

Supplemental Materials

Linear mixed-effects model fit by REML

Data: t2
AIC BIC logLik
149861.2 150226.9 -74889.62

Random effects:

Formula: ~date | idpat
Structure: General positive-definite, Log-Cholesky parametrization
StdDev Corr
(Intercept) 1.04244198 (Intr)
date 0.06148531 -0.552
Residual 0.66376887

Fixed effects: list(my.formula)

	Value	Std.Error	DF	t-value	p-value
(Intercept)	-0.0396223	0.024804933	40959	-1.59736	0.1102
date	-0.3597227	0.011351583	40959	-31.68921	0.0000
date:exposure_2	0.1692587	0.013222788	40959	12.80053	0.0000
date:exposure_3	0.0920916	0.023725094	40959	3.88161	0.0001
date:baseline_hbald	-0.0304261	0.000509866	40959	-59.67473	0.0000
date:baseline_bmi	0.0002438	0.000124843	40959	1.95284	0.0508
date:sex	0.0082230	0.001443833	40959	5.69528	0.0000
date:age	-0.0007498	0.000066133	40959	-11.33806	0.0000
date:X3	0.0740168	0.002357832	40959	31.39189	0.0000
date:X6	-0.0530411	0.002849846	40959	-18.61194	0.0000
date:X9	-0.0087072	0.001733425	40959	-5.02314	0.0000
date:X12	-0.0067790	0.001256346	40959	-5.39584	0.0000
date:X15	-0.0021699	0.001059605	40959	-2.04788	0.0406
date:X18	-0.0003382	0.000961600	40959	-0.35168	0.7251
date:X21	-0.0011069	0.000915009	40959	-1.20970	0.2264
date:exposure_2:baseline_hbald	-0.0049984	0.000850579	40959	-5.87651	0.0000
date:exposure_2:baseline_bmi	-0.0009154	0.000193550	40959	-4.72947	0.0000
date:exposure_2:sex	-0.0148567	0.002303493	40959	-6.44965	0.0000
date:exposure_2:age	-0.0001083	0.000108986	40959	-0.99367	0.3204
date:exposure_3:baseline_hbald	-0.0015656	0.001698609	40959	-0.92170	0.3567
date:exposure_3:baseline_bmi	0.0007293	0.000348503	40959	2.09252	0.0364
date:exposure_3:sex	-0.0051960	0.004369131	40959	-1.18926	0.2343
date:exposure_3:age	0.0001522	0.000210811	40959	0.72193	0.4703
date:exposure_2:X3	-0.0437612	0.003057789	40959	-14.31138	0.0000
date:exposure_2:X6	0.0398737	0.004341362	40959	9.18461	0.0000
date:exposure_2:X9	0.0037128	0.002918703	40959	1.27208	0.2034
date:exposure_2:X12	-0.0006382	0.002110446	40959	-0.30240	0.7624
date:exposure_2:X15	0.0014935	0.001787501	40959	0.83551	0.4034
date:exposure_2:X18	-0.0007757	0.001615890	40959	-0.48006	0.6312
date:exposure_2:X21	0.0008197	0.001553428	40959	0.52767	0.5977
date:exposure_3:X3	-0.0279548	0.004772579	40959	-5.85739	0.0000
date:exposure_3:X6	0.0161465	0.006880409	40959	2.34674	0.0189
date:exposure_3:X9	0.0110690	0.004794213	40959	2.30884	0.0210
date:exposure_3:X12	-0.0007091	0.003694135	40959	-0.19194	0.8478
date:exposure_3:X15	0.0006838	0.003329546	40959	0.20537	0.8373
date:exposure_3:X18	0.0013442	0.003087906	40959	0.43532	0.6633
date:exposure_3:X21	-0.0019513	0.003138572	40959	-0.62172	0.5341

eTable1a. Fixed effects components of model to predict hbald change. When exposure_2 and exposure_3 are 0, model is predicting response to sulfonylurea. When exposure_2 = 1 and exposure_3 = 0, the model predicts response to thiazolidinedione. When exposure_2 = 0 and exposure_3 = 1, the model predicts response to sulfonylurea. Colons denote interaction term (r syntax), as is usually denoted by an asterisk in other formats.

