RQMO
REGROUPEMENT QUÉBÉCOIS DES MALADIES ORPHELINES

INFORMATION FOR THE DIAGNOSIS AND MANAGEMENT OF EHLERS-DANLOS SYNDROMES (EDS) AND JOINT HYPERMOBILITY SPECTRUM DISORDERS (or related conditions)

For patients, parents, caregivers, and healthcare professionals

Ehlers-Danlos syndromes (EDS) belong to the group of heritable connective tissue disorders. In 2017, the International Consortium on Ehlers-Danlos Syndrome, which brings together the world's leading experts in heritable connective tissue disorders, published the new classification of Ehlers-Danlos syndromes (EDS) and defined «Hypermobility spectrum disorders» [i]. There are thirteen (13) subtypes of EDS, of which twelve (12) are rare or ultra-rare. The hypermobile EDS or hEDS subtype is the most common, probably accounting for more than 85-90% of all cases. Additionally, experts now recognize that EDS is more common than previously believed. Medical publications indicated an estimate of 1/5,000 people affected in the population, while new estimates can reach up to 1/500 people including hypermobility spectrum disorders [ii].

Since its characterization in the beginning of the 20th century, much more is now known about EDS and its description is no longer limited to the three symptoms long taught in medicine: joint hypermobility, skin extensibility and tissue fragility. Indeed. It is now recognized that EDS is a complex multisystemic disease, accompanied by numerous comorbidities.

Subtypes other than hEDS, although rare, have features that aid diagnosis and have associated genes that can be tested. In contrast, the most common subtype, hEDS, has a much more variable presentation and no genes have yet been associated with it. Although it seems to show an autosomal dominant inheritance, it is believed that hEDS is rather a multifactorial disease (multiple genes and other internal and external factors) [ii].

Some comorbidities associated with EDS and confirmed by studies include: gastrointestinal disorders, postural orthostatic tachycardia syndrome (POTS), mast cell activation syndrome, craniocervical instability, Chiari malformation, tethered spinal cord, complex regional pain syndrome, hernias, asthma, pneumonia, osteoporosis, neurological problems, immunoglobulin deficiencies, etc. [iv, v, vi].

The **"hypermobility spectrum disorders"** (HSD) were also characterized by the International Consortium (see below).

Diagnosis: See below the diagnostic criteria for EDS and hypermobility spectrum disorders. If you suspect that you have one of the Ehlers-Danlos syndromes (or a related hereditary connective tissue disease), you can ask your family doctor or another of your treating physicians to refer you to a medical genetics service or other service (see below section "Resources for diagnosis").

- ***If you haven't been referred to a specialist or do not have a family doctor, contact us (www.rqmo.org)***

Diagnostic criteria for EDS

Classification and iagnostic criteria for all subtypes were established in 2017 by the International Consortium on Ehlers-Danlos Syndrome. See here: The 2017 international classification of the Ehlers–Danlos syndromes - Malfait - 2017 - American Journal of Medical Genetics Part C: Seminars in Medical Genetics - Wiley Online Library.

The diagnostic criteria for **hypermobile EDS (the most frequent subtype)** can be found in this article by the Consortium: https://www.ehlers-danlos.com/eds-types/#Hypermobile-EDS

Those for hypermobile EDS were established on the sparse knowledge base at that time. They are being validated by ongoing studies (*EDS International Registry* and the *HEDGE study*) and comorbidities had not been included at the time the criteria were published. (It should be noted that the International Consortium on EDS has indicated that a diagnosis of hypermobile EDS made according to the previous criteria should not be changed.)

Hypermobility spectrum disorders (HSD): if the diagnosis is not hEDS, it could be a HSD. See definition:

- Consortium article
- Ehlers-Danlos Society

Note 1: we remind you that the signs and symptoms of EDS can vary greatly from one individual to another, even between individuals of the same family. Criteria are

a good indication, but one must show judgement in applying these criteria since they are in the process of being validated.

Note 2 - Genetic testing: Since no major gene has been identified to date for hEDS, the members of the Consortium have clearly indicated that the diagnosis of hEDS should be carried out based on clinical manifestations and exclusion of other EDS subtypes.

It is always prudent to carry out a genetic analysis (with a panel of genes associated with all known heritable connective tissue disorders) to exclude the possibility that it is another subtype or even another heritable connective tissue disorder, particularly those associated with severe cardiac manifestations.

Note 3: Individuals with hEDS (and even other subtypes) often have received one or more of the following diagnoses: fibromyalgia, chronic fatigue syndrome, rheumatoid arthritis, ankylosing spondylitis, complex regional pain syndrome, multiple sclerosis, or others. Unfortunately, given the lack of knowledge or recognition of this disease in the medical community, many affected individuals are diagnosed with psychosomatic or psychiatric disorders.

Note 4: it is also necessary to keep in mind that although a person shows many EDS-like symptoms, it may be that he/she has a rare disease other than a heritable connective tissue disorder.

