

Table 1. Ampicillin Demographics/Baseline Evaluations

Group			Birth Weight (grams)	Gestational Age (weeks)	Serum Creatinine (mg/dL)	Post-natal Age (days)	Post-menstrual Age (weeks)	Weight (kg)
1	N	Valid	21.000	21.000	21.000	21.000	21.000	21.000
	Mean		1413.381	30.276	0.910	2.571	30.633	1.395
	Median		1430.000	32.300	0.800	1.000	32.400	1.430
	Std. Deviation		581.334	3.381	0.385	2.315	3.252	0.568
	Minimum		500.000	24.300	0.600	0.000	25.100	0.460
	Maximum		2600.000	34.000	2.500	7.000	34.400	2.600
	Percentiles	25	867.000	26.800	0.700	1.000	27.350	0.825
		50	1430.000	32.300	0.800	1.000	32.400	1.430
	75	1800.000	33.100	0.900	4.500	33.300	1.750	
2	N	Valid	7.000	7.000	7.000	7.000	7.000	7.000
	Mean		935.429	26.929	0.671	15.429	29.129	1.084
	Median		800.000	26.100	0.600	16.000	28.700	1.060
	Std. Deviation		415.421	2.476	0.236	4.036	2.625	0.405
	Minimum		603.000	25.000	0.500	9.000	26.900	0.660
	Maximum		1810.000	32.300	1.200	21.000	34.600	1.870
	Percentiles	25	645.000	25.600	0.600	13.000	26.900	0.700
		50	800.000	26.100	0.600	16.000	28.700	1.060
	75	1040.000	27.000	0.600	18.000	29.600	1.200	
3	N	Valid	27.000	27.000	27.000	27.000	27.000	27.000
	Mean		3145.926	38.189	0.589	2.926	38.611	3.193
	Median		3360.000	38.000	0.600	2.000	38.900	3.390
	Std. Deviation		576.323	1.974	0.238	2.645	1.891	0.749
	Minimum		2060.000	34.400	0.200	0.000	34.400	2.000
	Maximum		4000.000	41.400	1.300	7.000	42.400	5.420
	Percentiles	25	2620.000	36.600	0.400	1.000	37.300	2.540
		50	3360.000	38.000	0.600	2.000	38.900	3.390
	75	3570.000	39.900	0.600	5.000	40.000	3.610	
4	N	Valid	18.000	18.000	18.000	18.000	18.000	18.000
	Mean		2963.889	38.378	0.461	13.389	40.278	3.164
	Median		3010.000	38.800	0.450	12.500	40.100	2.950
	Std. Deviation		682.626	1.762	0.172	5.359	1.927	0.790
	Minimum		1700.000	35.300	0.200	8.000	36.400	1.900
	Maximum		4190.000	41.300	0.800	25.000	43.400	4.500
	Percentiles	25	2340.000	37.075	0.300	8.000	39.300	2.498
		50	3010.000	38.800	0.450	12.500	40.100	2.950

Group			Birth Weight (grams)	Gestational Age (weeks)	Serum Creatinine (mg/dL)	Post-natal Age (days)	Post- menstrual Age (weeks)	Weight (kg)
75			3345.000	40.000	0.600	17.250	42.025	3.843
TOTAL	N	Valid	73.000	73.000	73.000	73.000	73.000	73.000
	Mean		2390.671	34.879	0.658	6.603	35.818	2.466
	Median		2470.000	36.100	0.600	5.000	37.300	2.500
	Std. Deviation		1057.700	5.032	0.321	6.407	5.076	1.137
	Minimum		500.000	24.300	0.200	0.000	25.100	0.460
	Maximum		4190.000	41.400	2.500	25.000	43.400	5.420
	Percentiles	25	1480.000	32.350	0.500	1.000	32.550	1.510
		50	2470.000	36.100	0.600	5.000	37.300	2.500
		75	3310.000	39.050	0.800	10.000	39.700	3.420

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Table 2. Ampicillin Measured and Predicted Concentration Overall and by Age Group