Linear mixed-effects model fit by REML

Data: t2
AIC BIC logLik
58218.17 58514.62 -29068.09

Random effects:

Formula: ~date | idpat
Structure: General positive-definite, Log-Cholesky parametrization
StdDev Corr
(Intercept) 2.6721997 (Intr)
date 0.2547603 0.04
Residual 2.5950424

Fixed effects: list(my.formula)

	Value	Std.Error	DF	t-value	p-value
(Intercept)	0.0593326	0.18397781	5194	0.322499	0.7471
date	0.6603080	0.09711530	5194	6.799218	0.0000
date:exposure_2	-0.4680743	0.12377570	5194	-3.781633	0.0002
date:exposure_3	-0.7926975	0.22238533	5194	-3.564522	0.0004
date:baseline_hb1ac	0.0247700	0.00481189	5194	5.147673	0.0000
date:baseline_bmi	-0.0059192	0.00117933	5194	-5.019084	0.0000
date:sex	-0.0446248	0.01378166	5194	-3.237982	0.0012
date:age	-0.0023288	0.00063286	5194	-3.679870	0.0002
date:X3	-0.0218624	0.02113054	5194	-1.034634	0.3009
date:X6	-0.0085521	0.02696790	5194	-0.317122	0.7512
date:X9	0.0255139	0.01738184	5194	1.467850	0.1422
date:X12	-0.0107077	0.01308922	5194	-0.818052	0.4134
date:X15	0.0102046	0.01139744	5194	0.895341	0.3706
date:X18	-0.0033149	0.01046885	5194	-0.316640	0.7515
date:X21	0.0074621	0.01033317	5194	0.722148	0.4702
date:exposure_2:baseline_hb1ac	0.0030626	0.00733385	5194	0.417601	0.6763
date:exposure_2:baseline_bmi	0.0046314	0.00184163	5194	2.514843	0.0119
date:exposure_2:sex	0.0789275	0.02117138	5194	3.728030	0.0002
date:exposure_2:age	0.0009475	0.00104312	5194	0.908301	0.3638
date:exposure_3:baseline_hb1ac	-0.0284369	0.01597693	5194	-1.779871	0.0752
date:exposure_3:baseline_bmi	-0.0048694	0.00315413	5194	-1.543814	0.1227
date:exposure_3:sex	-0.0612017	0.04011611	5194	-1.525614	0.1272
date:exposure_3:age	0.0038339	0.00207010	5194	1.852036	0.0641
date:exposure_2:X3	0.0829318	0.03037574	5194	2.730197	0.0064
date:exposure_2:X6	-0.0593989	0.04294637	5194	-1.383094	0.1667
date:exposure_2:X9	-0.0268357	0.02885047	5194	-0.930166	0.3523
date:exposure_2:X12	-0.0052822	0.02147625	5194	-0.245957	0.8057
date:exposure_2:X15	0.0032429	0.01846781	5194	0.175597	0.8606
date:exposure_2:X18	0.0188146	0.01695207	5194	1.109868	0.2671
date:exposure_2:X21	-0.0165411	0.01689197	5194	-0.979226	0.3275
date:exposure_3:X3	0.1460181	0.04539083	5194	3.216908	0.0013
date:exposure_3:X6	-0.1409086	0.06599332	5194	-2.135195	0.0328
date:exposure_3:X9	0.0305848	0.04916083	5194	0.622137	0.5339
date:exposure_3:X12	-0.0242042	0.03779280	5194	-0.640445	0.5219
date:exposure_3:X15	0.0004284	0.03306475	5194	0.012957	0.9897
date:exposure_3:X18	-0.0034809	0.02925160	5194	-0.118999	0.9053
date:exposure_3:X21	-0.0085668	0.02913126	5194	-0.294075	0.7687

eTable1b. Fixed effects components of model to predict weight change. When exposure_2 and exposure_3 are 0, model is predicting response to sulfonylurea. When exposure_2 = 1 and exposure_3 = 0, the model predicts response to thiazolidinedione. When exposure_2 = 0 and exposure_3 = 1, the model predicts response to sulfonylurea. Colons denote interaction term (r syntax), as is usually denoted by an asterisk in other formats.

```
Call:
glm(formula = my.formula, family = binomial, data = t2)
```

```
Deviance Residuals:
    Min       1Q   Median       3Q      Max
-1.9834 -0.9239 -0.6258  1.1414  3.6566
```

