

ORIGINAL ARTICLE

## Two simple methods to predict Pediatric Dose of Antituberculosis Medicines: Application of Allometry and Salisbury Rule

### Supplementary File

**Table S1: Predicted and observed Isoniazid dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed Dose (mg)	Predicted Dose (mg)		Ratio (predicted/observed)	
		Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=300 mg/day (adult BW = ≥34 kg)</b>					
<b>*Different doses for different body weights<sup>S1</sup></b>					
4-8 (6)	43	61	36	1.44	0.85
>8-12 (10)	109	97	60	0.89	0.55
>12-16 (14)	150	132	84	0.88	0.56
>16-25 (20)	198	181	120	0.86	0.57
>25-37 (30)	153	261	180	1.71	1.18
<b>**Pediatric dose<sup>S2</sup>=10 mg/kg, weight estimated</b>					
0-6 months (5)	50	52	30	1.04	0.60
7-12 months (8)	80	79	48	0.99	0.60
<b>Pediatric dose<sup>S3</sup>=10 mg/kg/kg; weight estimated</b>					
<5 years (10)	100	97	60	0.97	0.60
5-10 years (20)	200	181	120	0.91	0.60
>10 years (30)	300	261	180	0.87	0.60
<b>***Pediatric dose=10 mg/kg/day, Low birth weight, preterm and term neonates<sup>S4</sup></b>					
1.2 (slow)	12	14	7	1.20	0.60
1.2 (Intermediate)	12	22	11	1.80	0.90
1.2 (fast)	12	29	14	2.40	1.20
2.0 (slow)	20	23	12	1.14	0.60
2.0 (Intermediate)	20	34	18	1.71	0.90
2.0 (fast)	20	46	24	2.28	1.20

Notes: Numbers in parenthesis are body weights.

\*4-7.9 kg = 7.1 mg/kg; 8-11.9 kg = 10.9 mg/kg; 12-15.9 kg = 10.7 mg/kg; 16-24.9 kg = 10.6 mg/kg; >25-36.9 kg = 5.1 mg/kg.

\*\*Pediatric age and weights were used from Rifampicin for evaluation.

\*\*\*Adult doses used in this study were used by the authors Bekker et al (reference 4) based on the clearance values of isoniazid; slow = 300 mg, intermediate = 450 mg, fast = 600 mg.

**Table S2: Predicted and observed Pyrazinamide dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=30 mg/kg and maximum dose 1800 (adult BW=60 kg)<sup>55</sup></b>					
<44 (40)	1200	1250	1260	1.04	1.05
45-54 (50)	1500	1528	1440	1.02	0.96
<b>*Different doses for different body weights<sup>51</sup></b>					
4-8 (6)	128	227	216	1.76	1.68
>8-12 (10)	323	359	360	1.11	1.11
>12-16 (14)	444	486	504	1.09	1.14
>16-25 (20)	656	630	673	0.96	1.03
>25-37 (30)	846	965	1080	1.14	1.28
<b>**Pediatric dose<sup>52</sup>=35 mg/kg, weight estimated</b>					
0-6 months (5)	175	192	180	1.10	1.03
7-12 months (8)	280	294	288	1.05	1.03

Notes: Numbers in parenthesis are body weights.

\*4-7.9 kg = 21.4 mg/kg; 8-11.9 kg = 32.3 mg/kg; 12-15.9 kg = 31.7 mg/kg; 16-24.9 kg = 35.1 mg/kg; >25-36.9 kg = 28.2 mg/kg.

\*\*Pediatric age and weights were used from Rifampicin for evaluation.

**Table S3: Predicted and observed Rifampicin/Rifampin dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=10 mg/kg and maximum dose 600<sup>55</sup></b>					
40	400	417	420	1.04	1.05
50	500	509	576	1.02	1.15
<b>*Different doses for different body weights<sup>51</sup></b>					
4-8 (6)	64	82	72	1.27	1.12
>8-12 (10)	164	129	120	0.79	0.73
>12-16 (14)	225	175	168	0.78	0.75
>16-25 (20)	295	227	224	0.77	0.76
>25-37 (30)	309	348	360	1.13	1.17
<b>**Pediatric dose<sup>52</sup>=15 mg/kg, weight estimated</b>					
0-6 months (5)	75	64	60	0.85	0.80
7-12 months (8)	120	98	96	0.82	0.80

Notes: Numbers in parenthesis are body weights.

