CHEST Online Supplement

CURB-65 Pneumonia Severity Assessment Adapted for Electronic Decision Support

Barbara E. Jones, MD; Jason Jones, PhD; Thomas Bewick, MD; Wei Shen Lim, MD; Dominik Aronsky, MD, PhD; Samuel M. Brown, MD; Wim G. Boersma, MD; Menno M. van der Eerden, MD; and Nathan C. Dean, MD, FCCP

 DOI: 10.1378/chest.10-1296

Instructions: Enter patient values into columns A through E.
Predicted mortality is provided in column U

Details: Age, BUN, and RR are transformed using the relevant "spline" lookup sheets.
The logistic regression estimate is produced in columns G through T.

Raw Patient Data					Spline Transformed Values											Results	
					Parmeter Estimates												
					-3.703	*0.000*	*0.000*	*1.965*	*1.349*	*5.093*	*3.315*	*0.000*	*2.304*	*0.000*	*0.261*	*-0.006*	
Age	**Confused**	**First BUN**	**First RR**	**First SBP**	**Int**	**Age1**	**Age2**	**Age3**	**Confused**	**BUN1**	**BUN2**	**BUN3**	**RR1**	**RR2**	**RR3**	**SBP**	**Estimate**	**Final**
62	**0**	**44**	**28**	**95**	1	0.414	0.442	###	0	0.046	0.605	-0.284	0.333	0.480	###	95	-1.790	**14.3%**
77	**0**	**14**	**20**	**100**	1	0.513	0.331	0.069	0	-0.313	0.720	-0.365	-0.121	0.667	###	100	-3.751	**2.3%**
85	**0**	**15**	**24**	**192**	1	0.354	0.338	0.284	0	-0.307	0.729	-0.370	0.155	0.566	###	192	-3.174	**4.0%**
83	**0**	**27**	**16**	**143**	1	0.404	0.333	0.228	0	-0.148	0.681	-0.342	-0.215	0.511	###	143	-3.186	**4.0%**
68	**0**	**15**	**18**	**152**	1	0.522	0.377	###	0	-0.307	0.729	-0.370	-0.220	0.649	###	152	-4.632	**1.0%**
59	**0**	**8**	**20**	**130**	1	0.337	0.477	###	0	-0.229	0.477	-0.242	-0.121	0.667	###	130	-5.004	**0.7%**
68	**0**	**11**	**24**	**182**	1	0.522	0.377	###	0	-0.298	0.641	-0.325	0.155	0.566	###	182	-4.181	**1.5%**
25	**0**	**10**	**20**	**109**	1	-0.069	0.201	###	0	-0.280	0.594	-0.302	-0.121	0.667	###	109	-4.445	**1.2%**
28	**0**	**10**	**24**	**128**	1	-0.093	0.281	###	0	-0.280	0.594	-0.302	0.155	0.566	###	128	-4.008	**1.8%**
48	**0**	**10**	**28**	**98**	1	0.035	0.562	###	0	-0.280	0.594	-0.302	0.333	0.480	###	98	-3.739	**2.3%**
55	**0**	**10**	**28**	**124**	1	0.224	0.520	###	0	-0.280	0.594	-0.302	0.333	0.480	###	124	-3.827	**2.1%**
44	**0**	**9**	**24**	**111**	1	-0.044	0.555	###	0	-0.257	0.539	-0.274	0.155	0.566	###	111	-4.314	**1.3%**
63	**0**	**32**	**16**	**75**	1	0.437	0.430	###	0	-0.086	0.657	-0.326	-0.215	0.511	###	75	-3.422	**3.2%**
75	**0**	**20**	**16**	**103**	1	0.533	0.336	0.020	0	-0.242	0.716	-0.362	-0.215	0.511	###	103	-3.717	**2.4%**
45	**0**	**8**	**20**	**128**	1	-0.027	0.559	###	0	-0.229	0.477	-0.242	-0.121	0.667	###	128	-5.144	**0.6%**
37	**0**	**19**	**20**	**107**	1	-0.111	0.476	###	0	-0.257	0.721	-0.365	-0.121	0.667	###	107	-4.238	**1.4%**
57	**0**	**46**	**16**	**100**	1	0.282	0.499	###	0	0.065	0.597	-0.277	-0.215	0.511	###	100	-3.163	**4.1%**
54	**0**	**14**	**28**	**102**	1	0.196	0.529	###	0	-0.313	0.720	-0.365	0.333	0.480	###	102	-3.458	**3.1%**
84	**0**	**26**	**22**	**97**	1	0.380	0.335	0.256	0	-0.161	0.686	-0.345	0.025	0.619	###	97	-2.362	**8.6%**
91	**1**	**55**	**36**	**100**	1	0.173	0.362	0.459	1	0.145	0.562	-0.243	0.421	0.379	0.080	100	1.537	**82.3%**
36	**0**	**11**	**20**	**107**	1	-0.114	0.459	###	0	-0.298	0.641	-0.325	-0.121	0.667	###	107	-4.692	**0.9%**