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Coefficients:
              Estimate Std. Error z value Pr(>|z|)
(Intercept)   -1.9136888   0.2694827   -7.101 1.24e-12 ***
exposure_2    -3.3891164   0.5071199   -6.683 2.34e-11 ***
date           0.4860849   0.0500270    9.716 < 2e-16 ***
exposure_3     0.8114058   0.7629484    1.064 0.287549
baseline_hbaldc -0.7963668   0.0258031  -30.863 < 2e-16 ***
baseline_bmi   -0.0143971   0.0046311   -3.109 0.001879 **
sex            -0.4567543   0.0520006   -8.784 < 2e-16 ***
age            0.0070139   0.0023794    2.948 0.003201 **
exposure_2:date 0.2067120   0.0975825    2.118 0.034147 *
date:exposure_3 -0.0226935   0.1461997   -0.155 0.876646
exposure_2:baseline_hbaldc -0.1140420   0.0504240   -2.262 0.023718 *
date:baseline_hbaldc 0.0184237   0.0018505    9.956 < 2e-16 ***
exposure_2:baseline_bmi 0.0475246   0.0080454    5.907 3.48e-09 ***
date:baseline_bmi 0.0005025   0.0003445    1.458 0.144751
exposure_2:sex  0.7162803   0.0919294    7.792 6.61e-15 ***
date:sex        0.0085675   0.0038644    2.217 0.026619 *
exposure_2:age  0.0021790   0.0043786    0.498 0.618733
date:age        0.0006271   0.0001792    3.500 0.000466 ***
exposure_3:baseline_hbaldc -0.2489308   0.0831191   -2.995 0.002746 **
exposure_3:baseline_bmi -0.0104562   0.0118141   -0.885 0.376127
exposure_3:sex  0.4808382   0.1473822    3.263 0.001104 **
exposure_3:age  -0.0226241   0.0071506   -3.164 0.001556 **
date:X3        -0.1010083   0.0097982  -10.309 < 2e-16 ***
date:X6        0.0727579   0.0098303    7.401 1.35e-13 ***
date:X9        0.0141392   0.0050105    2.822 0.004774 **
date:X12       0.0014421   0.0036769    0.392 0.694902
date:X15       0.0114348   0.0030898    3.701 0.000215 ***
date:X18      -0.0036732   0.0026826   -1.369 0.170916
date:X21       0.0017304   0.0024195    0.715 0.474471
exposure_2:date:baseline_hbaldc 0.0023000   0.0033869    0.679 0.497090
exposure_2:date:baseline_bmi -0.0003351   0.0005724   -0.585 0.558282
exposure_2:date:sex -0.0133682   0.0065772   -2.033 0.042102 *
exposure_2:date:age 0.0000740   0.0003145    0.235 0.813980
date:exposure_3:baseline_hbaldc 0.0144271   0.0062010    2.327 0.019988 *
date:exposure_3:baseline_bmi 0.0008656   0.0009673    0.895 0.370852
date:exposure_3:sex -0.0261468   0.0119420   -2.189 0.028562 *
date:exposure_3:age 0.0016081   0.0005908    2.722 0.006492 **
exposure_2:date:X3 0.0015434   0.0186810    0.083 0.934156
exposure_2:date:X6 -0.0100287   0.0180165   -0.557 0.577773
exposure_2:date:X9 -0.0059653   0.0086338   -0.691 0.489612
exposure_2:date:X12 0.0117091   0.0062068    1.887 0.059226 .
exposure_2:date:X15 -0.0059533   0.0051250   -1.162 0.245390
exposure_2:date:X18 0.0070674   0.0043996    1.606 0.108193
exposure_2:date:X21 -0.0005483   0.0039387   -0.139 0.889281
date:exposure_3:X3 -0.0117806   0.0280391   -0.420 0.674376
date:exposure_3:X6 0.0165463   0.0277452    0.596 0.550930
date:exposure_3:X9 -0.0065773   0.0139927   -0.470 0.638317
date:exposure_3:X12 -0.0035593   0.0106597   -0.334 0.738453
date:exposure_3:X15 0.0037482   0.0094855    0.395 0.692729
date:exposure_3:X18 0.0015432   0.0083911    0.184 0.854081
date:exposure_3:X21 -0.0004329   0.0078572   -0.055 0.956064
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Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
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eTable1b. Model to predict probability of achieving HbA1c < 7%. When exposure_2 and exposure_3 are 0, model is predicting response to sulfonylurea. When exposure_2 = 1 and exposure_3 = 0, the model predicts response to thiazolidinedione. When exposure_2 = 0 and exposure_3 = 1, the model predicts response to sulfonylurea. Colons denote interaction term (r syntax), as is usually denoted by an asterisk in other formats.