RESOURCES FOR THE DIAGNOSIS OF EDS OU OTHER HEREDITARY CONNECTIVE TISSUE DISORDERS

New (as of March 2024): a medical geneticist specializing in EDS :

Dr Shuaa Basalom, medical geneticist
Brunswick Medical Centre, Pointe-Claire, Qc (West Island of Montreal)
https://cmbmed.com/
It is not a private clinic where you must pay. The doctor is paid by the Quebec health insurance plan (RAMQ).
For a consultation, you must be referred by a doctor. Send the referral by fax to the following number: 514-459-3430.
(do not use the fax number indicated on the website).

The Centre hospitalier universitaire de Montréal (CHUM) has a clinic for EDS managed by a doctor specialized in internal medicine. However, it is indicated that you must have a treating physician or a nurse practitioner willing to actively

participate in care. There is a form to be completed by your doctor (telephone: 514-890-8370)

Medical Genetics Services

Montreal:

- McGill University Health Center (MUHC) (Montreal Children's Hospital, Montreal General Hospital). Medical Genetics, pediatrics and adults: 514-412-4427
  (Note: The Medical Genetics Service of the MUHC only sees adults with the more serious (vascular) or rare cases of Ehlers-Danlos syndromes, and not the most common form, i.e. hypermobile EDS type. They have a form to determine if you qualify or not (ask for the form at genetics@muhc.mcgill.ca).

- Service de médecine génique, Centre hospitalier universitaire de Montréal (CHUM) : 514-890-8104

- CHU Sainte-Justine – Génétique médicale, pediatrics, adults and prenatal: 514-345-4727

  Also for children: Physiatry (physical medicine) : 514-345-4709

- Montreal Heart Institute – Adult genetics and cardiology ***(only if you or family members have cardiac manifestations or signs on cardiac ultrasound**)*: 514-376-3330 extension 3525

Québec City :

- Centre hospitalier universitaire de Québec-CHUL – Service de médecine génétique : 418-577-4696

- Institut universitaire de cardiologie et pneumologie de Québec, Université Laval, https://iucpq.qc.ca/ ***(only if you or family members have cardiac manifestations or signs on cardiac ultrasound**)*:

Sherbrooke : Centre hospitalier universitaire de Sherbrooke (CHUS) – Service de génétique médicale : 819-564-6828

Saguenay : CIUSSS du Saguenay—Lac-Saint-Jean - Service de génétique : 418-541-1234 extension 3238

Genetic Testing: If you are considering paying out-of-pocket to undergo genetic testing for EDS and other connective tissue diseases through a private clinic or website, we suggest you contact us in advance for important information before proceeding to pay for this service. Beware of websites advertising genetic testing for medical conditions without a doctor's prescription: these are not certified diagnostic laboratories. Contact us for advice from a genetic counselor on where to be tested and to pay less for these tests.

Note: It can take a very long time before obtaining an appointment in a genetics service. These are other specialties that can establish the diagnosis: rheumatology and physiatry.

For rhumatology : Department of rheumatology of the McGill University Hosptal Centre has some rheumatologists who know EDS.

Physiatry (physical medicine): see the physical rehabilitation centres below.

Contact the rheumatology or physiatry departments in hospitals or get more information here:

- Accueil - Association des médecins rhumatologues du Québec | AMRQ (rhumatologie.org)
- Association of Physiatrists of Quebec | Fédération des médecins spécialistes du Québec (fmsq.org)

MANAGEMENT OF YOUR SYMPTOMS AND HEALTH PROBLEMS ASSOCIATED WITH EHLERS-DANLOS SYNDROME

Note: We are providing indications here to refer you to specialists. However, there are very few medical specialists and healthcare professionals who know or have experience with EDS.

- ***If you or your doctor cannot find a specialist to manage your symptoms, please contact us at the RQMO (www.rqmo.org)***

Musculoskeletal manifestations:

Whether or not you have a diagnosis of EDS, if you have musculoskeletal manifestations (joint hypermobility causing sprains, subluxations, dislocations,

etc., repeatedly), you can ask to be referred to a physiatrist or to a physical rehabilitation centre.

Find a rehabilitation center near you: Authorized public rehabilitation facilities – Régie de l'assurance maladie du Québec (RAMQ)

These specific rehabilitation centers seem to know EDS more than others:

- Montreal : Constance-Lethbridge Rehabilitation Centre
  https://www.llmrc.ca/program-and-services/by-site/constance-lethbridge/
- Quebec City: Institut de réadaptation en déficience de Québec | CRWDP
- Estrie : Centre de réadaptation de l'Estrie - Trouver une ressource - Répertoire des ressources en santé et services sociaux (gouv.qc.ca)

Note: Be careful with physiotherapy services. The physiotherapist should seek information from colleagues who know and have experience with EDS before treating a person with EDS. (*Please contact us for the name of a resource in physiotherapy*). Be careful with chiropractic services. If you have some neck problems (e.g. problems with the cervical spine), it is not recommended that you have chiropractic manipulations of the neck or spine. Some osteopaths are familiar with EDS and can help you.

