Supplemental Material

Table S1. Frequency of clinical outcome by BMI category at most recent follow-up in paediatric patients.

	Total N=358 (N (%))	**Underweight N=34 (N (%))**	**Normal N=256 (N (%))**	**Overweight N=34 (N (%))**	**Obese N=34 (N (%))**	***P*-Value**
Deceased	13 (4)	1 (3)	9 (4)	2 (6)	1 (3)	0.95
Age Deceased (Years) (Median (IQR))	14 (6, 19)	19 (19, 19)	10 (5, 14)	25 (25, 25)	13 (13, 13)	0.24
Transplant	2 (1)	0	2 (1)	0	0	1.00
Takedown	2 (1)	0	2 (1)	0	0	1.00
NYHA III/IV	9 (3)	2 (6)	5 (2)	2 (6)	0	0.19
Severe Fontan Failure	23 (6)	3 (9)	15 (6)	4 (12)	1 (3)	0.39
Age Severe Fontan Failure (Years) (Median (IQR))	7 (4, 14)	9.5 (5, 16)	6 (4, 14)	16 (5.5, 25)	13 (13, 13)	0.65

P-value indicates comparison between paediatric BMI groups.

Table S2. Frequency of clinical outcome by BMI at most recent follow-up in adult patients.

	Total N=138 (N (%))	**Underweight N=11 (N (%))**	**Normal N=74 (N (%))**	**Overweight N=37 (N (%))**	**Obese N=16 (N (%))**	***P*-Value**
Deceased	11 (8)	1 (9)	5 (7)	3 (8)	2 (13)	0.7
Age Deceased (Years) (Median (IQR))	30 (22, 32)	31 (31, 31)	22 (21, 32)	30 (24, 35)	31.5 (26, 37)	0.61
Transplant	9 (7)	0	5 (7)	4 (11)	0	0.51
Takedown	1 (1)	1 (9)	0	0	0	0.08
NYHA III/IV	9 (7)	0	6 (8)	2 (5)	1 (6)	0.95
Venous Thromboembolism	36 (31)	3 (43)	21 (34)	8 (24)	4 (27)	0.65
Severe Fontan Failure	23 (17)	2 (18)	11 (15)	7 (19)	3 (19)	0.87
Age Severe Fontan Failure (Years) (Median (IQR))	26 (19, 31)	23 (15, 31)	25 (19, 27)	26 (14, 34)	37 (26, 39)	0.25

P-value indicates comparison between adult BMI groups.

Table S3. Baseline characteristics of patients by $BMI_{6-60month}$ trajectory.

		Total N=463 (N (%))	Lower N=154 (N (%))	Middle N=234 (N (%))	Upper N=75 (N (%))	*P*-Value
Sex	Male	295 (64)	51 (33)	181 (77)	63 (84)	< 0.01
	Female	168 (36)	103 (67)	53 (23)	12 (16)	
Birthweight (kg) (Mean ± SD)		3.26 ± 0.61	3.13 ± 0.59	3.32 ± 0.61	3.33 ± 0.62	0.13
Ventricular Morphology	Left	231 (50)	80 (52)	114 (49)	37 (49)	0.78
	Right	174 (38)	53 (34)	19 (8)	27 (36)	
	Biventricular	38 (8)	12 (8)	19 (8)	7 (9)	
	Indeterminate	14 (3)	7 (5)	5 (2)	2 (3)	
Isomerism/ Heterotaxy	None	422 (91)	136 (88)	215 (92)	71 (85)	0.37
	Left Atrial Isomerism	13 (3)	7 (4)	5 (2)	1 (1)	
	Right Atrial Isomerism	25 (5)	11 (7)	12 (5)	2 (3)	
Cardiac Position	Normal	414 (89)	134 (87)	212 (91)	68 (91)	0.02
	Dextrocardia/ Mesocardia	39 (8)	20 (13)	14 (6)	5 (7)	
Primary Diagnosis	Tricuspid Atresia	78 (17)	23 (15)	37 (16)	18 (24)	0.32
	DORV	50 (11)	18 (12)	22 (9)	10 (13)	
	DILV	68 (15)	25 (16)	37 (16)	6 (8)	
	Pulmonary Atresia with VSD	14 (3)	6 (4)	8 (3)	0	
	ccTGA (VA discordance and AV discordance)	28 (6)	7 (5)	15 (6)	6 (8)	
	Ebstein's Anomaly	5 (1)	0	3 (1)	2 (3)	
	Atrioventricular Canal or AVSD (aka unbalanced AVSD or common AV valve)	47 (10)	20 (13)	20 (9)	7 (9)	
	Pulmonary Atresia with	33 (7)	11 (7)	20 (9)	2 (3)	