PMID	author	year	drug	months	males	age	age_sd
11192132	Einhorn	2000	TZD	3.73	0.55	55.50	10.34
10755495	Fonseca	2000	TZD	6.10	0.68	58.30	8.80
15562200	Ahren	2004	DPP4	2.80	0.70	57.90	10.00
15860246	Feinglos	2005	SU	3.73	0.46	57.70	10.70
15386821	Matthews	2005	SU	12.10	0.49	57.00	9.00
15386821	Matthews	2005	TZD	12.13	0.51	56.00	9.20
17130197	Charbonnel	2006	DPP4	5.60	0.56	54.40	10.40
16367881	Kvapil	2006	SU	3.73	0.46	58.10	8.80
16842480	Ristic	2006	SU	5.60	0.50	61.60	10.10
16684436	Umpierrez	2006	SU	6.07	0.55	51.60	11.30
16684436	Umpierrez	2006	TZD	6.07	0.52	55.70	9.70
17992639	Ahren	2007	DPP4	12.10	0.62	58.40	9.20
17277036	Bosi	2007	DPP4	5.60	0.62	53.90	9.50
17300595	Nauck	2007	DPP4	12.13	0.57	56.80	9.30
17300595	Nauck	2007	SU	12.13	0.61	56.60	9.80
17587393	Ristic	2007	SU	12.10	0.51	61.50	10.20
18034842	Bolli	2008	DPP4	5.60	0.62	56.30	9.30
18034842	Bolli	2008	TZD	5.60	0.64	57.00	9.70
18095238	Hamann	2008	SU	12.10	0.52	59.30	9.20
18095238	Hamann	2008	TZD	12.10	0.53	58.50	9.60
17765245	Khanolkar	2008	SU	5.60	0.60	56.00	39.54
17765245	Khanolkar	2008	TZD	5.60	0.56	59.00	39.54
18194595	Raz	2008	DPP4	7.00	0.51	53.60	9.50
18201203	Scott	2008	DPP4	4.20	0.55	55.20	9.80
18201203	Scott	2008	TZD	4.20	0.63	54.80	10.50
19478198	Defronzo	2009	DPP4	5.60	0.54	54.80	9.60
19125777	Ferrannini	2009	DPP4	12.13	0.53	57.50	9.06
19125777	Ferrannini	2009	SU	12.13	0.54	57.50	9.28
19221978	Goodman	2009	DPP4	5.6	0.53	54.7	10.3
19309251	Kaku	2009	TZD	6.53	0.66	52.00	8.60
19125992	Nauck	2009	DPP4	6.07	0.47	55.00	11.00
18931095	Nauck	2009	SU	6.07	0.57	57.00	9.00
20580422	Bergental	2010	DPP4	6.07	0.52	52	11
20580422	Bergental	2010	TZD	6.07	0.48	53.00	10.00
20536495	Filozof	2010	DPP4	12.13	0.52	59.2	9.9
20536495	Filozof	2010	SU	12.13	0.52	59.70	10.20
21059094	Forst	2010	DPP4	2.80	0.56	61.80	9.80
20846286	Goke	2010	DPP4	12.13	0.50	57.50	10.26
20846286	Goke	2010	SU	12.13	0.54	57.60	10.37
20417856	Pratley	2010	DPP4	6.07	0.55	55.00	9.00
21199268	Arechavaleta	2011	DPP4	7.00	0.50	56.30	9.70
21199268	Arechavaleta	2011	SU	7.00	0.54	56.20	10.10
21114605	Taskinen	2011	DPP4	5.60	0.53	56.50	10.10
22486990	Yang	2011	DPP4	5.60	0.48	53.80	10.40
21114607	Yang	2011	SU	3.73	0.58	53.60	9.70

