

Blood samples document – Laboratory database

Introduction

This report was made to help anyone working with the new blood sample data available through the National Laboratory Database (Den Nationale Labdatabank).

This report was prepared by Anders Nissen Bonde, Christina Lee and Jesper Qvist Thomassen.

It contains:

- a link to register projects
- path to an assay change correction program
- path to a program with very basic data processing
- overview of the NPU codes
- overview of the existing laboratories, figure of coverage of the different time periods, and a brief report for each blood sample.

This is version 1 of the rapport and will be updated as more knowledge is gained using the samples.

The Laboratory Database - link to the data description by The Danish Health Data Authority (Sundhedsdatastyrelsen):

<https://sundhedsdatastyrelsen.dk/da/registre-og-services/om-de-nationale-sundhedsregistre/doedsaarsager-og-biologisk-materiale/laboratoriedatabasen>

Currently data is only available in the DST folder 706582 (September 2019).

Registration of projects

We recommend documenting your project into the following google file for an overview of ongoing projects:

<https://docs.google.com/spreadsheets/d/1903kiqbA3LQW8CzSHsHToJJ6O4E9sqI5GuGzJU3AFQ/edit?ts=5d778529#gid=0>

Code for correction of assays

For each of the blood samples a description of whether a correction is needed with assay change, as well as when and how it can be corrected is below.

Path for the corrections: [V:\Data\Workdata\706582\BK\Korrektioner](#)

SAS template for cleaning a new blood sample:

[V:\Data\Workdata\706582\BK\Korrektioner\tutorial_labdata](#)

If you have any questions about the above, please contact Anders/Christina at:

Labdatabiokemi@gmail.com

For specific questions about the blood samples contact the contact person in the table below.

Code for basic data management of the blood sample dataset

Data are organized in a single file (Lab_dm_researcher). The blood sample value is a categorical variable that must be converted briefly to a numeric value, and the comma before the decimals must be converted to a period. In the tutorial file, a short piece of code is available as an example of how to do so.

Overview of the blood samples examined, NPU codes, unit contact and number of samples (as of November 28, 2018)

