

Table S1. Reproducibility of the manually contour-traced validation dataset.

Parameter	Intra-observer			Inter-observer		
	Mn-D. ($\pm 1.96SD$)	ICC	MD	Mn-D. ($\pm 1.96SD$)	ICC	MD
LVEDV (mL)	-0.2 (± 5.6)	0.988	3	-1.0 (± 5.0)	0.989	3
LVEF (%)	-0.5 (± 1.6)	0.925	4	-0.4 (± 1.5)	0.940	4
LV mass (g)	0.0 (± 5.6)	0.993	5	0.3 (± 7.5)	0.989	6
RVEDV (mL)	0.6 (± 6.5)	0.987	4	0.6 (± 8.7)	0.979	4
RVEF (%)	-0.2 (± 1.2)	0.987	3	-0.1 (± 2.3)	0.963	4

Mn-D.: mean difference; SD: standard deviation; ICC: intraclass correlation coefficient; MD: maximum disagreement percentage; LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.

Table S2. Reproducibility of repeated Level 1 and phase 1 of Level 2 automated post-processing.

Parameter	Vendor 1		Vendor 2		Vendor 3	
	Mn-D. ($\pm 1.96SD$)	ICC	Mn-D. ($\pm 1.96SD$)	ICC	Mn-D. ($\pm 1.96SD$)	ICC
	Level 1					
LVEDV (mL)	-0.3 (± 1.2)	1.000	1.4 (± 4.0)	0.999	-0.5 (± 2.3)	1.000
LVEF (%)	0.0 (± 0.0)	1.000	-0.1 (± 1.6)	0.974	-0.3 (± 0.8)	0.999
LV mass (g)	-0.9 (± 4.2)	0.998	0.2 (± 1.2)	1.000	-0.2 (± 0.7)	1.000
RVEDV (mL)	-0.5 (± 2.0)	1.000	0.0 (± 0.0)	1.000	-	-
RVEF (%)	0.0 (± 0.0)	1.000	0.0 (± 0.0)	1.000	-	-
Phase 1 of Level 2						
LVEDV (mL)	-1.2 (± 1.7)	0.999	0.6 (± 2.5)	1.000	-0.4 (± 3.0)	0.999
LVEF (%)	0.2 (± 0.4)	0.999	-0.0 (± 0.9)	0.999	-0.0 (± 0.3)	1.000
LV mass (g)	0.7 (± 2.8)	0.999	-0.5 (± 2.6)	0.999	-0.5 (± 2.8)	0.998
RVEDV (mL)	-0.4 (± 3.1)	1.000	1.2 (± 3.5)	0.999	-	-
RVEF (%)	0.6 (± 2.0)	0.949	0.3 (± 0.6)	0.998	-	-

Mn-D.: mean difference; SD: standard deviation; ICC: intraclass correlation coefficient; LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.

Table S3. Comparison of results between Level 1, phase 1 of Level 2 automated, and gold standard manual tracing.

Parameter	Vendor 1		Vendor 2		Vendor 3	
	Mn-D. ($\pm 1.96SD$)	R ²	Mn-D. ($\pm 1.96SD$)	R ²	Mn-D. ($\pm 1.96SD$)	R ²
	Level 1					
LVEDV (mL)	-11 (± 21)	0.91	31 (± 33)	0.83	-4 (± 29)	0.83
LVEF (%)	4 (± 8)	0.53	-5 (± 16)	0.12	-4 (± 14)	0.21
LV mass (g)	26 (± 20)	0.86	24 (± 45)	0.46	2 (± 43)	0.43
RVEDV (mL)	-29 (± 45)	0.62	-60 (± 72)	0.27	-	-
RVEF (%)	-1 (± 13)	0.17	6 (± 27)	0.02	-	-
Phase 1 of Level 2						
LVEDV (mL)	-13 (± 10)	0.98	25 (± 26)	0.91	-16 (± 19)	0.93
LVEF (%)	5 (± 6)	0.72	-0 (± 15)	0.21	2 (± 10)	0.41
LV mass (g)	23 (± 15)	0.93	18 (± 32)	0.68	-3 (± 41)	0.45
RVEDV (mL)	-18 (± 13)	0.97	-31 (± 43)	0.66	-	-
RVEF (%)	6 (± 5)	0.63	4 (± 16)	0.01	-	-

Mn-D.: mean difference; SD: standard deviation; LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.