age	ageX1	ageX2	ageX3
18	0.00000	0.00000	0.00000
19	-0.01055	0.02929	-0.01873
20	-0.02102	0.05850	-0.03741
21	-0.03133	0.08758	-0.05601
22	-0.04141	0.11644	-0.07447
23	-0.05117	0.14502	-0.09275
24	-0.06054	0.17325	-0.11080
25	-0.06943	0.20105	-0.12858
26	-0.07778	0.22836	-0.14605
27	-0.08550	0.25511	-0.16315
28	-0.09251	0.28122	-0.17985
29	-0.09874	0.30662	-0.19610
30	-0.10410	0.33125	-0.21185
31	-0.10852	0.35503	-0.22705
32	-0.11192	0.37789	-0.24168
33	-0.11421	0.39977	-0.25567
34	-0.11533	0.42059	-0.26898
35	-0.11519	0.44027	-0.28157
36	-0.11372	0.45876	-0.29339
37	-0.11083	0.47598	-0.30440
38	-0.10644	0.49185	-0.31456
39	-0.10049	0.50631	-0.32381
40	-0.09289	0.51930	-0.33211
41	-0.08355	0.53072	-0.33942
42	-0.07241	0.54053	-0.34569
43	-0.05939	0.54864	-0.35087
44	-0.04439	0.55499	-0.35493
45	-0.02736	0.55950	-0.35782
46	-0.00825	0.56213	-0.35950
47	0.01277	0.56298	-0.35998
48	0.03548	0.56216	-0.35929
49	0.05969	0.55979	-0.35744
50	0.08518	0.55599	-0.35447
51	0.11174	0.55087	-0.35040
52	0.13915	0.54455	-0.34524
53	0.16721	0.53716	-0.33902
54	0.19571	0.52881	-0.33177
55	0.22443	0.51961	-0.32350
56	0.25317	0.50969	-0.31424
57	0.28171	0.49917	-0.30401
58	0.30984	0.48816	-0.29284
59	0.33736	0.47678	-0.28075
60	0.36405	0.46515	-0.26775
61	0.38970	0.45339	-0.25388
62	0.41410	0.44161	-0.23915
63	0.43704	0.42994	-0.22359
64	0.45831	0.41849	-0.20722

