Supplementary Material

Supplementary Tables

Table S1. Linear regression model for age, length of care home residence and frailty to predict the components of the full blood count in older people resident in care homes

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
Neutrophils	Age	0.11	-0.58	0.8	0.756	0.11	-0.61	0.83	0.764
	Length in care home	-0.04	-0.09	0.01	0.1	-0.04	-0.1	0.01	0.098
	Frailty	0.02	-0.17	0.21	0.83	0.05	-0.14	0.24	0.616
Lymphocytes	Age	-0.13	-0.98	0.71	0.755	-0.11	-1.00	0.77	0.801
	Length in care home	-0.02	-0.09	0.04	0.445	-0.02	-0.09	0.04	0.530
	Frailty	-0.07	-0.31	0.16	0.535	-0.06	-0.30	0.18	0.636
Monocytes	Age	-0.30	-0.97	0.37	0.381	-0.28	-0.98	0.43	0.435
	Length in care home	-0.03	-0.08	0.02	0.196	-0.03	-0.08	0.02	0.263
	Frailty	-0.07	-0.26	0.11	0.449	-0.05	-0.24	0.14	0.628
Total leukocytes	Age	-0.11	-0.75	0.54	0.743	-0.11	-0.79	0.56	0.744
	Length in care home	-0.04	-0.09	0.01	0.092	-0.04	-0.09	0.01	0.087
	Frailty	0.04	-0.14	0.22	0.682	0.07	-0.11	0.25	0.456
Platelets	Age	0.06	-0.32	0.73	0.442	0.16	-0.38	0.69	0.567
	Length in care home	-0.03	-0.05	0.031	0.70	-0.02	-0.06	0.02	0.336
	Frailty	0.25	0.07	0.36	0.003	0.23	0.08	0.37	0.002

*Variables are mutually adjusted for each other.

Table S2. Linear regression model for age, length of care home residence and frailty to predict the components of the immunophenotype in older people resident in care homes

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
T cells	Age	-0.14	-0.62	0.34	0.566	-0.14	-0.63	0.35	0.574
	Length in care home	0.01	-0.03	0.04	0.676	0.01	-0.03	0.04	0.660
	Frailty	-0.01	-0.13	0.12	0.932	-0.01	-0.14	0.12	0.897
Cytotoxic T cells	Age	0.38	-0.32	1.08	0.281	0.36	-0.35	1.07	0.318
	Length in care home	-0.02	-0.07	0.03	0.445	-0.03	-0.08	0.03	0.315
	Frailty	0.11	-0.08	0.30	0.239	0.12	-0.07	0.31	0.201
Activated cytotoxic T cells	Age	-0.23	-1.17	0.70	0.620	-0.28	-1.23	0.66	0.556
	Length in care home	0.04	-0.02	0.11	0.205	0.04	-0.03	0.11	0.307
	Frailty	0.18	-0.07	0.42	0.166	0.16	-0.10	0.41	0.229
Regulatory T cells	Age	0.83	-0.77	2.42	0.307	0.83	-0.79	2.45	0.311
	Length in care home	-0.08	-0.20	0.03	0.154	-0.09	-0.21	0.03	0.141
	Frailty	0.03	-0.40	0.46	0.886	0.08	-0.36	0.51	0.724
Helper T cells	Age	0.74	-0.37	1.86	0.190	0.70	-0.44	1.84	0.224
	Length in care home	-0.02	-0.10	0.07	0.701	-0.03	-0.11	0.06	0.515
	Frailty	0.20	-0.10	0.50	0.186	0.21	-0.10	0.51	0.180
Ratio $CD4^+$:$CD8^+$	Age	0.50	-0.32	1.32	0.230	0.47	-0.36	1.30	0.266
	Length in care home	0.00	-0.06	0.06	0.973	-0.01	-0.07	0.06	0.853
	Frailty	0.12	-0.10	0.34	0.266	0.12	-0.10	0.34	0.293
Monocytes	Age	0.03	-0.79	0.84	0.950	0.03	-0.80	0.86	0.948
	Length in care home	-0.02	-0.08	0.04	0.509	-0.02	-0.08	0.04	0.502
	Frailty	0.00	-0.21	0.22	0.977	0.02	-0.21	0.24	0.881