Group			Time after dose (hr)	Observed Concentration (mcg/mL)	Population Predicted Concentration (mcg/mL)	Post Hoc Predicted Concentration (mcg/mL)	Residual	Weighted Residual	Conditional Residual	Conditional Weighted Residual
1	N	Valid	40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000
	Mean		5.510	194.780	181.805	184.985	12.960	0.171	14.205	0.119
	Median		4.725	187.500	162.500	181.500	22.450	0.269	22.750	0.276
	Std. Deviation		4.343	112.767	93.808	90.965	68.538	0.847	69.170	0.848
	Minimum		0.370	23.500	37.300	33.900	-221.000	-2.300	-220.000	-2.430
	Maximum		15.200	464.000	407.000	382.000	119.000	1.980	120.000	1.530
	Percentiles	25	1.150	114.250	105.500	115.500	-4.155	-0.073	-4.100	-0.076
		50	4.725	187.500	162.500	181.500	22.450	0.269	22.750	0.276
		75	9.723	269.750	271.000	264.250	57.525	0.679	58.300	0.655
2	N	Valid	13.000	13.000	13.000	13.000	13.000	13.000	13.000	13.000
	Mean		7.365	140.392	116.569	128.600	23.889	0.199	28.645	0.025
	Median		8.180	142.000	90.900	124.000	0.156	0.191	2.990	0.355
	Std. Deviation		3.464	101.846	59.494	71.607	80.356	1.309	84.678	1.230
	Minimum		1.000	16.300	48.600	29.400	-72.700	-1.770	-72.400	-1.840
	Maximum		11.900	402.000	272.000	264.000	222.000	2.710	236.000	2.060
	Percentiles	25	5.025	43.100	78.300	75.400	-36.300	-0.882	-32.850	-1.130
		50	8.180	142.000	90.900	124.000	0.156	0.191	2.990	0.355
		75	10.040	187.000	141.000	156.500	83.500	1.225	92.100	0.916
3	N	Valid	55.000	55.000	55.000	55.000	55.000	55.000	55.000	55.000
	Mean		5.240	130.459	122.929	128.182	7.496	0.276	8.965	0.146
	Median		4.270	107.000	113.000	119.000	-0.845	0.002	-0.632	0.034
	Std. Deviation		4.027	101.516	90.017	90.956	65.099	1.455	66.269	1.025
	Minimum		0.250	6.600	3.860	6.520	-221.000	-2.470	-221.000	-2.570
	Maximum		14.100	388.000	317.000	316.000	216.000	7.250	231.000	3.760
	Percentiles	25	1.540	42.700	40.000	41.800	-14.300	-0.434	-12.700	-0.424

Group			Time after dose (hr)	Observed Concentration (mcg/mL)	Population Predicted Concentration (mcg/mL)	Post Hoc Predicted Concentration (mcg/mL)	Residual	Weighted Residual	Conditional Residual	Conditional Weighted Residual
4	N	50	4.270	107.000	113.000	119.000	-0.845	0.002	-0.632	0.034
		75	7.830	205.000	222.000	225.000	37.200	0.725	42.100	0.673
	Valid	34.000	34.000	34.000	34.000	34.000	34.000	34.000	34.000	34.000
	Mean		5.014	96.812	100.988	92.648	-4.181	-0.017	-2.038	-0.160
	Median		5.060	67.000	82.100	68.900	-7.580	-0.179	-6.470	-0.189
	Std. Deviation		3.399	79.060	72.904	69.392	35.849	1.002	35.172	1.060
	Minimum		0.470	0.850	10.100	3.930	-63.700	-1.960	-61.500	-2.450
	Maximum		14.300	279.000	274.000	254.000	111.000	2.700	116.000	2.160
	Percentiles	25	2.033	38.325	46.475	37.000	-27.400	-0.446	-25.300	-0.475
	50	5.060	67.000	82.100	68.900	-7.580	-0.179	-6.470	-0.189	
	75	7.293	157.250	135.750	142.250	13.425	0.223	13.900	0.233	
TOTAL	N	Valid	142.000	142.000	142.000	142.000	142.000	142.000	142.000	142.000
	Mean		5.456	141.430	133.678	135.713	7.740	0.169	9.608	0.054
	Median		5.000	122.500	113.500	123.000	1.035	0.039	2.190	0.090
	Std. Deviation		3.944	105.566	89.829	90.461	61.957	1.184	63.066	1.005
	Minimum		0.250	0.850	3.860	3.930	-221.000	-2.470	-221.000	-2.570
	Maximum		15.200	464.000	407.000	382.000	222.000	7.250	236.000	3.760
	Percentiles	25	1.865	44.075	59.925	55.375	-15.200	-0.415	-13.325	-0.431
		50	5.000	122.500	113.500	123.000	1.035	0.039	2.190	0.090
		75	8.073	209.000	196.500	195.000	37.900	0.700	42.500	0.660