65	0.47770	0.40738	-0.19006
66	0.49500	0.39673	-0.17214
67	0.50999	0.38666	-0.15348
68	0.52247	0.37728	-0.13411
69	0.53223	0.36872	-0.11403
70	0.53911	0.36106	-0.09329
71	0.54314	0.35431	-0.07189
72	0.54443	0.34842	-0.04986
73	0.54306	0.34338	-0.02723
74	0.53914	0.33915	-0.00401
75	0.53276	0.33570	0.01977
76	0.52402	0.33301	0.04410
77	0.51300	0.33103	0.06895
78	0.49980	0.32975	0.09429
79	0.48452	0.32912	0.12011
80	0.46725	0.32913	0.14639
81	0.44809	0.32974	0.17311
82	0.42713	0.33092	0.20023
83	0.40447	0.33264	0.22775
84	0.38020	0.33488	0.25563
85	0.35441	0.33759	0.28386
86	0.32720	0.34075	0.31242
87	0.29867	0.34434	0.34128
88	0.26890	0.34832	0.37042
89	0.23800	0.35265	0.39982
90	0.20606	0.35732	0.42946
91	0.17318	0.36229	0.45932
92	0.13944	0.36753	0.48938
93	0.10494	0.37301	0.51960
94	0.06978	0.37870	0.54998
95	0.03405	0.38457	0.58049
96	-0.00215	0.39059	0.61111
97	-0.03873	0.39673	0.64181
98	-0.07560	0.40296	0.67258
99	-0.11265	0.40925	0.70339
100	-0.14229	0.41428	0.72805
101	-0.16601	0.41831	0.74777
102	-0.18498	0.42153	0.76354
103	-0.20016	0.42410	0.77616
104	-0.21230	0.42617	0.78626
105	-0.22201	0.42781	0.79434
106	-0.22978	0.42913	0.80080
107	-0.23600	0.43019	0.80597
108	-0.24097	0.43103	0.81010
109	-0.24495	0.43171	0.81341
110	-0.24813	0.43225	0.81606
111	-0.25068	0.43268	0.81818
112	-0.25272	0.43303	0.81987

113	-0.25435	0.43330	0.82123
114	-0.25565	0.43353	0.82231
115	-0.25669	0.43370	0.82318
116	-0.25753	0.43384	0.82387
117	-0.25819	0.43396	0.82443
118	-0.25873	0.43405	0.82487
119	-0.25915	0.43412	0.82523
120	-0.25950	0.43418	0.82551

FirstBUN	bunX1	bunX2	bunX3
0	0.02367	-0.04806	0.02438
1	0.01691	-0.03433	0.01741
2	0.00000	0.00000	0.00000
3	-0.04226	0.08582	-0.04353
4	-0.08384	0.17055	-0.08651
5	-0.12404	0.25308	-0.12838
6	-0.16217	0.33232	-0.16857
7	-0.19755	0.40717	-0.20654
8	-0.22948	0.47655	-0.24173
9	-0.25729	0.53934	-0.27358
10	-0.28027	0.59445	-0.30154
11	-0.29775	0.64080	-0.32505
12	-0.30903	0.67727	-0.34355
13	-0.31371	0.70323	-0.35672
14	-0.31258	0.71988	-0.36515
15	-0.30667	0.72887	-0.36969
16	-0.29707	0.73185	-0.37114
17	-0.28482	0.73046	-0.37036
18	-0.27099	0.72638	-0.36816
19	-0.25663	0.72122	-0.36536
20	-0.24240	0.71603	-0.36250
21	-0.22836	0.71089	-0.35960
22	-0.21450	0.70580	-0.35667
23	-0.20082	0.70075	-0.35371
24	-0.18733	0.69574	-0.35072
25	-0.17401	0.69079	-0.34769
26	-0.16087	0.68587	-0.34464
27	-0.14792	0.68101	-0.34155
28	-0.13514	0.67619	-0.33843
29	-0.12254	0.67141	-0.33528
30	-0.11011	0.66667	-0.33210
31	-0.09787	0.66199	-0.32889
32	-0.08579	0.65734	-0.32565
33	-0.07389	0.65274	-0.32238
34	-0.06217	0.64819	-0.31907
35	-0.05061	0.64367	-0.31574
36	-0.03923	0.63920	-0.31238
37	-0.02802	0.63478	-0.30899
38	-0.01698	0.63039	-0.30556
39	-0.00611	0.62605	-0.30211
40	0.00459	0.62176	-0.29863
41	0.01513	0.61750	-0.29512
42	0.02550	0.61329	-0.29158
43	0.03570	0.60912	-0.28801
44	0.04574	0.60499	-0.28442
45	0.05561	0.60090	-0.28079
46	0.06532	0.59685	-0.27713

