

Table 1: The non-linear correlation between (i) measurement gap and numerical value and (ii) measurement gap and change in numerical value, for 70 laboratory tests. The measurement gap and numerical value correlations are calculated on three different time scales (full time scale, short time scale, long time scale). The following results are reported: the mutual information (MI), the confidence intervals for the MI results (CI of MI) and the MI total (which is the confidence interval subtracted from the MI). In addition, we calculated the ergodicity for every laboratory test measured via the Kolgomorov-Smirnov statistic and the result was 1, the same for all laboratory tests, and is therefore not shown.

Nonlinear Correlations between Laboratory Test Numerical Values and Time Between Measurement													
Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	MI total (dv/dt)	Total MI
25-OH													
Vitamin D	0.043	0.035	0.007	1.847	1.842	0.005	0.052	0.042	0.010	0.059	0.032	0.027	0.027
Albumin	0.154	0.001	0.153	0.045	0.004	0.041	0.051	0.001	0.050	0.020	0.001	0.019	0.019
Alkaline Phosphatase	0.038	0.001	0.037	0.012	0.005	0.007	0.023	0.002	0.021	0.010	0.001	0.008	0.008
ALT	0.037	0.001	0.036	0.012	0.005	0.007	0.014	0.002	0.012	0.009	0.001	0.008	0.008
Amylase	0.089	0.017	0.072	0.077	0.060	0.017	0.032	0.019	0.012	0.052	0.017	0.034	0.034

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Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	Total MI (dv/dt)
AST	0.062	0.001	0.061	0.016	0.005	0.011	0.019	0.002	0.018	0.023	0.001	0.022
Base Excess Arterial	0.029	0.017	0.012	0.025	0.019	0.007	0.102	0.085	0.017	0.058	0.020	0.038
Basophiles %	0.002	0.000	0.001	0.003	0.002	0.001	0.002	0.000	0.002	0.004	0.001	0.003
Bicarbonate Arterial	0.040	0.001	0.040	0.024	0.001	0.023	0.010	0.001	0.009	0.010	0.001	0.010
Bilirubin Direct	0.083	0.001	0.082	0.022	0.005	0.017	0.020	0.002	0.019	0.050	0.003	0.047
Bilirubin Total	0.063	0.001	0.061	0.019	0.006	0.013	0.013	0.002	0.011	0.021	0.002	0.019
Blood Protein	0.120	0.001	0.119	0.050	0.004	0.046	0.034	0.001	0.032	0.022	0.001	0.021
BNP	0.100	0.075	0.026	0.514	0.520	-0.005	0.097	0.082	0.015	0.071	0.066	0.005
BUN	0.057	0.001	0.056	0.016	0.001	0.015	0.035	0.001	0.034	0.031	0.001	0.030
Calcium	0.110	0.001	0.109	0.020	0.001	0.019	0.016	0.001	0.015	0.011	0.001	0.010
Calcium Ionized	0.023	0.012	0.011	0.024	0.014	0.010	0.048	0.036	0.012	0.025	0.011	0.014
CEA	0.093	0.066	0.027	0.870	0.897	-0.027	0.103	0.078	0.025	0.067	0.062	0.005
Chloride	0.039	0.000	0.038	0.011	0.001	0.010	0.012	0.001	0.012	0.006	0.000	0.006
Cholesterol	0.024	0.002	0.022	0.051	0.026	0.025	0.016	0.002	0.014	0.021	0.002	0.019
CK	0.034	0.004	0.030	0.023	0.014	0.008	0.011	0.006	0.005	0.019	0.005	0.014

