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ERR-Qexp-a55-leuk.rec

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```
-- Result protocol
  From MECAN version 0.2
  Based on MINUIT2 version 5.27.02
  In file format version rec.1.0
  Parallelisation mode 'useOpenmpDefault'
  Operation mode 'regression & analysis'
  Group data mode 'use_raw_data'

-- Control files
  MINUIT2 file 'qexp.min'
  Control file 'par/leuk.par'

-- Optimisation time
  Optimisation started: Mi. Aug 15 13:57:32 2012
  Optimisation stopped: Mi. Aug 15 14:05:36 2012
  Elapsed time: 00:08:04 or 484 secs

-- Raw data summary
  Grouped data read from file 'lss14.csv'
  Created 53782 Poisson cells with 8 categories
    for organ/organ group 'leukemia'
  Counted      86611 persons
  Counted      3294282.3 person years
  Counted      318 cases
  Case counts pertain to end point(s) for 1 organ/organ groups
  End point no. 1 'Leukemia 204-208'
  Organ dose 'marrow10' with Id 9

-- Stratification summary
  Created 53782 Poisson cells with 5 categories
    for organ/organ group 'leukemia'
  Category 'city' with Id 0
  Category 'sex' with Id 1
  Category 'agexcat' with Id 4
  Category 'agecat' with Id 5
  Category 'marrow10' with Id 7

  Total mean age at exposure [yr] 22.4097
  Total mean age attained [yr] 50.4871
  Total mean age of cases (approx.) [yr] 58.3279
  Total mean dose [Gy] 0.133906

-- Additional used categories
  none

-- Optimisation results
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Optimisation strategy 'medium'
 Number of model calls: 149
 Initial deviance: 2670.88980
 Final deviance: 2670.88980
 Reduction: 5.96277e-07

Risk model 'elk_swcs'
 Objective function 'poisson'
 Error mode 'minos'
 MINUIT2 errdef: 1

Model parameter

no.	name	unit	value	eparab	eminus	eplus	var/fix
0	b0	[-]	-9.49592	0.104876	-0.105789	0.10354	varbl
1	bsex	[-]	-0.322168	0.0571363	-0.0571745	0.057124	varbl
2	bcity	[-]	-0.140183	0.0649278	-0.0656532	0.0642816	varbl
3	ba1	[-]	2.11138	0.26537	-0.26536	0.269033	varbl
4	ba2	[-]	1.07978	0.205344	-0.209542	0.199365	varbl
5	be1	[1/yr]	0.00640716	0.00458611	-0.00458636	0.00460414	varbl
6	be2	[1/yr^2]	-0.00071956	0.000227255	-0.000230483	0.000222893	varbl
7	os	[-]	0	-	-	-	fixed
8	err	[1/Gy]	0	-	-	-	fixed
9	err2	[1/Gy^2]	4.2884	1.24178	-1.09762	1.38497	varbl
10	gam_e	[1/yr]	0	-	-	-	fixed
11	cen_e	[yr]	30	-	-	-	fixed
12	eps_a	[-]	-1.61701	0.346829	-0.363812	0.337504	varbl
13	cen_a	[yr]	55	-	-	-	fixed
14	nu_exp	[1/Gy]	-0.378203	0.128305	-0.12754	0.127259	varbl

Model parameter (final vs. initial)

no.	name	unit	final	initial	change	rel. ch. [%]
0	b0	[-]	-9.49592	-9.49592	4.25447e-07	-4.48031e-06
1	bsex	[-]	-0.322168	-0.322157	-1.08129e-05	0.00335639
2	bcity	[-]	-0.140183	-0.140184	5.03793e-07	-0.00035938
3	ba1	[-]	2.11138	2.11139	-1.31724e-05	-0.000623872
4	ba2	[-]	1.07978	1.07979	-1.34788e-05	-0.00124828
5	be1	[1/yr]	0.00640716	0.00640753	-3.70639e-07	-0.00578443
6	be2	[1/yr^2]	-0.00071956	-0.000719578	1.84582e-08	-0.00256514
7	os	[-]	fixed	0		
8	err	[1/Gy]	fixed	0		
9	err2	[1/Gy^2]	4.2884	4.28823	0.000169738	0.00395824
10	gam_e	[1/yr]	fixed	0		
11	cen_e	[yr]	fixed	30		
12	eps_a	[-]	-1.61701	-1.61691	-9.61698e-05	0.00594775
13	cen_a	[yr]	fixed	55		
14	nu_exp	[1/Gy]	-0.378203	-0.378183	-2.01428e-05	0.00532621

