



**European
Reference
Network**

for rare or low prevalence
complex diseases



Network

Neuromuscular
Diseases (ERN EURO-NMD)

Neuromuscular Pathology working group

Chair: Bjarne Udd, Tampere, FI
Co-chair: Anders Oldfors, Gothenburg, SE
Patient representative:
Massimo Mara, IT

Members:

- Norma Romero, Paris, FR
- Werner Stenzel, Berlin, G
- Montse Olive, Barcelona, S

The larger consultation group: 38 neuromuscular pathology specialists



Pathology group: activities– Freiburg meeting 30th Nov 2017

Group: B Udd, A Oldfors, N Romero, W Stenzel, M Olive, Massimo Mara (PR)

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- Direct consultations of cases once the IT-platform is available for exchange of clinical data and pathology images
- Survey of the current methodological practices and activities at the different HCPs
 - Responses from the different HCPs so far 47/61 = 75%
 - Survey to be completed by 2017
- Guidelines for minimal basic methodology and recommendations of standard/extended methodological practice including reporting
 - Planned for early 2018
- Identification of gaps and the need for training in neuromuscular pathology

47 HCPs that have sent their activity data

- Seville
- Barcelona SantPau
- Prague
- Lyon
- Limoges
- Torino
- Essen ped
- Munich FB
- Nice
- Barcelona StJoan ped
- Paris Ouest/Creteil
- Ulm
- Milano uni
- Milano Besta
- Gothenburg
- Siena
- Maastricht
- Brescia
- Tampere
- Paris InstMyol
- Brussels StLuc
- Amsterdam
- Berlin
- Messina
- Barcelona
 - Hebron/Belvitge
- Leuven
- Ljubjana
- Padova
- Newcastle
- Pisa
- Napoli
- Rotterdam
- Pecs
- Nijmegen
- StEtienne
- Göttingen
- Warsaw
- Paris Kremlin
- London UCL/GOS
- Oxford
- Valencia
- Genoa
- Rome Gemelli
- Bonn
- Nantes
- Rome Bambino
- Brno



HCPs not having responded

- Leiden
- Marseille
- Utrecht
- Freiburg
- Antwerp
- Gent
- Munich ped
- Budapest
- Brussels Erasm
- Ferrara
- Milano NEMO
- Stockholm KS
- Milano uniAUX
- Sofia Bulgaria

responsible contact

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Prof Ivailo Tournev



Results of the survey so far

Neuromuscular pathology activities within EURO-NMD

- Total amount of analyzed samples /year
 - Muscle biopsies: > 10000 - all cryoprocessed
 - 8 centers have less than 100 samples/year
 - 22 centers have 100 -200 samples/year
 - 17 centers analyze 200 -400 samples/year
 - Routine histology- histochemistry in place (HE, GTC, NADH, COX-SDH, PAS, ORO)
 - Variable use of stains for fiber typing and metabolic histochemistry
 - Highly variable use of immunohistochemistry (available antibodies from 13 to 105)
 - 40% do not have their own diagnostic Western blotting
 - Highly variable use of semithin stainings and EM (0-100% of all, more in pediatric labs)
 - Nerve 1200
 - most processed for semithin sections
 - Skin 2000



Quality of current processing and assessment?

- Huge amount of work and resources – is the quality comparable
- Quality of technical processing:
 - proportion of technical artefacts or inadequate sampling/sections not known
- Large variability of stainings: all routines cannot be 'the best possible'
 - Much of what stainings are used is based on older traditions in each lab
 - Immunohistochemistry adopted mostly for sarcolemmal proteins
- We also requested examples of reports on the results
 - normal muscle, nerve, skin
 - dystrophic muscle
 - inclusion body myositis
 - peripheral neuropathy
 - thin fiber neuropathy in skin





What next?

- Possibilities to improve quality, ie. diagnostic accuracy



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What next?

- Possibilities to improve quality → improved diagnostic accuracy
- Common standards → some degree of harmonization of procedures



What next?

- Possibilities to improve quality → improved diagnostic accuracy
- Common technical standards → some degree of harmonization
 - Recommendations on basic = minimal requirements
 - Recommendations on preferred processing and stainings
 - Recommendations on extended methodology
 - Additional lab-specific preferences of course possible
 - → planned to be prepared by the activity group during early part of 2018
- Common standards of reporting → some degree of harmonization
 - Recommendations on basic requirements
 - Recommendations on preferred standards
 - → planned to be prepared by the activity group during early half of 2018
 - Ideally both requests and reports in standard formats for integration aspects
 - **Combining standardized pathology data with genomic data could clarify new diseases**



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Training in neuromuscular pathology

- After the recommendations on practices: Needs for training could be identified by a new survey among the participating centers
 - Technical processing
 - Reading biopsies
 - Reporting
- Possibilities to integrate with existing Myology schools?
- Possibilities to integrate with a European Neuromuscular Curriculum



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Consultations of cases via CPMS

- Referral formats, consultation pathways, flow-charts and reporting
 - Diagnostic cases with all clinical data
 - Diagnostic cases with restricted questions such as muscle/nerve pathology
 - Management and therapy consultations
- Restricted pathology consultations
 - Referral directly from a partner center
 - Referrals from other clinics likely re-directed to a center or the pathology group
- Assessment and report from the pathology group
 - No further diagnostic advice
 - Further diagnostic biopsy examinations → referral to the expert center
 - With cross-border agreement voucher if patient needs to travel
 - Cross-border voucher also if just samples are sent for advanced examinations?