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Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	Total MI (dv/dt)
CK-MB	0.106	0.112	-0.006	0.177	0.152	0.025	0.147	0.160	-0.013	0.102	0.098	0.005
Creatinine	0.060	0.001	0.059	0.025	0.002	0.024	0.033	0.001	0.032	0.045	0.001	0.043
CRP												
High Sensitivity	0.069	0.034	0.035	0.636	0.584	0.052	0.060	0.039	0.021	0.046	0.033	0.012
ESR	0.052	0.014	0.038	0.352	0.393	-0.041	0.048	0.015	0.033	0.020	0.014	0.006
Ferritin	0.066	0.016	0.050	0.400	0.390	0.010	0.066	0.019	0.048	0.037	0.016	0.021
Folic Acid	0.109	0.088	0.022	1.375	1.432	-0.056	0.123	0.096	0.028	0.096	0.077	0.019
Glucose												
Whole Blood	0.034	0.001	0.033	0.023	0.002	0.022	0.012	0.001	0.010	0.015	0.001	0.014
HCT	0.118	0.001	0.117	0.021	0.001	0.019	0.050	0.001	0.049	0.012	0.001	0.011
HDL	0.011	0.003	0.008	0.252	0.247	0.006	0.010	0.003	0.007	0.009	0.002	0.007
Hemoglobin	0.111	0.001	0.110	0.017	0.001	0.015	0.051	0.001	0.050	0.014	0.001	0.013
Hemoglobin A _{1c}	0.057	0.005	0.052	0.518	0.540	-0.022	0.058	0.005	0.053	0.023	0.004	0.019
Homocysteine	0.206	0.159	0.048	1.521	1.578	-0.058	0.246	0.192	0.054	0.111	0.115	-0.003
Iron	0.037	0.021	0.016	0.485	0.485	0.000	0.039	0.023	0.016	0.030	0.020	0.010
LDH	0.058	0.006	0.052	0.030	0.023	0.007	0.028	0.008	0.020	0.021	0.006	0.015
LDL	0.015	0.003	0.012	0.280	0.307	-0.026	0.015	0.003	0.012	0.015	0.003	0.013

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Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	Total MI (dv/dt)
Lipase	0.127	0.018	0.109	0.077	0.060	0.017	0.034	0.016	0.018	0.052	0.017	0.034
Lymphocytes %	0.062	0.002	0.060	0.013	0.009	0.004	0.029	0.002	0.027	0.015	0.002	0.013
Magnesium	0.020	0.002	0.018	0.016	0.002	0.013	0.031	0.005	0.025	0.015	0.002	0.013
MCH	0.009	0.001	0.008	0.003	0.002	0.002	0.011	0.001	0.010	0.014	0.000	0.013
MCHC	0.010	0.000	0.009	0.005	0.001	0.004	0.010	0.001	0.010	0.012	0.000	0.011
MCV	0.008	0.001	0.007	0.003	0.002	0.001	0.011	0.001	0.010	0.041	0.001	0.040
Microalbumin /Creatinine Ratio	0.034	0.022	0.011	1.319	1.249	0.070	0.039	0.030	0.009	0.029	0.021	0.008
Monocytes %	0.017	0.001	0.016	0.012	0.007	0.005	0.014	0.002	0.012	0.009	0.002	0.006
MPV	0.009	0.001	0.009	0.003	0.002	0.002	0.010	0.001	0.009	0.029	0.001	0.028
NRBC %	0.059	0.017	0.042	0.027	0.020	0.006	0.120	0.058	0.063	0.072	0.013	0.060
NRBC Abso-lute	0.022	0.014	0.008	0.018	0.016	0.001	0.078	0.063	0.015	0.016	0.013	0.003
PCO ₂ , Arterial	0.014	0.011	0.003	0.014	0.011	0.002	0.078	0.066	0.013	0.036	0.010	0.027
PCO ₂ , Venous	0.089	0.053	0.036	0.139	0.107	0.032	0.098	0.087	0.011	0.082	0.040	0.042
pH Arterial	0.016	0.006	0.010	0.016	0.007	0.009	0.056	0.048	0.008	0.027	0.004	0.023
pH Urine	0.006	0.001	0.005	0.007	0.008	-0.001	0.006	0.001	0.005	0.006	0.003	0.003