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Correlation matrix (of 10 variable parameters)

0									
1	-0.054199075								
2	0.30999583	0.010890369							
3	-0.37206068	-0.079637049	0.0094247507						
4	-0.24654291	-0.051030509	0.017582308	0.39606974					
5	0.22399732	0.0090184885	0.074664875	-0.52349315	-0.17368283				
6	-0.53432929	0.13505065	-0.017312025	0.098552516	-0.1598525	-0.11907908			
7	-0.36695208	0.0049843829	0.0026283116	0.13421981	0.057827306	-0.0207253	0.04366759		
8	-0.079690886	0.024461571	-0.0015639998	-0.34341765	0.53262695	0.021427128	-0.00029790086	0.07036771	
9	0.11418096	0.024424399	0.0071096078	-0.066405853	0.028162094	0.026113252	-0.016307759	-0.82046297	
0.080954282									

-- O/E analysis

Checking sums for persons, person years and cases

	Stratification	O/E analysis
Total persons:	86611	86611
Total person years:	3.29428e+06	3.29428e+06
Total observed cases:	318	318
Total expected cases:	318.004	318.004
Deviance:	2670.89	37.2576

Cases

Excess:	94.3
Baseline:	223.7
Total:	318.0

Categories

name	unit	id	size	used
agexcat	yr	4	4	4
agecat	yr	5	4	4
marrow10	Gy	7	5	4

Number of Poisson cells

	Stratification	O/E analysis
Total cells:	27720	64
Used cells:	53782	40

Poisson cells

cell	subjects	pyr	cases	obs haz	ubnd 4	mean 4	ubnd 5	mean 5	ubnd 7	mean 7
0	13057	101123.29	1	9.88892e-06	20	4.46854	20	14.8023	0.5	0.0939403
1	3975	324053.35	15	4.62887e-05	20	9.1773	40	30.1791	0.5	0.0975599
2	8104	57092.47	3	5.25463e-05	40	25.0347	40	35.0642	0.5	0.107059
3	0	315836.96	12	3.79943e-05	20	9.39005	60	49.8374	0.5	0.0979589
4	3305	205804.81	6	2.91538e-05	40	30.2796	60	50.1692	0.5	0.107652
5	9067	68352.41	6	8.77804e-05	60	44.8118	60	54.8787	0.5	0.109273
6	0	109490.15	13	0.000118732	20	13.5791	infy	65.7873	0.5	0.10176

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7	0	209170.81	37	0.000176889	40	30.8783	infty	72.0007	0.5	0.107023
8	1997	191482.30	28	0.000146228	60	48.5002	infty	72.2454	0.5	0.108687
9	2786	27718.45	2	7.21541e-05	infty	65.2003	infty	77.626	0.5	0.102219
10	1207	8215.25	8	0.000973799	20	4.88333	20	15.0014	1.5	0.978151
11	737	36059.42	8	0.000221856	20	11.1884	40	30.3333	1.5	0.97297
12	969	7463.32	1	0.000133989	40	24.5702	40	34.8287	1.5	0.977193
13	0	35265.68	8	0.000226849	20	11.4733	60	49.8035	1.5	0.97049
14	378	24001.33	7	0.00029165	40	29.6972	60	50.1327	1.5	0.984573
15	1027	7870.86	2	0.000254102	60	44.6862	60	54.8289	1.5	0.967113
16	0	15045.50	4	0.00026586	20	14.8263	infty	66.3623	1.5	0.967312
17	0	22505.23	8	0.000355473	40	30.2714	infty	71.4529	1.5	0.982348
18	185	19764.19	11	0.000556562	60	48.1545	infty	71.7338	1.5	0.952927
19	195	1922.04	0	0	infty	64.4784	infty	77.0941	1.5	0.912676
20	348	2263.04	6	0.0026513	20	4.80715	20	14.9324	infty	2.60704
21	175	9511.55	5	0.000525677	20	11.1083	40	30.3187	infty	2.52412
22	226	1763.85	2	0.00113389	40	24.4504	40	34.77	infty	2.43736
23	0	8996.04	2	0.00022232	20	11.4226	60	49.6696	infty	2.51478
24	76	5225.31	8	0.00153101	40	29.2529	60	49.9794	infty	2.43729
25	209	1641.38	2	0.00121849	60	44.6789	60	54.7877	infty	2.43315
26	0	3341.08	4	0.00119722	20	14.7015	infty	66.0517	infty	2.46649
27	0	4238.19	5	0.00117975	40	29.4826	infty	70.5257	infty	2.42636
28	37	3425.07	4	0.00116786	60	47.9354	infty	70.7562	infty	2.46001
29	42	369.32	1	0.00270768	infty	63.679	infty	75.8466	infty	2.51524

