



## ELECTROCARDIOGRAPHIC CRITERIA\* NORMAL VALUES

Age	Heart Rate	Mean Frontal Plane QRS Axis	PR Interval	QRS Duration	Lead V <sub>1</sub>			Lead V <sub>6</sub>		
					*R Amplitude	S Amplitude	R/S Ratio	R Amplitude	S Amplitude	R/S Ratio
0-1 mo	100-180 (120)	+75 to +180 (+120) #	.08-.12 (.10)	.04-.08 (.06)	4-25 (15)	0-20 (10)	0.5 to ** (1.5)	1-21 (6)	0-12 (4)	0.1 to ** (2)
1-3 mo	110-180 (120)	+35 to +135 (+100)	.08-.12 (.10)	.04-.08 (.06)	2-20 (11)	1-18 (7)	0.3 to 10.0 (1.5)	3-20 (10)	0-6 (2)	1.5 to ** (4)
3-12 mo	100-180 (150)	+30 to +135 (+60)	.09-.13 (.12)	.04-.08 (.06)	3-20 (10)	1-16 (8)	0.3 to 4.0 (1.2)	6-20 (13)	0-4 (2)	2.0 to ** (6)
1-3 yr	100-180 (130)	0 to +110 (+60)	.10-.14 (.12)	.04-.08 (.06)	1-18 (9)	1-27 (13)	0.5 to 1.5 (0.8)	3-24 (12)	0-4 (2)	3.0 to ** (20)
3-5 yr	60-150 (100)	0 to +110 (+60)	.11-.15 (.13)	.05-.09 (.07)	1-18 (7)	1-30 (14)	0.1 to 1.5 (0.7)	4-24 (13)	0-4 (1)	2.0 to ** (20)
5-9 yr	60-130 (100)	-15 to +110 (+60)	.12-.16 (.14)	.05-.09 (.07)	1-18 (7)	1-30 (14)	0.1 to 1.0 (0.7)	4-24 (13)	0-4 (1)	2.0 to ** (20)
9-12 yr	50-110 (80)	-15 to +110 (+60)	.12-.17 (.14)	.05-.09 (.07)	1-16 (6)	1-26 (16)	0 to 1.0 (0.5)	4-30 (14)	0-4 (1)	4.0 to ** (20)
12-16 yr	50-100 (75)	-15 to +110 (+60)	.12-.17 (.15)	.05-.09 (.07)	1-16 (5)	1-23 (14)	0 to 1.0 (0.3)	4-30 (14)	0-5 (1)	2.0 to ** (10)
> 16 yr	50-90 (70)	-15 to +110 (+60)	.12-.20 (.15)	.05-.10 (.08)	1-14 (3)	1-23 (10)	0 to 1.0 (0.3)	4-30 (10)	0-6 (1)	2.0 to ** (9)

\*If QRS duration is normal, add R + R' and compare total (R + R') with standards.  
 In the presence of complete bundle branch block criteria for ventricular hypertrophy are invalid.  
 \*\*R/S undefined because S can be equal to 0  
 #Minimum - maximum (mean)

QT INTERVAL				T WAVES				CHAMBER ENLARGEMENT			
HR	R-R Interval	QT Min. - Max.	Mean	Age	Upright	Inverted	ST SEGMENT	CHAMBER ENLARGEMENT			
40	1.5	0.38 - 0.50	(0.45)	0-5 days	I, II, V <sub>1</sub>	III, AVF, V <sub>1</sub>	<b>ST SEGMENT</b> Elevation-depression > 1mm = myocardial injury  Elevation without reciprocal depression = injury/pericarditis  Depression without reciprocal elevation = injury/digitalis/"normal" premature	RIGHT VENTRICULAR			
50	1.2	0.36 - 0.48	(0.43)	5 days - 2 years	I, II, AVF, V <sub>1</sub>	III, V <sub>1</sub>		LEFT VENTRICULAR			
60	1.0	0.34 - 0.46	(0.41)	2 years - teens	I, II, AVF, V <sub>1</sub> -V <sub>4</sub>	III		COMBINED VENTRICULAR			
70	0.86	0.32 - 0.43	(0.37)	Adults	I, II, III, AVF, V <sub>1</sub> , V <sub>2</sub> , V <sub>4</sub>	V <sub>1</sub> -V <sub>4</sub>		RIGHT ATRIAL			
80	0.75	0.29 - 0.40	(0.35)					LEFT ATRIAL			
90	0.67	0.27 - 0.37	(0.33)					COMBINED ATRIAL			
100	0.60	0.26 - 0.35	(0.30)				1. Meets criteria for RVH and in addition S V <sub>1</sub> or R V <sub>1</sub> exceeds <i>mean</i> for age 2. Meets criteria for LVH and in addition R V <sub>1</sub> or S V <sub>1</sub> exceeds <i>mean</i> for age 3. Equiphase large midprecordial voltage - weak criterion ("Katz-Wachtel") 65mm in 1 lead, 45mm in 4 leads				
120	0.50	0.24 - 0.32	(0.28)				1. Lead II > 0.09 sec duration 2. Lead V <sub>1</sub> : late negative deflection > 0.04 sec duration and > 1mm deflection				
150	0.40	0.21 - 0.28	(0.25)				Early portion of P wave peaked and > 2.5mm plus duration of P wave > 0.09 sec				
180	0.33	0.19 - 0.27	(0.23)								
200	0.30	0.18 - 0.25	(0.22)								

\*From combined sources. Revised July 1978 - Garson, Gillette, McNamara