Table 3. Ampicillin Measured and Predicted Concentration by TAD

TAD Group			Time after dose (hr)	Observed Concentration (mcg/mL)	Population Predicted Concentration (mcg/mL)	Post Hoc Predicted Concentration (mcg/mL)	Residual	Weighted Residual	Conditional Residual	Conditional Weighted Residual	
< 1	N	Valid	24.000	24.000	24.000	24.000	24.000	24.000	24.000	24.000	
	Mean		0.574	247.392	256.708	251.708	-9.312	-0.063	-7.845	-0.069	
	Median		0.545	228.000	254.000	240.500	-6.780	-0.070	-6.512	-0.069	
	Std. Deviation		0.202	95.620	53.944	50.774	88.773	0.896	88.931	0.914	
	Minimum		0.250	43.400	157.000	189.000	-221.000	-2.300	-220.000	-2.430	
	Maximum		0.980	464.000	407.000	382.000	120.000	1.470	120.000	1.420	
	Percentiles	25		0.420	206.000	227.000	207.750	-37.075	-0.492	-35.775	-0.479
		50		0.545	228.000	254.000	240.500	-6.780	-0.070	-6.512	-0.069
		75		0.753	289.500	284.000	286.000	54.450	0.652	56.625	0.626
1 - 2	N	Valid	12.000	12.000	12.000	12.000	12.000	12.000	12.000	12.000	
	Mean		1.287	226.717	219.475	221.258	7.148	0.285	7.526	0.246	
	Median		1.175	237.000	254.500	251.000	25.450	0.326	26.250	0.322	
	Std. Deviation		0.316	113.740	93.999	92.011	85.890	1.168	85.904	1.159	
	Minimum		1.000	23.600	76.700	84.100	-221.000	-2.470	-221.000	-2.570	
	Maximum		1.920	361.000	365.000	362.000	104.000	1.780	104.000	1.660	
	Percentiles	25		1.013	126.500	107.375	114.250	-12.110	-0.171	-11.058	-0.168
		50		1.175	237.000	254.500	251.000	25.450	0.326	26.250	0.322
		75		1.563	336.250	285.250	289.250	60.525	1.164	60.700	1.138
2 - 3	N	Valid	10.000	10.000	10.000	10.000	10.000	10.000	10.000	10.000	
	Mean		2.419	196.300	191.300	186.500	5.046	-0.049	5.625	-0.107	
	Median		2.485	161.000	161.000	153.000	-9.320	-0.132	-9.180	-0.132	
	Std. Deviation		0.289	106.031	59.928	68.058	61.443	0.782	61.994	0.806	
	Minimum		2.070	73.000	131.000	120.000	-80.300	-1.330	-78.700	-1.650	
	Maximum		2.870	378.000	301.000	296.000	154.000	1.680	157.000	1.480	
	Percentiles	25		2.095	112.000	146.750	126.500	-26.400	-0.464	-26.225	-0.496

TAD Group			Time after dose (hr)	Observed Concentration (mcg/mL)	Population Predicted Concentration (mcg/mL)	Post Hoc Predicted Concentration (mcg/mL)	Residual	Weighted Residual	Conditional Residual	Conditional Weighted Residual		
3 - 6	N	Valid	50	161.000	161.000	153.000	-9.320	-0.132	-9.180	-0.132		
			75	309.000	236.250	262.750	28.950	0.323	29.250	0.335		
			40.000	40.000	40.000	40.000	40.000	40.000	40.000	40.000		
			Mean	4.609	139.730	122.103	128.610	17.596	0.255	19.747	0.202	
			Median	4.540	122.500	121.500	127.500	19.950	0.243	20.750	0.271	
			Std. Deviation	0.809	75.981	44.813	52.549	56.511	0.963	57.937	0.884	
			Minimum	3.150	23.500	21.100	31.100	-125.000	-1.900	-124.000	-2.210	
			Maximum	5.970	402.000	204.000	260.000	222.000	2.710	236.000	2.060	
			Percentiles	25	4.055	88.025	92.675	92.200	-10.193	-0.352	-9.915	-0.238
			50	4.540	122.500	121.500	127.500	19.950	0.243	20.750	0.271	
6 - 12	N	Valid	75	191.250	155.500	173.750	40.500	0.746	45.950	0.731		
			48.000	48.000	48.000	48.000	48.000	48.000	48.000	48.000		
			Mean	8.985	75.193	65.985	69.344	9.212	0.201	11.682	-0.014	
			Median	8.275	44.850	57.250	51.150	0.084	0.005	0.284	0.053	
			Std. Deviation	1.922	63.135	35.421	46.759	47.203	1.513	49.518	1.091	
			Minimum	6.080	6.600	15.400	6.520	-49.100	-1.960	-47.700	-2.380	
			Maximum	12.000	273.000	162.000	165.000	216.000	7.250	231.000	3.760	
			Percentiles	25	7.755	30.525	39.400	32.325	-11.525	-0.542	-10.573	-0.705
			50	8.275	44.850	57.250	51.150	0.084	0.005	0.284	0.053	
			75	11.200	111.500	91.050	108.750	27.750	0.508	28.275	0.471	
12 - 18	N	Valid	8.000	8.000	8.000	8.000	8.000	8.000	8.000	8.000		
			Mean	13.225	32.960	27.900	29.658	5.041	0.349	6.934	0.004	
			Median	12.800	19.450	15.300	15.860	-4.420	-0.282	-3.515	-0.303	
			Std. Deviation	1.156	43.690	25.070	36.451	25.372	1.338	26.938	1.404	
			Minimum	12.100	0.850	3.860	3.930	-13.700	-1.170	-12.600	-2.450	
			Maximum	15.200	136.000	72.800	114.000	63.100	2.700	69.100	2.160	