For missing values:
BUN Imputation:

age<=31	10
age<=49	11
age<=64	14
age>64	17

47	0.07487	0.59284	-0.27345
48	0.08425	0.58888	-0.26974
49	0.09348	0.58495	-0.26600
50	0.10254	0.58107	-0.26223
51	0.11144	0.57723	-0.25844
52	0.12019	0.57342	-0.25461
53	0.12878	0.56966	-0.25076
54	0.13721	0.56594	-0.24688
55	0.14548	0.56225	-0.24298
56	0.15360	0.55861	-0.23904
57	0.16157	0.55500	-0.23508
58	0.16938	0.55143	-0.23110
59	0.17704	0.54790	-0.22708
60	0.18454	0.54441	-0.22304
61	0.19190	0.54096	-0.21898
62	0.19910	0.53755	-0.21488
63	0.20616	0.53417	-0.21077
64	0.21306	0.53083	-0.20662
65	0.21982	0.52753	-0.20245
66	0.22643	0.52427	-0.19825
67	0.23289	0.52104	-0.19403
68	0.23921	0.51785	-0.18978
69	0.24539	0.51470	-0.18551
70	0.25142	0.51158	-0.18121
71	0.25730	0.50850	-0.17689
72	0.26305	0.50545	-0.17254
73	0.26865	0.50244	-0.16817
74	0.27411	0.49947	-0.16377
75	0.27944	0.49653	-0.15935
76	0.28462	0.49362	-0.15490
77	0.28967	0.49075	-0.15043
78	0.29457	0.48792	-0.14594
79	0.29935	0.48512	-0.14142
80	0.30398	0.48236	-0.13688
81	0.30848	0.47962	-0.13231
82	0.31285	0.47693	-0.12773
83	0.31708	0.47426	-0.12311
84	0.32118	0.47163	-0.11848
85	0.32515	0.46904	-0.11382
86	0.32899	0.46647	-0.10914
87	0.33270	0.46394	-0.10444
88	0.33628	0.46144	-0.09971
89	0.33973	0.45898	-0.09496
90	0.34306	0.45654	-0.09019
91	0.34625	0.45414	-0.08540
92	0.34932	0.45177	-0.08058
93	0.35227	0.44943	-0.07574
94	0.35509	0.44712	-0.07088

95	0.35779	0.44485	-0.06600
96	0.36036	0.44260	-0.06110
97	0.36282	0.44039	-0.05618
98	0.36515	0.43821	-0.05123
99	0.36736	0.43605	-0.04627
100	0.36945	0.43393	-0.04128
101	0.37143	0.43184	-0.03628
102	0.37329	0.42977	-0.03125
103	0.37502	0.42774	-0.02620
104	0.37665	0.42573	-0.02113
105	0.37816	0.42376	-0.01604
106	0.37955	0.42181	-0.01094
107	0.38083	0.41989	-0.00581
108	0.38200	0.41801	-0.00066
109	0.38305	0.41614	0.00451
110	0.38400	0.41431	0.00970
111	0.38483	0.41251	0.01490
112	0.38556	0.41073	0.02013
113	0.38617	0.40898	0.02537
114	0.38668	0.40726	0.03064
115	0.38708	0.40556	0.03592
116	0.38737	0.40389	0.04122
117	0.38756	0.40225	0.04654
118	0.38764	0.40063	0.05187
119	0.38762	0.39905	0.05723
120	0.38750	0.39748	0.06260
121	0.38728	0.39594	0.06800
122	0.38695	0.39443	0.07340
123	0.38652	0.39295	0.07883
124	0.38600	0.39148	0.08428
125	0.38537	0.39005	0.08974
126	0.38465	0.38864	0.09522
127	0.38382	0.38725	0.10071
128	0.38291	0.38589	0.10622
129	0.38189	0.38455	0.11175
130	0.38079	0.38323	0.11730
131	0.37958	0.38194	0.12286
132	0.37829	0.38068	0.12844
133	0.37690	0.37943	0.13403
134	0.37542	0.37821	0.13965
135	0.37385	0.37701	0.14527
136	0.37219	0.37584	0.15091
137	0.37044	0.37469	0.15657
138	0.36860	0.37356	0.16225
139	0.36668	0.37245	0.16793
140	0.36467	0.37136	0.17364
141	0.36257	0.37030	0.17936
142	0.36038	0.36925	0.18509