Table S4. Number of measurements considered accurate with Level 1 and phases 1 and 2 of Level 2 automated post-processing.

	Vendor 1	Vendor 2	Vendor 3			
Parameter	Level 1					
LVEDV	21 (53%)	2 (5%)	26 (65%)			
LVEF	24 (60%)	15 (38%)	21 (53%)			
LV mass	1 (3%)	8 (20%)	8 (20%)			
RVEDV	11 (28%)	4 (10%)	-			
RVEF	16 (40%)	8 (20%)	-			
Level 2						
Relative-to-manual median standard error correction						
	Before	After	Before	After	Before	After
LVEDV	21 (53%)	39 (98%)	3 (8%)	28 (70%)	11 (28%)	33 (83%)
LVEF	14 (35%)	39 (98%)	15 (28%)	17 (43%)	29 (73%)	33 (83%)
LV mass	0 (0%)	28 (70%)	10 (25%)	12 (30%)	12 (30%)	15 (38%)
RVEDV	12 (30%)	39 (98%)	9 (23%)	19 (48%)	-	-
RVEF	3 (8%)	32 (80%)	9 (23%)	17 (43%)	-	-

Data presented as number (percentage). Level 2 automated results are subdivided between before (phase 1) and after (phase 2) software package-specific relative-to-manual median standard error correction. Results were considered accurate when the outcome differed 6% (the maximum interobserver disagreement) or less from the manual result.

LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.

Table S5. Intraclass correlation coefficient between Level 1 automated and manual tracing results for volumes and mass.

Parameter	Vendor 1	Vendor 2	Vendor 3
LVEDV	0.949	0.899	0.911
LVESV	0.874	0.641	0.743
LV mass	0.928	0.670	0.657
RVEDV	0.771	0.519	-
RVESV	0.829	0.300	-

LV: left ventricle; EDV: end-diastolic volume; ESV: end-systolic volume; RV: right ventricle.

Table S6. Software package-specific relative-to-manual standard error in phase 1 of Level 2 automation.

Parameter	Vendor 1	Vendor 2	Vendor 3
LVEDV	-7 (-8, -6)	12 (9, 18)	-9 (-11, -7)
LVEF	9 (6, 13)	2 (-10, 8)	4 (1, 6)
LV mass	21 (18, 29)	16 (7, 34)	3 (-18, 11)
RVEDV	-8 (-11, -7)	-14 (-20, -9)	-
RVEF	12 (10, 15)	9 (-3, 18)	-

Standard error reported as median percentage (interquartile range).

LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.

Table S7. Difference between phase 2 of Level 2 automated and manual results after relative-to-manual standard error correction.

	Vendor 1	Vendor 2	Vendor 3
Parameter	Mn-D. ($\pm 1.96SD$)	Mn-D. ($\pm 1.96SD$)	Mn-D. ($\pm 1.96SD$)
LVEDV (mL)	0 (± 10)	3 (± 22)	0 (± 22)
LVEF (%)	0 (± 5)	-1 (± 15)	-1 (± 9)
LV mass (g)	1 (± 15)	1 (± 30)	-6 (± 40)
RVEDV (mL)	-1 (± 13)	-3 (± 45)	-
RVEF (%)	1 (± 4)	-1 (± 15)	-

Mn-D.: mean difference; SD: standard deviation; LV: left ventricle; EDV: end-diastolic volume; EF: ejection fraction; RV: right ventricle.