TAD Group		Time after dose (hr)	Observed Concentration (mcg/mL)	Population Predicted Concentration (mcg/mL)	Post Hoc Predicted Concentration (mcg/mL)	Residual	Weighted Residual	Conditional Residual	Conditional Weighted Residual
Percentiles	25	12.225	7.873	9.605	7.123	-11.463	-0.541	-10.058	-0.632
	50	12.800	19.450	15.300	15.860	-4.420	-0.282	-3.515	-0.303
	75	14.250	35.375	48.450	36.625	12.655	1.573	14.208	1.142

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Table 4. Ampicillin Pop PK Base Model Population Parameter Estimates and Variance

Model No.	Model Type	Parameter Estimates (Fixed Effects)	BSV-CL (%)	Residual Error Variance (%)
AMP_101_006	Base	V (L) = 0.402* WTKG CL (L/h) = 0.0752 * WTKG	43	32

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Table 5. Ampicillin Pop PK Final Model Population Parameter Estimates and Variance

Model No.	Model Type	Parameter Estimates (Fixed Effects)	BSV-CL (%)	Residual Error Variance (%)
AMP_102_006	Final	V (L) = 0.399* WTKG CL (L/h) = 0.078 * WTKG * (0.6/SCR) ^{0.428} (PMA/37) ^{1.34}	23	34

Table 6. Ampicillin Posthoc Individual Parameters by Age Group

Group			CL (L/hr/kg)	CL (L/hr)	V (L/kg)	V (L)	Half-life (hr)	
1	N	Valid	21.000	21.000	21.000	21.000	21.000	
	Mean		0.052	0.075	0.399	0.556	5.574	
	Median		0.055	0.075	0.399	0.570	5.030	
	Std. Deviation		0.012	0.039	0.000	0.227	1.402	
	Minimum		0.030	0.024	0.398	0.183	3.860	
	Maximum		0.071	0.157	0.400	1.040	9.350	
	Percentiles	25		0.044	0.037	0.399	0.329	4.650
		50		0.055	0.075	0.399	0.570	5.030
75			0.059	0.108	0.399	0.698	6.330	
2	N	Valid	7.000	7.000	7.000	7.000	7.000	
	Mean		0.059	0.068	0.399	0.432	5.233	
	Median		0.070	0.074	0.398	0.422	3.950	
	Std. Deviation		0.018	0.040	0.000	0.162	2.035	
	Minimum		0.033	0.024	0.398	0.263	3.760	
	Maximum		0.074	0.138	0.399	0.747	8.260	
	Percentiles	25		0.034	0.031	0.398	0.279	3.820
		50		0.070	0.074	0.398	0.422	3.950
75			0.072	0.084	0.399	0.478	8.070	
3	N	Valid	27.000	27.000	27.000	27.000	27.000	
	Mean		0.086	0.272	0.399	1.273	3.449	
	Median		0.086	0.257	0.399	1.350	3.230	
	Std. Deviation		0.021	0.088	0.001	0.299	0.960	
	Minimum		0.045	0.146	0.397	0.797	2.190	
	Maximum		0.126	0.461	0.400	2.160	6.200	
	Percentiles	25		0.070	0.200	0.398	1.010	2.660
		50		0.086	0.257	0.399	1.350	3.230
75			0.104	0.340	0.399	1.440	3.960	