143	0.35812	0.36823	0.19084
144	0.35577	0.36723	0.19660
145	0.35333	0.36625	0.20238
146	0.35082	0.36529	0.20817
147	0.34822	0.36435	0.21398
148	0.34555	0.36344	0.21980
149	0.34279	0.36254	0.22563
150	0.34009	0.36166	0.23135
151	0.33745	0.36079	0.23695
152	0.33485	0.35995	0.24244
153	0.33231	0.35912	0.24782
154	0.32982	0.35831	0.25309
155	0.32738	0.35751	0.25826
156	0.32499	0.35673	0.26333
157	0.32265	0.35597	0.26829
158	0.32035	0.35522	0.27315
159	0.31810	0.35448	0.27792
160	0.31589	0.35376	0.28259
161	0.31373	0.35306	0.28717
162	0.31161	0.35237	0.29165
163	0.30954	0.35169	0.29605
164	0.30750	0.35103	0.30036
165	0.30551	0.35038	0.30458
166	0.30355	0.34974	0.30872
167	0.30164	0.34911	0.31277
168	0.29976	0.34850	0.31675
169	0.29792	0.34790	0.32064
170	0.29612	0.34732	0.32446
171	0.29435	0.34674	0.32820
172	0.29262	0.34617	0.33187
173	0.29092	0.34562	0.33546
174	0.28926	0.34508	0.33898
175	0.28763	0.34455	0.34243
176	0.28604	0.34403	0.34581
177	0.28447	0.34352	0.34912
178	0.28294	0.34302	0.35237
179	0.28143	0.34253	0.35555
180	0.27996	0.34205	0.35867
181	0.27852	0.34158	0.36173
182	0.27710	0.34111	0.36472
183	0.27572	0.34066	0.36766
184	0.27436	0.34022	0.37053
185	0.27303	0.33978	0.37335
186	0.27172	0.33936	0.37611
187	0.27044	0.33894	0.37882
188	0.26919	0.33853	0.38148
189	0.26796	0.33813	0.38408
190	0.26676	0.33774	0.38662

191	0.26558	0.33736	0.38912
192	0.26442	0.33698	0.39157
193	0.26329	0.33661	0.39397
194	0.26218	0.33625	0.39632
195	0.26109	0.33589	0.39862
196	0.26003	0.33555	0.40088
197	0.25898	0.33520	0.40309
198	0.25796	0.33487	0.40526
199	0.25696	0.33454	0.40738
200	0.25597	0.33422	0.40946
201	0.25501	0.33391	0.41150
202	0.25407	0.33360	0.41350
203	0.25314	0.33330	0.41546
204	0.25223	0.33300	0.41738
205	0.25134	0.33271	0.41926
206	0.25047	0.33243	0.42111
207	0.24962	0.33215	0.42292
208	0.24878	0.33188	0.42469
209	0.24796	0.33161	0.42642
210	0.24716	0.33135	0.42812
211	0.24637	0.33109	0.42979
212	0.24560	0.33084	0.43143
213	0.24484	0.33059	0.43303
214	0.24410	0.33035	0.43460
215	0.24338	0.33012	0.43613
216	0.24267	0.32988	0.43764
217	0.24197	0.32966	0.43912
218	0.24128	0.32943	0.44056
219	0.24062	0.32921	0.44198
220	0.23996	0.32900	0.44337
221	0.23932	0.32879	0.44473
222	0.23868	0.32858	0.44607
223	0.23807	0.32838	0.44738
224	0.23746	0.32819	0.44866
225	0.23687	0.32799	0.44992
226	0.23629	0.32780	0.45115
227	0.23572	0.32762	0.45235
228	0.23516	0.32743	0.45354
229	0.23461	0.32726	0.45469
230	0.23407	0.32708	0.45583
231	0.23355	0.32691	0.45694
232	0.23303	0.32674	0.45803
233	0.23253	0.32658	0.45910
234	0.23203	0.32642	0.46015
235	0.23155	0.32626	0.46118
236	0.23107	0.32610	0.46218
237	0.23061	0.32595	0.46317
238	0.23015	0.32580	0.46414