	Intact Ventricular Septum					
	HLHS	91 (20)	25 (16)	48 (21)	18 (24)	
	Other	46 (10)	17 (11)	23 (10)	6 (8)	
Number Prior Procedures	0–1	85 (18)	35 (23)	30 (17)	10 (13)	0.06
	2	233 (50)	64 (42)	123 (53)	46 (61)	
	3–6	145 (31)	55 (36)	71 (30)	19 (25)	
Type Fontan	AP	34 (7)	13 (8)	17 (7)	4 (5)	0.01
	ECC	383 (83)	116 (75)	197 (84)	70 (93)	
	LT	42 (9)	24 (16)	17 (7)	1 (1)	
	Not Entered	4 (1)	1 (1)	3 (1)	0	
Conversion		13 (3)	5 (3)	7 (3)	1 (1)	0.86
Fenestration		159 (38)	53 (38)	80 (38)	26 (37)	0.96
Centre	Children's Hospital Westmead	246 (53)	82 (53)	128 (55)	40 (53)	0.61
	Royal Children's Hospital, Melbourne	213 (46)	72 (47)	106 (45)	35 (47)	
AV Valve Repair/Replacement		53 (11)	19 (12)	27 (12)	7 (9)	0.83
Date of Fontan (Median (IQR))		2010 (2000–2014)	2008 (1998–2014)	2010 (2001–2014)	2012 (2006–2014)	0.03
Age at Fontan (Median (IQR))		4.67 (3.96, 5.48)	4.86 (4.11, 5.61)	4.60 (3.87, 5.39)	4.47 (3.93, 5.08)	0.47
Age Last Follow-Up (Median (IQR))		13.30 (8.75, 18.14)	14.47 (9.09, 21.36)	12.84 (8.49, 17.72)	11.88 (8.10, 15.73)	0.46

P-value indicates comparison between paediatric $BMI_{6–60month}$ trajectory groups.

Table S4. Baseline characteristics of patients by $BMI_{5\text{-}16year}$ trajectory.

		Total N=458 (N (%))	Lower N=273 (N (%))	Middle N=155 (N (%))	Higher N=30 (N (%))	*P*-Value
Sex	Male	291 (64)	165 (60)	109 (70)	17 (57)	0.08
	Female	167 (36)	108 (40)	46 (30)	13 (43)	
Birthweight (kg) (Mean ± SD)		3.27 ± 0.62	3.18 ± 0.61	3.33 ± 0.61	3.62 ± 0.68	0.03
Ventricular Morphology	Left	232 (51)	126 (46)	90 (58)	16 (53)	0.20
	Right	166 (36)	102 (37)	53 (34)	11 (37)	
	Biventricular	39 (9)	28 (10)	8 (5)	3 (10)	
	Indeterminate	15 (3)	13 (5)	2 (1)	0	
Isomerism/ Heterotaxy	None	418 (91)	241 (88)	150 (97)	27 (90)	0.01
	Left Atrial Isomerism	11 (2)	9 (3)	2 (1)	0	
	Right Atrial Isomerism	25 (5)	21 (8)	1 (1)	3 (10)	
Cardiac Position	Normal	411 (90)	242 (89)	139 (90)	30 (100)	0.07
	Dextrocardia/ Mesocardia	38 (8)	28 (10)	10 (6)	0	
Primary Diagnosis	Tricuspid Atresia	77 (17)	39 (14)	32 (21)	6 (20)	0.53
	DORV	52 (11)	31 (11)	17 (11)	4 (13)	
	DILV	72 (16)	41 (15)	28 (18)	3 (10)	
	Pulmonary Atresia with VSD	15 (3)	11 (4)	4 (3)	0	
	ccTGA (VA discordance and AV discordance)	26 (6)	17 (6)	9 (6)	0	
	Ebstein's Anomaly	5 (1)	2 (1)	3 (2)	0	
	Atrioventricular Canal or AVSD (aka unbalanced AVSD or	47 (10)	35 (13)	9 (6)	3 (10)	

	common AV valve)					
	Pulmonary Atresia with Intact Ventricular Septum	31 (7)	17 (6)	12 (8)	2 (7)	
	HLHS	85 (19)	50 (18)	29 (19)	6 (20)	
	Other	45 (10)	28 (10)	11 (7)	6 (20)	
Number Prior Procedures	0–1	97 (21)	60 (22)	32 (21)	5 (17)	0.16
	2	225 (49)	126 (46)	78 (50)	21 (70)	
	3–6	136 (30)	87 (32)	45 (29)	4 (13)	
Type Fontan	APP	43 (9)	26 (10)	15 (10)	2 (7)	0.76
	ECC	354 (79)	213 (78)	124 (80)	27 (9)	
	LT	49 (11)	33 (12)	15 (10)	1 (3)	
	Not Entered	2 (0)	1 (0)	1 (1)	0	
Conversion		14 (3)	9 (3)	5 (3)	0	0.91
Fenestration		159 (39)	97 (40)	51 (37)	11 (39)	0.88
Centre	Children's Hospital Westmead	140 (52)	143 (52)	83 (54)	14 (47)	0.93
	Royal Children's Hospital, Melbourne	218 (48)	130 (48)	72 (46)	16 (53)	
AV Valve Repair/Replacement		54 (12)	32 (12)	19 (12)	3 (10)	0.97
Date of Fontan		2009 (1999–2012)	2009 (1999–2014)	2010 (1999–2014)	2010 (2003–2012)	0.58
Age at Fontan (Median (IQR))		4.70 (3.97, 5.52)	4.87 (4.13, 5.90)	4.45 (3.78, 5.14)	4.26 (3.35, 4.97)	0.36
Age Last Follow-Up (Median (IQR))		13.83 (9.36, 18.88)	14.38 (9.45, 20.09)	13.14 (8.99, 17.67)	13.54 (10.58, 17.25)	0.50