Group			CL (L/hr/kg)	CL (L/hr)	V (L/kg)	V (L)	Half-life (hr)
4	N	Valid	18.000	18.000	18.000	18.000	18.000
	Mean		0.109	0.352	0.399	1.261	2.659
	Median		0.114	0.367	0.398	1.175	2.415
	Std. Deviation		0.020	0.125	0.001	0.314	0.681
	Minimum		0.059	0.134	0.397	0.757	2.120
	Maximum		0.130	0.587	0.400	1.790	4.680
	Percentiles	25	0.096	0.260	0.398	0.995	2.238
		50	0.114	0.367	0.398	1.175	2.415
		75	0.124	0.448	0.399	1.530	2.870
Total	N	Valid	73.000	73.000	73.000	73.000	73.000
	Mean		0.079	0.399	0.215	0.983	4.036
	Median		0.072	0.399	0.200	0.996	3.820
	Std. Deviation		0.029	0.001	0.144	0.453	1.663
	Minimum		0.030	0.397	0.024	0.183	2.120
	Maximum		0.130	0.400	0.587	2.160	9.350
	Percentiles	25	0.056	0.398	0.084	0.602	2.590
		50	0.072	0.399	0.200	0.996	3.820
		75	0.107	0.399	0.327	1.360	4.885

Table 7. Ampicillin Posthoc Exposure Thresholds

Group			AUCss (mcg/mL)	Cmaxss (mcg/mL)	Cminss (mcg/mL)	
1	N	Valid	21.000	21.000	21.000	
	Mean		4437.143	331.333	91.819	
	Median		4030.000	318.000	77.000	
	Std. Deviation		1671.742	66.015	63.149	
	Minimum		2860.000	244.000	35.800	
	Maximum		10300.000	563.000	320.000	
	Percentiles	25		3335.000	294.000	52.750
		50		4030.000	318.000	77.000
		75		4920.000	348.000	111.000
2	N	Valid	7.000	7.000	7.000	
	Mean		3412.857	273.857	64.271	
	Median		2670.000	266.000	33.400	
	Std. Deviation		1634.378	75.267	53.501	
	Minimum		1640.000	159.000	20.600	
	Maximum		5770.000	368.000	145.000	
	Percentiles	25		2250.000	223.000	27.200
		50		2670.000	266.000	33.400
		75		5580.000	364.000	137.000
3	N	Valid	27.000	27.000	27.000	
	Mean		3032.926	265.778	50.422	
	Median		2770.000	274.000	47.800	
	Std. Deviation		1364.954	66.932	40.570	
	Minimum		939.000	127.000	5.440	
	Maximum		6640.000	413.000	173.000	
	Percentiles	25		1770.000	226.000	11.900
		50		2770.000	274.000	47.800
		75		4190.000	314.000	80.200

Group			AUCss (mcg/mL)	Cmaxss (mcg/mL)	Cminss (mcg/mL)
4	N	Valid	18.000	18.000	18.000
	Mean		2490.556	236.611	35.634
	Median		2435.000	246.500	28.100
	Std. Deviation		839.744	46.461	28.200
	Minimum		1470.000	138.000	5.400
	Maximum		4900.000	302.000	129.000
	Percentiles	25	1915.000	212.250	21.900
		50	2435.000	246.500	28.100
		75	2855.000	264.500	43.050
Total	N	Valid	73.000	73.000	73.000
	Mean		3339.575	278.219	60.012
	Median		2900.000	281.000	47.300
	Std. Deviation		1550.982	71.593	51.072
	Minimum		939.000	127.000	5.400
	Maximum		10300.000	563.000	320.000
	Percentiles	25	2285.000	239.000	27.050
		50	2900.000	281.000	47.300
		75	4265.000	319.000	82.400

Table 8. Ampicillin Simulation Exposure Thresholds**AGE GROUP=1**

Variable	N	Mean	Std Dev	Coeff of Variation	50th Pctl	Minimum	Maximum
CMAXSS	480	169.24	30.89	18.25	163.03	123.66	297.34
CMINSS	480	47.42	30.57	64.46	41.17	3.35	174.32
CMINSSGT2	480	1	0	0	1	1	1
CMINSSGT8	480	0.98	0.13	13.03	1	0	1

AGE GROUP=2

Variable	N	Mean	Std Dev	Coeff of Variation	50th Pctl	Minimum	Maximum
CMAXSS	480	228.75	31.81	13.9	221.64	182.97	369.01
CMINSS	480	46.01	31.25	67.92	38.67	3.18	184.92
CMINSSGT2	480	1	0	0	1	1	1
CMINSSGT8	480	0.96	0.2	20.87	1	0	1