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Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	Total MI (dv/dt)
pH Venous	0.073	0.046	0.027	0.123	0.092	0.031	0.076	0.072	0.004	0.062	0.040	0.022
Phosphorus	0.026	0.002	0.024	0.012	0.003	0.009	0.019	0.004	0.015	0.015	0.002	0.013
Platelet Count	0.041	0.001	0.040	0.019	0.002	0.017	0.021	0.001	0.020	0.027	0.001	0.026
PO ₂ Arterial	0.055	0.011	0.043	0.035	0.012	0.023	0.084	0.062	0.022	0.031	0.011	0.021
PO ₂ Venous	0.197	0.056	0.140	0.128	0.096	0.032	0.121	0.098	0.023	0.211	0.054	0.157
Potassium	0.035	0.001	0.034	0.027	0.001	0.025	0.012	0.001	0.011	0.021	0.001	0.020
PSA Screening	0.124	0.022	0.103	0.745	0.773	-0.028	0.130	0.027	0.102	0.061	0.023	0.038
PTH	0.094	0.038	0.056	0.980	1.010	-0.030	0.098	0.044	0.053	0.052	0.033	0.018
RBC	0.104	0.001	0.103	0.020	0.002	0.018	0.049	0.001	0.047	0.012	0.001	0.011
RDW	0.051	0.001	0.050	0.005	0.002	0.003	0.042	0.001	0.040	0.019	0.001	0.018
Sodium	0.043	0.001	0.042	0.012	0.001	0.011	0.008	0.001	0.007	0.005	0.000	0.004
T4	0.061	0.016	0.044	0.560	0.600	-0.040	0.064	0.018	0.045	0.026	0.015	0.011
T4 Free	0.054	0.028	0.027	0.802	0.807	-0.005	0.057	0.031	0.025	0.042	0.026	0.016
TIBC	0.073	0.021	0.052	0.685	0.662	0.023	0.070	0.023	0.047	0.037	0.018	0.019
Triglycerides	0.017	0.003	0.014	0.226	0.215	0.011	0.016	0.003	0.013	0.008	0.003	0.005
Troponin	0.034	0.019	0.014	0.030	0.024	0.006	0.043	0.038	0.005	0.031	0.020	0.012
TSH	0.059	0.005	0.054	0.175	0.167	0.008	0.060	0.006	0.054	0.046	0.005	0.041
Uric Acid	0.029	0.006	0.023	0.045	0.025	0.020	0.023	0.008	0.015	0.031	0.006	0.025
Vitamin B ₁₂	0.066	0.044	0.022	1.224	1.224	0.000	0.072	0.048	0.024	0.052	0.037	0.015

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Laboratory Test	MI (full)	CI of MI (full)	MI total (full)	MI (short)	CI of MI (short)	MI total (short)	MI (long)	CI of MI (long)	MI total (long)	MI (dv/dt)	CI of MI (dv/dt)	Total MI (dv/dt)
WBC	0.057	0.001	0.056	0.010	0.002	0.008	0.018	0.001	0.017	0.008	0.001	0.007

Table 2: The linear correlations (LC) and p-values of 70 laboratory tests, calculated on both the short and long time scale. A positive linear correlation indicates that a higher laboratory test value is correlated to a longer time until next measurement and a negative linear correlation indicates that a higher laboratory test value is correlated to a shorter time until next measurement. The linear correlation across the full time scale is not shown as it was very close to 0 for every laboratory test (all p-values for the full time scale linear correlations were statistically significant - except for the Vitamin B₁₂ test.)

Linear Correlations between Laboratory Test Values and Measurement Gap				
Laboratory Test	LC (Short)	p-value of LC (Short)	LC (Long)	p-value of LC (Long)
25-OH Vitamin D	0.200	2.28E-01	0.053	2.63E-05
Albumin	-0.029	2.87E-11	0.296	0.00E+00
Alkaline Phosphatase	0.033	2.44E-14	-0.177	0.00E+00
ALT	-0.050	4.52E-31	-0.129	0.00E+00
Amylase	-0.083	3.58E-08	-0.111	3.65E-36
AST	-0.108	3.74E-135	-0.148	0.00E+00
Base Excess Arterial	0.066	3.58E-13	-0.123	3.06E-10
Basophiles %	0.020	1.15E-01	-0.048	2.32E-23
Bicarbonate Arterial	0.181	0.00E+00	0.103	0.00E+00
Bilirubin Direct	-0.050	4.30E-28	-0.169	0.00E+00
Bilirubin Total	-0.055	3.54E-32	-0.121	0.00E+00
Blood Protein	0.030	3.09E-11	0.195	0.00E+00
BNP	0.037	5.10E-01	-0.127	2.04E-12
BUN	-0.156	0.00E+00	-0.208	0.00E+00
Calcium	0.098	0.00E+00	0.115	0.00E+00
Calcium Ionized	0.057	3.87E-11	-0.071	4.57E-08
CEA	0.023	9.08E-01	-0.186	1.66E-16