Activated monocytes (CD80$^+$)	Age	1.33	-0.39	3.06	0.129	1.31	-0.44	3.06	0.142
	Length in care home	-0.05	-0.18	0.07	0.395	-0.07	-0.19	0.06	0.317
	Frailty	0.15	-0.31	0.62	0.516	0.18	-0.30	0.65	0.463
Activated monocytes (CD86$^+$)	Age	2.72	0.84	4.61	0.005	2.78	0.87	4.70	**0.005**
	Length in care home	-0.04	-0.18	0.10	0.563	-0.03	-0.17	0.11	0.628
	Frailty	-0.19	-0.70	0.33	0.470	-0.21	-0.73	0.30	0.415
NK cells	Age	-0.02	-0.80	0.76	0.966	-0.02	-0.81	0.77	0.958
	Length in care home	-0.01	-0.07	0.04	0.605	-0.02	-0.07	0.04	0.574
	Frailty	0.02	-0.18	0.23	0.820	0.04	-0.18	0.25	0.742
B cells	Age	-0.08	-0.92	0.75	0.845	-0.07	-0.91	0.78	0.877
	Length in care home	0.04	-0.02	0.10	0.178	0.05	-0.01	0.11	0.130
	Frailty	-0.09	-0.31	0.13	0.417	-0.12	-0.35	0.10	0.285
Activated B cells (CD80$^+$)	Age	0.41	-0.38	1.20	0.310	0.44	-0.37	1.24	0.284
	Length in care home	0.01	-0.05	0.07	0.688	0.02	-0.04	0.08	0.542
	Frailty	-0.12	-0.33	0.09	0.266	-0.14	-0.36	0.08	0.204
Activated B cells (CD86$^+$)	Age	0.02	-1.23	1.28	0.970	0.06	-1.22	1.34	0.923
	Length in care home	0.02	-0.08	0.11	0.741	0.02	-0.07	0.12	0.603
	Frailty	-0.17	-0.50	0.17	0.324	-0.19	-0.53	0.16	0.288

*Variables are mutually adjusted for each other.

Table S3. Linear regression model for age, length of care home residence and frailty to predict phagocytic function in older people resident in care homes.

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
Percentage of neutrophils gated with phagocytic activity	Age	-0.10	-0.50	0.31	0.641	-0.08	-0.49	0.33	0.693
	Length in care home	-0.02	-0.05	0.01	0.228	-0.02	-0.05	0.01	0.300
	Frailty	-0.05	-0.16	0.06	0.370	-0.04	-0.15	0.07	0.510
Geometric median fluorescence intensity (GMFI) of active neutrophils	Age	0.16	-0.43	0.75	0.596	0.14	-0.46	0.75	0.637
	Length in care home	0.03	-0.02	0.07	0.235	0.02	-0.02	0.07	0.290
	Frailty	0.05	-0.10	0.21	0.504	0.04	-0.13	0.20	0.669
Percentage of monocytes gated with phagocytic activity	Age	0.32	-0.62	1.26	0.504	0.35	-0.61	1.31	0.472
	Length in care home	0.00	-0.07	0.06	0.899	0.00	-0.07	0.07	0.959
	Frailty	-0.12	-0.38	0.13	0.328	-0.13	-0.39	0.13	0.314
Geometric median fluorescence intensity (GMFI) of active monocytes	Age	0.14	-0.61	0.88	0.719	0.16	-0.60	0.92	0.675
	Length in care home	0.01	-0.04	0.06	0.747	0.01	-0.04	0.07	0.602
	Frailty	-0.11	-0.30	0.09	0.287	-0.12	-0.32	0.08	0.246

*Variables are mutually adjusted for each other.