AGE GROUP=3

Variable	N	Mean	Std Dev	Coeff of Variation	50th Pctl	Minimum	Maximum
CMAXSS	480	154.35	21.18	13.72	150.02	120.8	293.86
CMINSS	480	33.9	20.77	61.28	29.53	3.05	172.53
CMINSSGT2	480	1	0	0	1	1	1
CMINSSGT8	480	0.98	0.15	15.33	1	0	1

AGE GROUP=4

Variable	N	Mean	Std Dev	Coeff of Variation	50th Pctl	Minimum	Maximum
CMAXSS	480	145.2	16.16	11.13	142.51	118.97	235.93
CMINSS	480	25.11	15.64	62.29	22.23	1.98	114.7
CMINSSGT2	480	1	0.05	4.57	1	0	1
CMINSSGT8	480	0.93	0.25	26.75	1	0	1

Variable	N	Mean	Std Dev	Coeff of Variation	50th Pctl	Minimum	Maximum
CMAXSS	1920	174.38	41.56	23.83	159.76	118.97	369.01
CMINSS	1920	38.11	27.01	70.89	30.94	1.98	184.92
CMINSSGT2	1920	1	0.02	2.28	1	0	1
CMINSSGT8	1920	0.96	0.19	19.6	1	0	1

Table 9. Ampicillin Pop PK Model Building

Model Description	Estimation	Population Model	OFV	θ_1 V	θ_2 CL	θ_3 COV1	θ_4 COV4	θ_5 COV5	ETA- CL	EPS
Weight (Base)	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG)	1283.99	0.4020	0.0752	-	-	-	0.1870	0.1050
GA, DOL, SCR	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * EXP(θ_3 * (SCR - 0.6) * (GA/36) ⁰⁴) * (θ_5 * DOL/7)	1364.48	0.5190	0.3450	0.3180	2.3200	0.4580	0.4610	0.1500
GA, DOL	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (GA/36) ⁰³ * (DOL/7) ⁰⁴	1239.17	0.4030	0.0844	1.8500	0.1970	-	0.0723	0.1110
Birth weight	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (BW/2500) ⁰³	1283.99	0.4019	0.0752	-	-	-	0.1872	0.1052
DOL	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (DOL/7) ⁰³	1277.88	0.4100	0.0786	0.1670	-	-	0.1670	0.1050
SCR	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (0.6/SCR) ⁰³	1249.14	0.4080	0.0734	0.6240	-	-	0.0817	0.1160
GA	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (GA/36) ⁰³	1257.18	0.3950	0.0801	1.7400	-	-	0.0960	0.1150
PMA	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (PMA/37) ⁰³	1250.51	0.3940	0.0805	1.9400	-	-	0.0844	0.1140
SCR, PMA (Final)	FOCE-I	V = θ_1 * (WTKG) CL = θ_2 * (WTKG) * (0.6/SCR) ⁰³ * (PMA/37) ⁰⁴	1228.8	0.3990	0.0775	0.4280	1.3400	-	0.0522	0.1150

Table 10. Ampicillin Model Validation – Bootstrap Performance

Item	Frequency
Total Bootstrap Samples	1000
Full Convergence	1000
Covariance Matrix	NA
Median (2.5, 97.5%) MOF	1223 (1110, 1330)

REDACTED

Table 11. Ampicillin Model Validation – Confidence Intervals

Parameter	Symbol	Point Estimate	%RSE	Bootstrap CI		
				2.5%	Median	97.5%
CL	θ_{CL}	0.078	4.37	0.071	0.077	0.084
V	θ_v	0.399	6.34	0.350	0.398	0.452
CL, SCR	θ_{CL-SCR}	0.428	21.40	0.235	0.433	0.639
CL, PMA	θ_{CL-PMA}	1.34	23.73	0.651	1.31	1.96
Inter-individual variance (CV%)						
CL	ω^2_{CL}	22.8	0.07	12.1	21.9	28.7
Residual variance (CV%)						
	σ^2	33.9	0.08	26.6	33.5	41.4

Table 12. PK Sample Collection Strategy

Sample #	6 hours	8 hours	12 hours
1	0	0	0
2	1 - 4	2 - 5	2 - 8
3	Pre	Pre	Pre
4 (elimination)	12 - 18	16 - 24	24 - 36

Pre = within 1 hour prior to administration of ampicillin

REDACTED