–10 mmHg ml m^{-2}
RV function index	RFI	PASP/CI	31.7 ± 16.7 in ICU survivors with PH
RV end-diastolic volume	RVEDV	SV/EF	100–160 mL
RV end-diastolic volume index	RVEDVi	RVEDV/BSA	60–100 mL m^{-2}
RV end-systolic volume	RVESV	EDV-SV	50–100 mL
RV ejection fraction	RVEF	(SV/EDV) × 100	40–60%
RV systolic pressure	RVSP	n.a	15–30 mmHg
RV diastolic pressure	RVDP	n.a	2–8 mmHg

BSA body suface area; *CI* cardiac index; *EDV* end diastolic volume; *EF* ejection fraction; *HR* heart rate; *LV* left ventricle; *MAP* mean arterial pressure; *MPAP* mean pulmonary arterial pressure; *n.a.* not applicable; *PAWP* pulmonary artery wedge pressure; *PH* pulmonary hypertension; *RV* right ventricle

Adapted from: Edwards Clinicical Education Quick Guide to Cardiopulmonary Care [4]

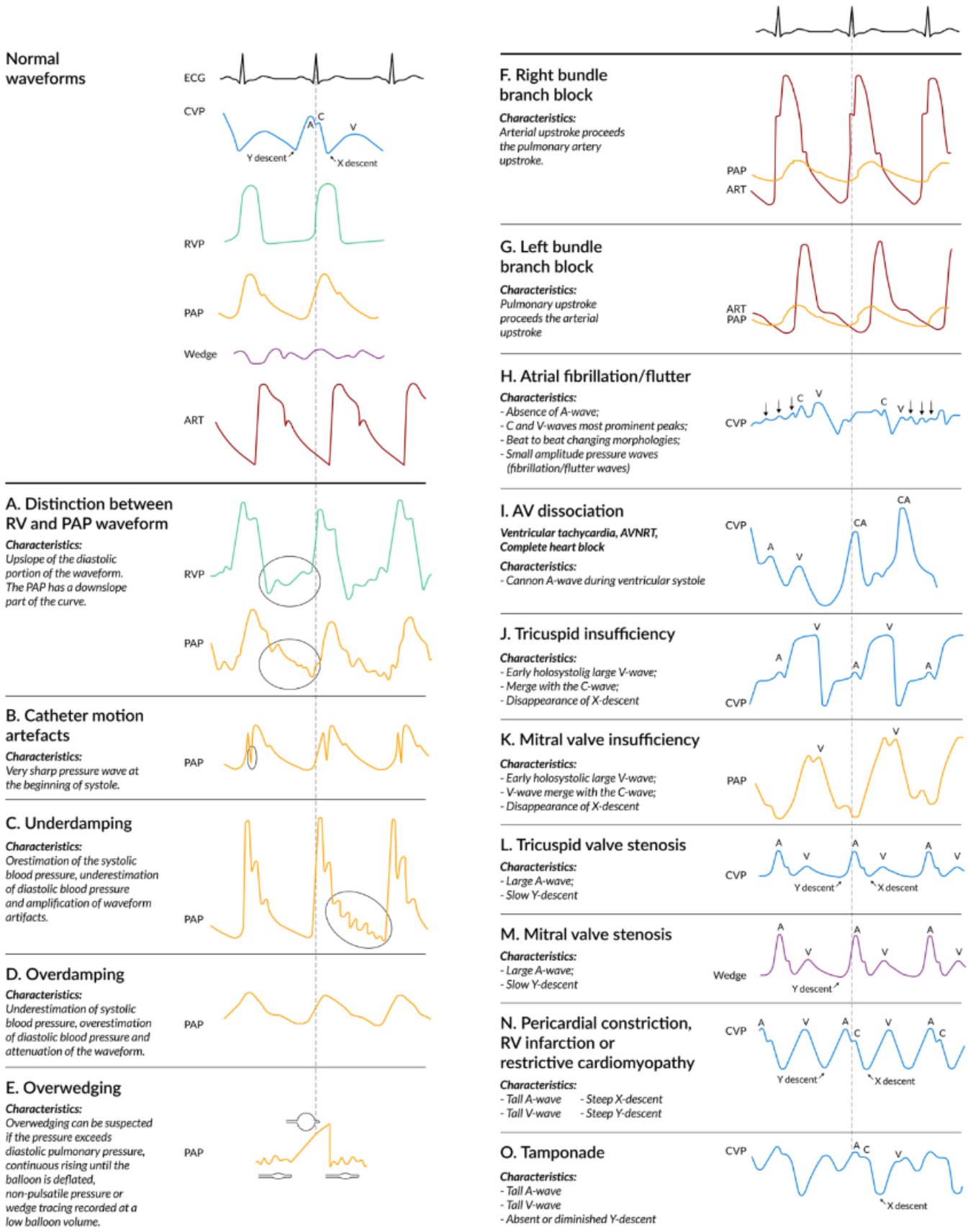