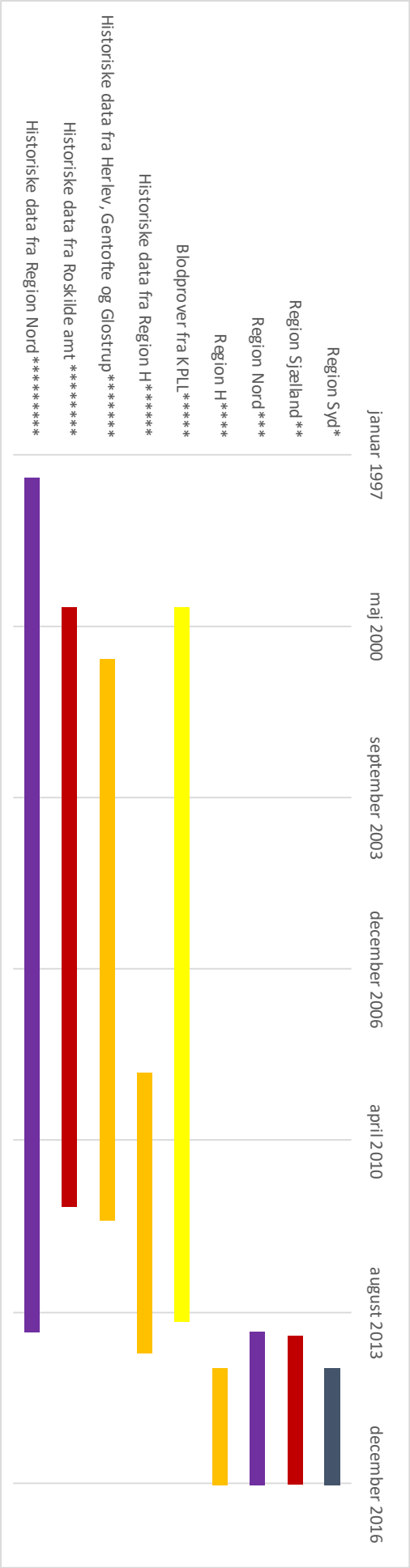
Liver and coagulation	Codes	Sample name, unit	Contact person	Number of samples
ALAT	NPU19651	P—Alanintransaminase, U/L	Maria	16.616.334
Lactate Dehydrogenase	NPU19658	P—L-Lactatdehydrogenase, U/L	Maria	7.764.685
INR	NPU01685	P—Koagulation, vævsfaktor(aktuel/norm; INR).	Anders	8.198.249
APTT	NPU01682	P—Koagulation, overflade-induceret; tid(proc.)	Anders	1.215.549
Thrombocytes	NPU03568	B—Thrombocyter; antalk. = $\times 10^9/L$	Anders	19.235.301
Albumine	NPU01132	P—Albumin, $\mu\text{mol/L}$	Anders Bonde	4.872
	NPU19673	P—Albumin, g/l	Anders Bonde	15.356.520
Nyretal og væsketal				
Creatinine	NPU04998	P—Creatininium, $\mu\text{mol/L}$	Anders Bonde	13.000.114
	NPU18016	P—Creatininium, $\mu\text{mol/L}$	Anders Bonde	7.764.685
Carbamide	NPU01459	P—Carbamid, mmol/L	Philip Schytz	8.991.419
Calcium-ion	NPU01446	P—Calcium-ion(frit), mmol/L	Philip Schytz	390.517
	NPU04144	P—Calcium-ion(frit) mmol/L - estimeret til pH 7.37	Philip Schytz	5.033.427
Calcium, total	NPU01443	P—Calcium(II), mmol/L	Philip Schytz	5.777.277
	NPU04169	P—Calcium(II), mmol/L - korrigeret værdi	Philip Schytz	2.471.400
Magnesium, total	NPU02647	P—Magnesium(II), mmol/L	Maria Krogager	2.103.014
Magnesium-ion	NPU02650	P—Magnesium-ion, mmol/L	Maria Krogager	0
Potassium	NPU03230	P—Kalium-ion, mmol/L	Maria Krogager	27.033.468
Sodium-ion	NPU03429	P—Natrium-ion, mmol/L	Philip Schytz	27.014.690
Metabolism and diabetes				
TSH	NPU03577	P—Thyrotropin, 10-3 IU/L	Christina Lee	9.467.784
Thyroxin (t4)	NPU03578	P—Thyroxin, nmol/L	Christina Lee	1.276.552
Thyroxin (t4) - frit	NPU03579	P—Thyroxin(frit), pmol/L	Christina Lee	2.265.358
Triiodothyronin (t3)	NPU03624	P—Triiodothyronin, nmol/L	Christina Lee	1.326.842
Triiodothyronin frit	NPU03625	P—Triiodothyronin(frit), pmol/L	Christina Lee	1.052.248
Blood sugar	DNK35842	P(vB; fPt)—Glucose, mmol/L	Christina Lee	379.983
	NPU02192	P—Glucose, mmol/L	Christina Lee	5.147.318
	NPU22069	P(fPt)—Glucose; stofk. mmol/L - fasting	Christina Lee	6.520
HbA1c	NPU03835	Hb(Fe; B)—Hæmoglobin A1c(Fe), %	Anders Bonde	147.985
	NPU27300	Hb(Fe; B) – Hæmoglobin, A1c(Fe), mmol/mol	Anders Bonde	9.032.153
Infection				
CRP	NPU19748	P—C-reaktivt protein/hsCRP, IU/L	Anders Bonde	18.887.338
Procalcitonine	NPU21576	P—Procalcitonin, $\mu\text{g/L}$	Anders Bonde	140.030
Hgb	NPU02319	B—Hæmoglobin(Fe), mmol/L	Anders Bonde	27.548.869
Leukocytes	NPU02593	B—Leukocyter, $10^9/L$	Anders Bonde	23.495.700
	NPU17579	B—Leukocyter, $10^9/L$ - Manuelt mikroskopi	Anders Bonde	57
Lipid status				
Triglycerides	NPU03620	P(fPt), Triglycerid, mmol/L - fastende	Christina Lee	2.411.506
Triglycerides	NPU04094	P—Triglycerid, mmol/L	Christina Lee	6.754.613
LDL	NPU01568	P—Cholesterol+ester, i LDL, mmol/L	Christina Lee	7.501.579
HDL	NPU01567	P—Cholesterol+ester, i HDL, mmol/L;	Christina Lee	8.809.477
Total Cholesterol				
Cholesterol+ester	NPU01566	P—Cholesterol+ester, mmol/L	Christina Lee	9.188.755
Cholesterol+ester	NPU18412	P(fPt)—Cholesterol+ester, mmol/L - fastende	Christina Lee	107.081
Iron status				
Iron	NPU02508	P—Jern, $\mu\text{mol/L}$	Morten Malmberg	2.763.533
Ferritin	NPU19763	P—Ferritin, $\mu\text{g/L}$	Morten Malmberg	3.211.062
Transferrin	NPU03607	P—Transferrin, $\mu\text{mol/L}$	Morten Malmberg	1.344.833
	NPU26470	P—Transferrin, g/L	Morten Malmberg	752.335