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Laboratory Test	LC (Short)	p-value of LC (Short)	LC (Long)	p-value of LC (Long)
Chloride	0.033	2.75E-39	0.022	2.39E-24
Cholesterol	-0.160	7.80E-59	-0.005	1.01E-01
CK	0.011	1.28E-01	-0.027	2.94E-09
CK-MB	-0.003	9.14E-01	-0.101	2.26E-02
Creatinine	-0.208	0.00E+00	-0.186	0.00E+00
CRP High Sensitivity	-0.084	1.53E-01	-0.118	2.96E-24
ESR	0.088	2.69E-02	-0.237	8.92E-250
Ferritin	0.067	2.06E-01	-0.215	2.61E-150
Folic Acid	-0.138	1.86E-01	-0.072	7.22E-05
Glucose Whole Blood	-0.150	0.00E+00	-0.093	0.00E+00
HCT	0.142	0.00E+00	0.276	0.00E+00
HDL	-0.058	7.28E-02	0.087	1.04E-158
Hemoglobin	0.118	0.00E+00	0.282	0.00E+00
Hemoglobin A _{1c}	0.036	4.63E-01	-0.193	0.00E+00
Homocysteine	-0.163	3.90E-01	-0.275	8.87E-27
Iron	0.135	1.08E-02	0.106	1.71E-34
LDH	-0.004	6.34E-01	-0.140	6.73E-159
LDL	-0.001	9.70E-01	0.015	7.80E-06
Lipase	-0.068	9.19E-06	-0.152	1.47E-61
Lymphocytes %	0.022	1.44E-04	0.149	0.00E+00
Magnesium	-0.083	7.73E-149	0.167	1.80E-322
MCH	-0.009	2.70E-04	0.025	7.13E-32
MCHC	-0.053	1.91E-102	0.100	0.00E+00
MCV	0.018	1.75E-13	-0.022	1.55E-25
Microalbumin/Creatinine Ratio	0.004	9.84E-01	-0.074	9.10E-10
Monocytes %	0.061	7.61E-25	-0.091	1.01E-224
MPV	-0.003	3.15E-01	0.078	6.38E-257

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Laboratory Test	LC (Short)	p-value of LC (Short)	LC (Long)	p-value of LC (Long)
NRBC %	0.038	1.66E-05	-0.087	3.86E-10
NRBC Absolute	-0.023	1.14E-02	-0.044	8.37E-03
PCO ₂ Arterial	-0.021	1.50E-03	0.061	4.57E-05
PCO ₂ , Venous	0.190	5.69E-20	0.091	3.18E-07
pH Arterial	0.100	3.74E-51	-0.109	3.64E-13
pH Urine	0.004	6.79E-01	-0.013	1.71E-04
pH Venous	0.239	5.04E-31	-0.065	2.63E-04
Phosphorus	-0.042	5.40E-36	-0.092	3.31E-136
Platelet Count	0.148	0.00E+00	0.029	1.53E-41
PO ₂ Arterial	-0.153	3.44E-116	-0.094	3.24E-10
PO ₂ Venous	-0.038	6.72E-02	-0.047	8.25E-03
Potassium	-0.071	8.56E-199	-0.044	6.33E-102
PSA Screening	0.174	2.95E-01	-0.341	2.29E-196
PTH	0.093	2.99E-01	-0.252	2.65E-92
RBC	0.145	0.00E+00	0.265	0.00E+00
RDW	-0.024	3.19E-20	-0.259	0.00E+00
Sodium	0.067	1.44E-182	0.102	0.00E+00
T4	-0.047	4.06E-01	-0.109	1.08E-44
T4 Free	0.039	6.30E-01	-0.107	2.43E-24
TIBC	0.034	5.49E-01	0.194	5.13E-104
Triglycerides	0.008	7.86E-01	-0.138	0.00E+00
Troponin	0.040	4.84E-05	-0.023	1.67E-01
TSH	0.026	4.27E-01	-0.226	0.00E+00
Uric Acid	-0.085	4.32E-18	-0.118	7.23E-111
Vitamin B ₁₂	-0.150	8.43E-02	0.061	1.61E-06
WBC	-0.097	0.00E+00	-0.002	3.31E-01