Table S4. Linear regression model for age, length of care home residence and frailty to predict plasma CRP and immune mediators in older people resident in care homes

Variable			Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
				Lower boundary	Upper boundary			Lower boundary	Upper boundary	
CRP		Age	0.02	-0.11	0.15	0.757	1.26	-1.85	4.37	0.422
		Length in care home	-0.30	-1.25	0.66	0.537	0.04	-0.19	0.27	0.720
		Frailty	1.76	0.36	3.16	0.014	1.18	0.34	2.01	0.006
sICAM-1		Age	0.24	-0.95	1.43	0.690	0.18	-1.01	1.38	0.760
		Length in care home	0.03	-0.05	0.12	0.431	0.02	-0.06	0.11	0.589
		Frailty	0.22	-0.10	0.53	0.172	0.20	-0.12	0.52	0.226
IL-1ra		Age	0.40	-1.24	2.05	0.627	0.28	-1.34	1.89	0.735
		Length in care home	0.11	-0.01	0.22	0.073	0.08	-0.03	0.20	0.158
		Frailty	0.50	0.07	0.92	0.023	0.43	0.00	0.87	0.050
sE-Selectin		Age	0.34	-0.81	1.50	0.557	0.25	-0.89	1.39	0.661
		Length in care home	0.03	-0.05	0.12	0.410	0.02	-0.07	0.10	0.697
		Frailty	0.37	0.07	0.67	0.015	0.35	0.05	0.66	0.024
sVCAM-1		Age	1.22	0.17	2.27	0.023	1.19	0.13	2.26	0.029
		Length in care home	0.03	-0.05	0.11	0.487	0.02	-0.06	0.10	0.595
		Frailty	0.13	-0.16	0.41	0.374	0.09	-0.19	0.38	0.516

MCP-1	Age	-0.32	-1.55	0.92	0.613	-0.40	-1.60	0.80	0.510
	Length in care home	0.11	0.03	0.20	0.012	0.10	0.01	0.19	0.026
	Frailty	0.30	-0.03	0.62	0.071	0.23	-0.09	0.56	0.152
IP-10	Age	1.87	0.68	3.06	0.002	1.77	0.61	2.93	0.003
	Length in care home	0.09	0.00	0.17	0.060	0.07	-0.02	0.15	0.126
	Frailty	0.40	0.08	0.72	0.016	0.32	0.01	0.64	0.042
TNF-RII	Age	1.79	0.65	2.94	0.002	1.76	0.60	2.92	0.003
	Length in care home	0.02	-0.07	0.10	0.724	0.01	-0.08	0.09	0.874
	Frailty	0.16	-0.16	0.47	0.332	0.12	-0.19	0.43	0.440
IL-6	Age	-0.68	-3.02	1.65	0.562	-0.60	-2.95	1.75	0.613
	Length in care home	0.07	-0.10	0.24	0.434	0.09	-0.08	0.26	0.296
	Frailty	-0.40	-1.02	0.22	0.200	-0.45	-1.08	0.18	0.158
IL-10	Age	0.51	-1.86	2.89	0.669	0.57	-1.80	2.94	0.636
	Length in care home	0.13	-0.04	0.30	0.133	0.15	-0.02	0.32	0.091
	Frailty	-0.29	-0.91	0.34	0.368	-0.40	-1.03	0.24	0.218
TNF-α	Age	1.17	-0.33	2.67	0.124	1.18	-0.34	2.70	0.126
	Length in care home	0.04	-0.07	0.15	0.479	0.04	-0.07	0.15	0.452
	Frailty	-0.05	-0.45	0.36	0.822	-0.09	-0.50	0.31	0.646

*Variables are mutually adjusted for each other.