Overview of the laboratories

The following was done by observing where hospitalized patients who have had blood samples from the following laboratories were admitted:

8078E2B9 – Odense Universitetshospital
8878E2BE – Region Sjællands Hospitalsvæsen
80F8E2B0 – Vejle
80F0E7B3 – Sygehus Sønderjylland
80F8E7B3 – Region Sjællands sygehusvæsen
8A80E7BD – Immediately no samples during hospitalization
8A98E7BB – Supplier to the Capital hospitals, but not Northern Zealand
8AE8E0B9 – Odense Universitetshospital
A000C3BF – Region Sjællands Sygehusvæsen
A000E1B8 – Rigshospitalet
A0A0E1BD – Regionshospitalet Nordjylland Thy
A0F0C2B0 – Kolding
A0F0C2B7 – Nordsjællands Hospitaler
A0F0E1B5 – Nordsjællands Hospitaler (probably Hillerød)
A0F0E1B6 – Regionshospitalet Nordjylland Ven
A0F0E2B1 – Frederiksberg Hospital
A0F0E3B3 – Aalborg
A0F8E1B3 – Nordsjællands Hospitaler
A0F8E3B1 – Region Sjællands Sygehusvæsen
A200E0B9 – Bispebjerg Hospital
A218E1BB – Amager og Hvidovre
A220C3BF – No blood samples from hospital admissions (Steno Diabetes center)
A808E6BD – Bornholms Hospital
A888E1BD – Capital Region hospitals (Rigshospitalet, Frederiksberg, BBH, Amager, Herlev, Hvidovre, Gentofte, Glostrup, Nordsjællands hospitals). Historical data (2008-2012)
A8F0C1B7 – Region Sjællands Hospitaler
A8F8E1B6 – Vejle Sygehus
AA10C6BF – Region Sjællands sygehusvæsen
AA10E0B9 – Herlev-Gentofte hospital
AA30E4B9 – Amager
AA48E0BD – Gentofte Hospital, Herlev-Gentofte
AA48E3BE – Gentofte Hospital, Herlev-Gentofte
AA70E5BA – Region Sjællands sygehusvæsen

Overview of the blood samples, coverage time and ratio for inpatients, and data gaps



** Region Zealand: data February 1, 2014 to December 31, 2016 (in the dataset Lab_dm_forsker)

*** Region North: data from January 1, 2014 to December 31, 2016 (in the dataset Lab_dm_forsker)

**** The Capital Region: data from September 15, 2014 to December 31, 2016 (in the dataset Lab_dm_forsker)

***** Blood samples from Copenhagen Practitioner's Laboratory . Covers the period from February 1, to December 31, 2013.

***** Available in the dataset lab_dm_forsker.

2009-2010: About 70% of inpatients have blood samples, except Herlev, Gentofte and Glostrup.

2010-2012: About 90% of inpatients have blood samples. However, note the following data gaps where no or very few have blood tests:

2012: January 10-19, February 6-17, April 2-9, May 2-12, June 2-17, July 2-11, August 2-11, October 1-6, October 25-29, November 24-29, December 15-19

2013: March 23-26, April 20 - May 6, June 1-October 24, November 2-5 and 2014: July 1 - September 15

***** Data is available in the dataset "bloodprove_kbhant" and covers the period from January 1, 2001 to December 31, 2011.

Only inpatients from Herlev, Gentofte, Glostrup and some few patients from Hillerød/ Frederikssund have blood samples in this dataset.

From these hospitals, between 10% and 30% of the inpatients have blood samples during this period.

Data includes patients other than those covered by the updated database of the laboratory database.

***** Covers approximately 30% of inpatients at Roskilde County hospitals cover the period from 1 January to 1 October 2011.

***** Available in the datasets blood "sample_nordfinal", "blood sample_nord0607", "blood sample_nord0809", "blood sample_nord1011" and "blood sample_nord1213".

From July 1997 to September 2006, the situation is as follows:

From January 1997 to June 2006 approximately 70% of the blood samples were taken.

However, please note the following data gaps, which are not covered by some of the North Region data sets: 2006: October - December.

The data sets blood sample_nord0607, blood sample_nord0809, blood sample_nord1011, and blood sample_nord1213. Covers the inpatients from Region North from 2007 to 2013 in varying degrees:

2007: 50% of inpatients have blood samples

2008: 80% of inpatients have blood samples

2009: 65% of inpatients have blood samples

2010-2013: 90% of inpatients have blood samples

ATTENTION !!! There are also blood samples that lack values within specific labs and years