239	0.22971	0.32566	0.46508
240	0.22927	0.32551	0.46601
241	0.22884	0.32537	0.46692
242	0.22842	0.32524	0.46781
243	0.22800	0.32510	0.46868
244	0.22760	0.32497	0.46954
245	0.22720	0.32484	0.47038
246	0.22682	0.32471	0.47120
247	0.22644	0.32459	0.47201
248	0.22606	0.32447	0.47280
249	0.22570	0.32435	0.47357
250	0.22534	0.32423	0.47433

FirstRR	rrX1	rrX2	rrX3
5	0.04430	-0.09470	0.05014
6	0.04419	-0.09447	0.05001
7	0.04392	-0.09389	0.04971
8	0.04324	-0.09243	0.04893
9	0.04153	-0.08879	0.04701
10	0.03727	-0.07968	0.04218
11	0.02662	-0.05692	0.03013
12	0.00000	0.00000	0.00000
13	-0.06656	0.14229	-0.07533
14	-0.12799	0.27873	-0.14756
15	-0.17915	0.40347	-0.21360
16	-0.21492	0.51067	-0.27035
17	-0.23015	0.59447	-0.31472
18	-0.21971	0.64903	-0.34360
19	-0.18092	0.67101	-0.35514
20	-0.12086	0.66715	-0.35238
21	-0.04904	0.64669	-0.33961
22	0.02499	0.61886	-0.32110
23	0.09334	0.59137	-0.30043
24	0.15461	0.56570	-0.27835
25	0.20904	0.54180	-0.25491
26	0.25684	0.51961	-0.23015
27	0.29825	0.49907	-0.20413
28	0.33349	0.48012	-0.17687
29	0.36280	0.46269	-0.14844
30	0.38641	0.44675	-0.11887
31	0.40453	0.43221	-0.08820
32	0.41740	0.41903	-0.05650
33	0.42525	0.40714	-0.02380
34	0.42830	0.39649	0.00986
35	0.42679	0.38702	0.04443
36	0.42094	0.37867	0.07986
37	0.41097	0.37138	0.11610
38	0.39713	0.36509	0.15312
39	0.37964	0.35974	0.19087
40	0.35872	0.35527	0.22930
41	0.33460	0.35163	0.26836
42	0.30752	0.34876	0.30801
43	0.27769	0.34659	0.34821
44	0.24536	0.34507	0.38891
45	0.21074	0.34414	0.43006
46	0.17407	0.34374	0.47162
47	0.13557	0.34380	0.51354
48	0.09976	0.34387	0.55253
49	0.06646	0.34393	0.58879
50	0.03549	0.34398	0.62251
51	0.00669	0.34404	0.65387

52	-0.02009	0.34408	0.68304
53	-0.04500	0.34413	0.71016
54	-0.06816	0.34417	0.73539
55	-0.08971	0.34421	0.75885
56	-0.10974	0.34425	0.78066
57	-0.12838	0.34428	0.80095
58	-0.14571	0.34431	0.81982
59	-0.16182	0.34434	0.83737
60	-0.17681	0.34437	0.85369
61	-0.19075	0.34439	0.86887
62	-0.20371	0.34442	0.88299
63	-0.21577	0.34444	0.89612
64	-0.22698	0.34446	0.90832
65	-0.23741	0.34448	0.91968
66	-0.24710	0.34449	0.93024
67	-0.25612	0.34451	0.94006
68	-0.26451	0.34452	0.94919
69	-0.27231	0.34454	0.95768
70	-0.27956	0.34455	0.96558
71	-0.28631	0.34456	0.97293
72	-0.29258	0.34458	0.97976
73	-0.29842	0.34459	0.98611
74	-0.30384	0.34460	0.99202
75	-0.30889	0.34460	0.99752
76	-0.31358	0.34461	1.00263
77	-0.31795	0.34462	1.00738
78	-0.32201	0.34463	1.01180
79	-0.32578	0.34464	1.01591
80	-0.32929	0.34464	1.01974