Oslo University Hospital

JUNE 2022

NEWSLETTER

Extrapolated NORMal valueS from historical records – The E-Norms study

THE PROJECT

The E-norms project is a quality control and research project at Oslo University hospital. Our aim is to improve neurophysiological diagnostics for people who suffer from neuromuscular disease in Norway by establishing new normal values.

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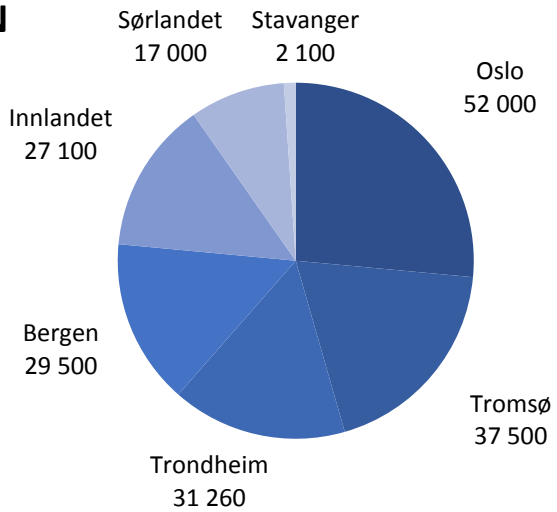
SUMMER UPDATE

Here is an update on project activities and database since the last newsletter from the E-norms project at Oslo University hospital.

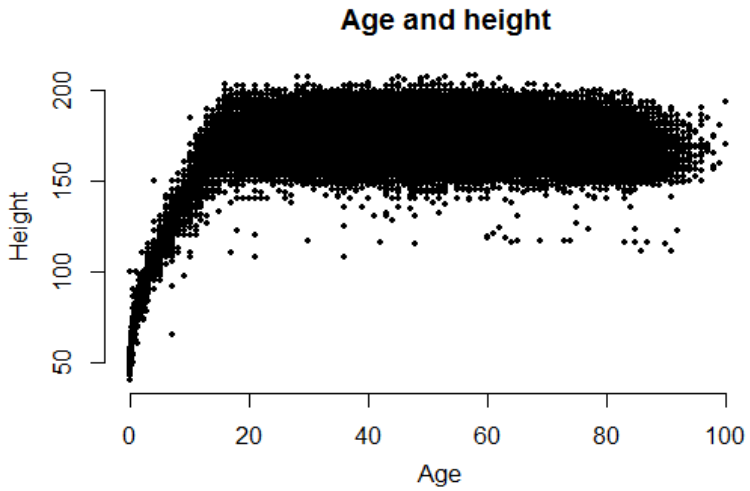
COLLABORATION

Since the last newsletter we have received data from three other hospitals; Kristiansand, Arendal (Sørlandet HF) and Drammen. Our database now includes almost 200 000 patients.



A SMALL PEEK AT THE DATA

Because neurophysiology are dependent on age and height, it is essential to create age- and height-stratified normal values. Our database consists of patients in all ages and heights – with over 500 patients in the age of 0-2 and almost 7000 patients above the age of 80!



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FIRST NORMAL VALUES DEVELOPED

We have developed normal values with the E-norms method for the most commonly assessed nerves in nerve conduction studies. These are based on data from Oslo University hospital and our goal is to provide similar normal values from each collaboration hospital as well as national normal values and implement them in the clinical equipment.

A table of the normal values is availible on our homepage https://www.ous-research.no/e-norms. See also a selection of the table below.

Normal values nerve conduction studies

Motor nerves										
Nerve	**Age group**	**Amplitude (mv)**			**Conduction velocity (m/s)**			**Latency (ms)**		
		n	Mean	- SD2	n	Mean	- SD2	n	Mean	+ SD2
Peroneus	3-9	468	2.7	1.6	440	50.3	43.4	772	3.2	3.8
	10-19	1250	3.8	2.6	1336	48.4	46.0	2790	3.7	4.4
	20-29	1980	4.6	3.2	1912	47.5	45.1	4479	3.9	4.6
	30-39	3163	3.9	2.5	3067	46.8	43.6	7731	3.9	4.8
	40-49	4667	2.2	2.1	4532	45.7	41.4	11953	4.2	5.0
	50-59	5938	3.0	1.4	5748	43.8	39.7	16687	4.2	4.9
	60-69	5819	2.6	0.8	5557	43.0	39.8	17386	4.6	5.4
	70-79	3594	1.5	0.2	3393	41.1	36.9	12722	4.5	5.1
	> 80	1062	1.1	0.3	998	40.2	35.4	3907	4.7	5.6

ONGOING ACTIVITIES

- Establishing a common code-book for naming of NCS data
- Data merging and cleaning of new data
- Preparations for further analysis structuring the data
- Coding of different methods in R/Python: E-norms; extrapolated normal values, MeRef; multivariable extrapolated reference values, and MMC; mixed model clustering
- Automatization of the E-norms and MeRef methods, with particular focus on automatic detection of inflection points on the S-curve.
- Collaborative meetings with industrial partner and international partners
- Grant application writing