Observed/expected comparison
cell pyr

cases

hazard

cell dev.

		obs	exp	bsl	obs	exp	bsl	
0	101123.29	1	4.3	2.1	9.88892e-06	4.22226e-05	2.03329e-05	3.6363
1	324053.35	15	9.6	7.5	4.62887e-05	2.95069e-05	2.30393e-05	2.6318
2	57092.47	3	2.3	1.9	5.25463e-05	4.10205e-05	3.28698e-05	0.169663
3	315836.96	12	15.9	14.2	3.79943e-05	5.04192e-05	4.49874e-05	1.05803
4	205804.81	6	14.4	12.6	2.91538e-05	6.99601e-05	6.13937e-05	6.29218
5	68352.41	6	5.9	5.2	8.77804e-05	8.58824e-05	7.64057e-05	0.00284617
6	109490.15	13	10.8	10.0	0.000118732	9.90815e-05	9.17002e-05	0.401005
7	209170.81	37	31.4	29.2	0.000176889	0.000150153	0.000139595	0.94144
8	191482.30	28	28.9	26.8	0.000146228	0.00015073	0.000139921	0.0260118
9	27718.45	2	2.9	2.7	7.21541e-05	0.000104925	9.86333e-05	0.318946
10	8215.25	8	5.7	0.2	0.000973799	0.000697822	1.99378e-05	0.797415
11	36059.42	8	8.0	0.8	0.000221856	0.000222611	2.29958e-05	9.25249e-05
12	7463.32	1	1.9	0.2	0.000133989	0.000248751	3.17629e-05	0.47562
13	35265.68	8	7.5	1.6	0.000226849	0.000212443	4.49111e-05	0.0337012
14	24001.33	7	7.1	1.5	0.00029165	0.00029585	6.16254e-05	0.00143773
15	7870.86	2	2.6	0.6	0.000254102	0.000336508	7.91247e-05	0.173669
16	15045.50	4	4.5	1.3	0.00026586	0.000296843	8.91527e-05	0.0504406
17	22505.23	8	9.6	3.1	0.000355473	0.000427453	0.000136986	0.289533
18	19764.19	11	8.4	2.8	0.000556562	0.000427204	0.000141144	0.706065
19	1922.04	0	0.5	0.2	0	0.000272485	0.000102352	1.04745

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20	2263.04	6	5.7	0.0	0.0026513	0.00253225	1.98599e-05	0.0124709
21	9511.55	5	7.6	0.2	0.000525677	0.000797827	2.50546e-05	1.00509
22	1763.85	2	1.4	0.1	0.00113389	0.000782906	3.20447e-05	0.243425
23	8996.04	2	6.3	0.4	0.00022232	0.000701169	4.89302e-05	4.02096
24	5225.31	8	4.4	0.3	0.00153101	0.000850436	6.09497e-05	2.29452
25	1641.38	2	1.6	0.1	0.00121849	0.000975458	7.88496e-05	0.0920274
26	3341.08	4	3.1	0.3	0.00119722	0.000934834	0.000100631	0.225803
27	4238.19	5	4.6	0.6	0.00117975	0.0010949	0.000132045	0.0271751
28	3425.07	4	4.0	0.5	0.00116786	0.00116979	0.000138598	1.09794e-05
29	369.32	1	0.3	0.0	0.00270768	0.000946093	0.00012134	0.801836