baseline_bmi	baseline_bmi_sd	baseline_hba1c	baseline_hba1	delta_hba1	se_hba1c	p_goal
32.10	5.30	9.86	1.40	-0.64	0.11	
29.80	3.90	8.90	1.50			
29.40	3.60	7.70	0.60	-0.60	0.10	0.42
31.70	4.40	7.45	0.78	-0.66	0.10	0.69
32.60	5.80	8.53	0.89		0.08	
32.60	5.00	8.71	1.00	-0.99		
30.90	5.30	7.96	0.81	-0.67	0.05	
30.50	4.40	9.40	1.40	-1.70		
29.50	3.60	7.60	0.58	-0.57	0.08	
34.50	6.70	8.40	0.72	-1.30	0.08	0.56
33.80	6.60	8.31	0.77	-1.23	0.07	0.55
29.60	3.70	7.60	0.60		0.10	0.43
33.20	6.10	8.40	1.00	-0.90	0.10	
31.30	5.20	7.70	0.90	-0.51	0.04	0.63
31.20	5.00	7.60	0.90	-0.56	0.04	0.59
30.00	3.20	7.55	0.57		0.10	0.47
32.20	5.60	8.40	1.00	-0.90	0.10	
32.10	5.10	8.40	0.90	-1.00	0.10	0.36
32.20	4.90	8.00	1.00	-0.86	0.11	
33.00	5.90	8.00	0.90	-0.78	0.06	
33.66	8.18	7.08	0.69	-1.00	0.15	
34.55	8.83	7.33	0.52	-1.19	0.13	
30.10	4.40	8.40	9.30	-0.90	0.30	
30.30	4.70	7.80	1.00	-0.73	0.07	
30.40	5.50	7.70	0.80	-0.79		0.63
31.20	4.70	8.10	0.80	-0.69	0.07	
31.80	5.30	7.31	0.64	-0.44	0.02	0.54
31.70	5.30	7.30	0.65	-0.53	0.02	0.56
31.7	4.6	8.5	1	-0.66	0.11	
25.60	4.20	7.58	1.00	-0.67	0.09	
32.00	5.00	7.90	0.70	-0.60	0.10	
31.20	4.60	8.40	1.00	-1.00	0.10	0.36
32	5	8.5	1.2	-0.9	0.1	
32.00	6.00	8.50	1.10	-1.20	0.10	
31.2	5	8.5	1	-0.81	0.06	0.296
30.80	5.00	8.50	1.00	-0.85	0.06	0.32
31.70	4.50	8.50	0.80	-0.50	0.10	0.15
31.50	5.70	7.70	0.90	-0.74	0.04	
31.30	6.20	7.70	0.90	-0.80	0.04	
32.60	5.40	8.50	0.70	-0.90	0.07	
31.50	5.70	7.50	0.70	-0.46	0.04	
31.30	6.20	7.50	0.80	-0.52	0.04	
29.90	4.80	8.09	0.86	-0.49	0.04	
26.30	3.60	7.90	0.80	-0.78	0.10	0.47
25.30	3.70	8.50	1.10	-1.39	0.08	0.44

delta_weight		se_weight	
0.95		0.26	
1.90			
-0.40		0.20	
0.40			
1.40			
1.50			
-0.65			
0.10			
1.74		0.41	
1.85		0.38	
-0.20		0.07	
0.20		0.30	
-1.50		0.28	
1.10		0.28	
0.91			
0.30		0.20	
1.90		0.20	
1.60		0.30	
2.70		0.30	
0.13		-0.50	
-0.40		0.20	
1.50		0.23	
-0.87			
-0.23		0.11	
1.56		0.12	
-0.19			
1.68			
1.00		0.20	
-0.8		0.33	
2.80		0.31	
0.08			
1.36			
-0.57			
-1.10		0.20	
1.10		0.16	
-0.96		0.30	
-0.80		0.15	
1.20		0.15	
-0.40			
-1.05		0.10	
0.10		0.26	