\*4-7.9 kg = 10.7 mg/kg; 8-11.9 kg = 16.4 mg/kg; 12-15.9 kg = 16.1 mg/kg; 16-24.9 kg = 15.8 mg/kg; >25-36.9 kg = 10.3 mg/kg.

**Table S4: Predicted and observed Ethambutol dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=15 mg/kg (adult BW=70 kg)<sup>56</sup></b>					
<37 (35)	525	536	650	1.02	1.24
37-43 (40)	600	604	700	1.01	1.17
43-50 (46)	690	685	760	0.99	1.10
50-57 (53)	795	779	830	0.98	1.04
57-64 (60)	900	870	900	0.97	1.00
64-71 (67)	1000	961	970	0.96	0.97
<b>*Different doses for different body weights<sup>51</sup></b>					
4-8 (6)	103	128	142	1.24	1.38
>8-12 (10)	170	159	182	0.94	1.07
>12-16 (14)	294	235	280	0.80	0.95
>16-25 (20)	438	305	374	0.70	0.85
>25-37 (30)	507	445	570	0.88	1.12
<b>**Pediatric Dose<sup>52</sup>=20 mg/kg, weight estimated</b>					
0-6 months (5)	100	93	100	0.93	1.01
7-12 months (8)	160	142	160	0.89	1.01

Notes: Numbers in parenthesis are body weights

\*4-7.9 kg = 14.5 mg/kg; >8-11.9 kg = 18.7 mg/kg; >12-15.9 kg = 21 mg/kg; >16-24.9 kg = 23.4 mg/kg; >25-37 kg = 17.8 mg/kg.

\*\*Pediatric age and weights were used from Rifampicin for evaluation.

**Table S5: Predicted and observed Levofloxacin dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=1000 mg/day (adult BW = &gt;45 kg), WHO<sup>1</sup>, (in the main text)</b>					
5-<10 (7)	150	156	140	1.04	0.93
10-<16 (13)	250	273	260	1.09	1.04
16-<24 (20)	350	402	400	1.15	1.14
24-<35 (30)	625	580	600	0.93	0.96
<b>Dose 15-20 mg mg/kg/day, WHO recommended dose<sup>57</sup></b>					
4.9-10.5 years (28)	504	545	560	1.08	1.11
<b>Dose 20-30 mg/kg/day, higher than WHO recommended dose<sup>57</sup></b>					
10.1-12.3 years (32)	800	614	620	0.77	0.78

Notes: Numbers in parenthesis are body weights

5-<10 kg = 150 mg/day, 10-<16 kg = 200-300 mg/day, 16-<24 kg = 300-400 mg/day, 24-<35 kg = 500-750 mg/day

**Table S6: Predicted and observed Rifampentine dose in children based on allometry or Salisbury Rule**

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
<b>Adult dose=900 mg (adult BW = &gt;50 kg)<sup>58</sup>, *Different doses for different body weights<sup>58</sup></b>					
2.6 years (12)	300	229	216	0.76	0.72
4.5 years (20)	450	362	360	0.80	0.80
7.4 years (28)	600	490	504	0.82	0.84
9.7 years (41)	750	691	639	0.92	0.85

Notes: Numbers in parenthesis are body weights

\*10-14 kg = 21-30 mg/kg, >14-25 kg = 18-32 mg/kg, >25-32 kg = 19-24 mg/kg, >32-50 kg = 15-23 mg/kg, >50 kg = <18 mg/kg or 900 maximum. Dose mentioned in column 2 is the total dose given to children by Weiner et al (reference 8).

Table 7: Predicted and observed Streptomycin dose in children based on allometry or Salisbury Rule

Weight (kg)	Observed	Predicted Dose (mg)		Ratio (predicted/observed)	
	Dose (mg)	Allometry	Salisbury	Allometry	Salisbury
Adult dose=15 mg/kg/day intramuscularly (adult BW=70 kg) <sup>59</sup>					
5	100	98	105	0.98	1.05
10	200	182	210	0.91	1.05
15	300	262	315	0.87	1.05
20	400	340	420	0.85	1.05
30	600	490	630	0.82	1.05

Notes: For infants and children streptomycin dose was 20-40 mg/kg daily intramuscularly. In the analysis, the lowest pediatric dose (20 mg/kg daily) was used. The weight bands were created by the author of this manuscript.

## References

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