P-value indicates comparison between paediatric $BMI_{5\text{-}16year}$ trajectory groups.

Table S5. Frequency of long-term clinical outcome by $BMI_{6–60month}$ trajectory group.

		Total N=463 (N (%))	**Lower N=154 (N (%))**	**Middle N=234 (N (%))**	**Higher N=75 (N (%))**	***P*-Value**
Severe Fontan Failure		39 (8)	17 (11)	15 (6)	7 (9)	0.25
Time to Severe Fontan Failure (Years) (Median (IQR)		8.05 (2.51, 22.15)	3.51 (2.07, 18.80)	17.08 (4.78, 22.16)	5.53 (1.10, 6.82)	0.30
Deceased		20 (4)	10 (6)	7 (3)	3 (4)	0.26
Age Deceased (Years) (Median (IQR))		20.5 (11.5–29)	20.5 (6–25)	32 (19–35)	13 (5–15)	**0.05**
Transplant		8 (2)	3 (2)	3 (1)	2 (3)	0.64
Takedown		3 (1)	3 (2)	0	0	0.07
NYHA III/IV		18 (4)	7 (5)	8 (3)	3 (4)	0.81
Ventricular Function	None-Mild	220 (90)	76 (89)	114 (91)	30 (88)	0.89
	Moderate	21 (9)	8 (9)	9 (7)	4 (12)	
	Severe	3 (1)	1 (1)	2 (2)	0	
Valvular Regurgitation	Mild	198 (81)	7 (82)	99 (79)	29 (85)	0.85
	Moderate	37 (15)	11 (13)	22 (18)	4 (12)	
	Severe	9 (4)	4 (5)	4 (3)	1 (3)	

P-value indicates comparison between paediatric $BMI_{6–60month}$ trajectory groups.

Table S6. Frequency of long-term clinical outcome by $BMI_{5–16year}$ trajectory.

		Total N=458 (N (%))	Lower N=273 (N (%))	Middle N=155 (N (%))	Higher N=30 (N (%))	*P*-Value
Severe Fontan Failure		41 (9)	21 (8)	18 (12)	2 (7)	0.36
Time to Severe Fontan Failure (Years) (Median (IQR))		8.94 (3.92, 8.93)	12.71 (3.92, 22.15)	15.75 (6.82, 22.16)	4.31 (0.80, 8.93)	0.40
Deceased		20 (4)	10 (4)	8 (5)	2 (7)	0.45
Age Decease (Years) (Median (IQR))		23 (14.5–30.5)	20.5 (14–32)	22.5 (14.5–27.5)	25.5 (25–26)	0.74
Transplant		11 (2)	5 (2)	6 (4)	0	0.33
Takedown		1 (0)	0	1 (1)	0	0.40
NYHA III/IV		18 (4)	10 (4)	8 (5)	0	0.45
Ventricular Dysfunction	Mild/None	220 (90)	126 (88)	76 (94)	18 (95)	0.57
	Moderate	22 (9)	16 (11)	5 (6)	1 (5)	
	Severe	2 (1)	2 (1)	0	0	
Valvular Regurgitation	Mild/None	198 (81)	113 (78)	71 (88)	14 (74)	0.24
	Moderate	38 (16)	24 (17)	9 (11)	5 (26)	
	Severe	8 (3)	7 (5)	1 (1)	0	

P-value indicates comparison between paediatric $BMI_{5–16year}$ trajectory groups.

Table S7. $BMI_{5–16years}$ trajectory according to $BMI_{0–6months}$ trajectory (n=357 with data at both 0–6-months and 5–16-years).

Change in BMI Trajectory		$BMI_{5–16years}$			
		Lower (n=204) N (%)	Middle (n=128) N (%)	Higher (n=25) N (%)	Total (n=357) N (%)
$BMI_{0–6months}$	Lower	24 (12)	8 (6)	1 (4)	33 (9)
	Middle	141 (69)	74 (58)	12 (48)	227 (64)
	Higher	39 (19)	46 (36)	12 (48)	97 (27)