Fig. 2 Pressure waveform pitfalls and abnormalities . *CA* cannon a-wave, *CVP* central venous pressure, *ECG* electrocardiogram, *RV* right ventricle, *RVP* right ventricular pressure, *PAP* pulmonary artery pressure, *ART* arterial

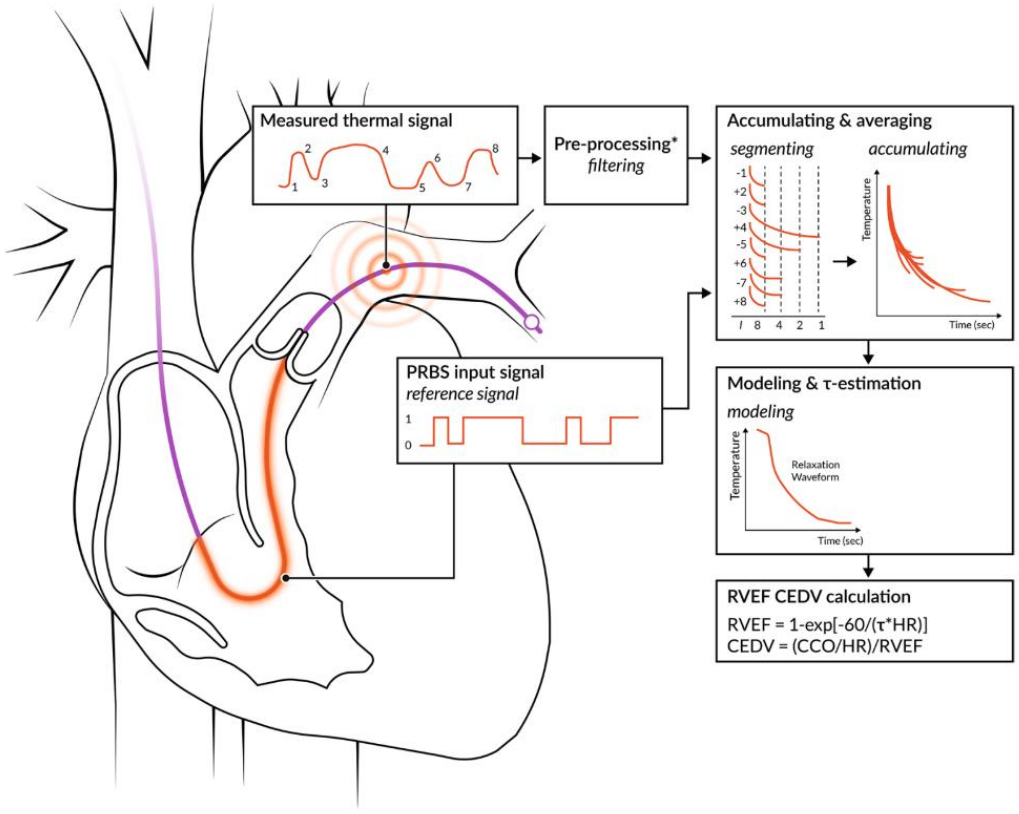

Fig. 1 Relaxation waveform for continuous cardiac output and concomitant calculations of right ventricular ejection fraction and right ventricular end-diastolic volume calculations. Shown are the thermal signal sent out by the proximal part of the PAC, how this is received in the more distal part of the PAC, and how this is transformed to derive the specific variables. PRBS Pseudo-Random Binary Sequence; RVEF right ventricular ejection fraction. CEDV continuous right ventricular end-diastolic volume. CCO continuous cardiac output. τ = exponential decay time constant. * This step is skipped when using STAT-CCO over trend CCO monitoring. Adapted from: Wiesenack C et al. [46]