Table S5. Linear regression model for age, length of care home residence and frailty to predict immune mediators measured in PGN-stimulated whole blood cultures from older people resident in care homes

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
PGN IL-10	Age	-0.14	-2.94	2.66	0.923	0.06	-2.72	2.84	0.967
	Length in care home	-0.05	-0.25	0.15	0.630	-0.01	-0.21	0.19	0.929
	Frailty	-0.80	-1.52	-0.07	0.031	-0.79	-1.54	-0.04	0.038
PGN TNF-α	Age	0.64	-2.07	3.36	0.639	0.73	-2.02	3.48	0.600
	Length in care home	-0.01	-0.21	0.18	0.890	0.00	-0.20	0.20	0.975
	Frailty	-0.34	-1.06	0.38	0.351	-0.35	-1.09	0.39	0.345
PGN IL-6	Age	1.13	-1.29	3.54	0.357	1.18	-1.28	3.64	0.341
	Length in care home	0.02	-0.15	0.20	0.788	0.04	-0.14	0.22	0.691
	Frailty	-0.23	-0.87	0.41	0.478	-0.27	-0.94	0.39	0.410
PGN IL-1β	Age	1.38	-2.32	5.09	0.460	1.59	-2.12	5.30	0.398
	Length in care home	0.00	-0.27	0.27	0.999	0.04	-0.23	0.32	0.755
	Frailty	-0.84	-1.81	0.14	0.091	-0.89	-1.89	0.11	0.079

*Variables are mutually adjusted for each other.

Table S6. Linear regression model for age, length of care home residence and frailty to predict immune mediators measured in LPS-stimulated whole blood cultures from older people resident in care homes

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
LPS IL-10	Age	0.50	-2.22	3.22	0.717	0.52	-2.25	3.29	0.710
	Length in care home	0.01	-0.19	0.20	0.954	0.01	-0.19	0.21	0.920
	Frailty	-0.09	-0.81	0.63	0.808	-0.10	-0.85	0.64	0.781
LPS TNF-α	Age	0.52	-1.40	2.45	0.590	0.44	-1.50	2.39	0.651
	Length in care home	0.05	-0.09	0.19	0.479	0.03	-0.11	0.18	0.631
	Frailty	0.32	-0.19	0.83	0.213	0.29	-0.23	0.81	0.273
LPS IL-6	Age	0.95	-0.64	2.54	0.238	0.93	-0.70	2.56	0.258
	Length in care home	0.01	-0.11	0.13	0.882	0.00	-0.12	0.12	0.956
	Frailty	0.10	-0.33	0.52	0.651	0.08	-0.36	0.52	0.718
LPS IL-12p70	Age	0.20	-1.81	2.22	0.842	0.25	-1.80	2.30	0.809
	Length in care home	0.02	-0.13	0.16	0.807	0.03	-0.12	0.18	0.699
	Frailty	-0.20	-0.74	0.33	0.449	-0.23	-0.78	0.32	0.411
LPS IL-1β	Age	1.74	-0.59	4.08	0.141	1.69	-0.69	4.07	0.161
	Length in care home	0.04	-0.13	0.21	0.665	0.03	-0.15	0.20	0.772
	Frailty	0.23	-0.39	0.86	0.460	0.19	-0.45	0.83	0.560

*Variables are mutually adjusted for each other.

Table S7. Linear regression model for age, length of care home residence and frailty to predict immune mediators measured in PHA-stimulated whole blood cultures from older people resident in care homes

Variable		Unadjusted coefficient	95% Confidence Interval		p-value	Adjusted coefficient*	95% Confidence Interval		p-value
			Lower boundary	Upper boundary			Lower boundary	Upper boundary	
PHA IFN-γ	Age	1.50	-3.57	6.57	0.559	1.43	-3.71	6.57	0.581
	Length in care home	0.19	-0.18	0.55	0.319	0.18	-0.20	0.56	0.345
	Frailty	0.20	-1.14	1.55	0.764	0.06	-1.32	1.44	0.934
PHA TNF-α	Age	0.107	-1.412	1.625	0.889	0.113	-1.433	1.658	0.885
	Length in care home	-0.036	-0.146	0.074	0.516	-0.037	-0.151	0.076	0.516
	Frailty	-0.005	-0.408	0.398	0.980	0.018	-0.397	0.433	0.930

*Variables are mutually adjusted for each other.