Cervical instability, Chiari malformation, tethered spinal cord, and others

If you have problems with the cervical vertebrae and you have symptoms such as headaches, "heavy head", tachycardia, neck pain, numbness, dizziness, vertigo, etc., you will need to be referred to physiatry, neurology or neurosurgery, as well as for other spinal problems.

- Association des Neurologues du Québec (anq.qc.ca)
- Ancq | Association de neurochirurgie du Québec
- Association of Physiatrists of Quebec | Fédération des médecins spécialistes du Québec (fmsq.org)

Chronic pain

- To find a pain clinic: Société québécoise de la douleur SQD – Liens utiles
- For support: Association Québécoise de la douleur chronique - Home – AQDC English : https://aqdc.info/en/

- Solutions for pain in children: Solutions for Kids in Pain (SKIP) Improving Children's Pain Management

Postural Orthostatic Tachycardia Syndrome (POTS)

Usually, doctors in internal medicine can manage the orthostatic problems or cardiologists.

- See information above about a specialist in internal medicine who has an EDS clinic at the CHUM
- Internist | Fédération des médecins spécialistes du Québec (fmsq.org)

Allergies, intolerances, mast cell activation syndrome

- Department of allergies and immunology, Montreal General Hospital at the MUHC
- Maisonneuve-Rosemont Hospital, Immunology Clinic
- The Association of Allergists and Immunologists of Québec

Gastrointestinal problems

- Department of Gastroenterology at the Centre hospitalier universitaire de Montréal (CHUM). To obtain an appointment: 514-890-8051 or 1-855-769-5842 (toll free).

OTHER RESOURCES

A private Facebook group for Quebec for people who want to connect with others who have EDS : **https://www.facebook.com/constellationthtc**

Compression garments:

- Vêtements Compressifs & Thérapeutiques | CDRM (Québec)
- EC3D Sports https://ec3dsports.com/ (Note: these are not specifically for EDS; they are sport garments)
- Orthopédie Vlamynck : https://www.orthopedie-vlamynck.com/sed/prise-en-charge-orthetique/ (France)

- Novatex Medical – Vêtements compressifs sur mesure, Syndrome Ehlers Danlos (novatex-medical.com) (France)

Finger splints :

- Digisplint Home - DigiSplint
- Digisplint distributor in Quebec : Appareils Orthopédiques - BBG Inc 514-484-4715

Information about other medical equipment for EDS: https://www.chronicpainpartners.com/top-3-products-edsers/

To find orthotics and prosthetics in Quebec: Trouver un professionnel - AOPQ (orthese.com)

An occupational therapist who knows EDS (private practice; bilingual): Occupational Therapy TeleHealth in Québec | ErgoFrégeau (ergofregeau.com) (Montreal)

Physiotherapists:

- Anike Vanagas, Athletica Physio (Montreal)
- Marcos Rodrigues https://marcosrodrigues.ca/ (Montreal)
- Ariane Montpetit, Physiothérapie universelle (Montreal)
- Clinique de réadaptation Synapse (Quebe city)
- Julie Morrissette, PhysioOutaouais (Aylmer, Ouatouais)

FOR YOU AND YOUR DOCTORS:

OFFICIAL AND SAFE SOURCES OF INFORMATION ON EHLERS-DANLOS SYNDROMES AND HYPERMOBILITY SPECTRUM DISORDERS

- The Beighton score is used to determine joint hyperlaxity. Please visit this website to assess the Beighton score: https://www.ehlers-danlos.com/assessing-joint-hypermobility/#1651847088572-b553b858-ce25

- The ILC Charitable Foundation – Past Conferences (theilcfoundation.org) (now called the EDS Canada Foundation). Lectures by doctors and health professionals, experts on different aspects of EDS.

- The Ehlers-Danlos Society: https://www.ehlers-danlos.com/ : International organization bringing together patients, patient organizations, medical experts, healthcare professionals and researchers. Mission: patient support, research, awareness and advocacy.

- EDS Awareness Webinars (chronicpainpartners.com). Webinars on different aspects of EDS.

- Groupe d'Étude et de Recherche du Syndrome d'Ehlers-Danlos (gersed.org): Group of French-speaking doctors with experience in the care of people with EDS, including mast cell activation syndrome. Training available for healthcare professionals.

- Protocole national de diagnostic et de soins (France) : Haute Autorité de Santé - Syndrome d'Ehlers-Danlos Non Vasculaire (SED NV) (has-sante.fr)

- Filière OSCAR https://www.filiere-oscar.fr/ : one of the « Filière santé maladies rares » in France for rare diseases of bones, calcium and cartilage, including non-vascular Ehlers-Danlos syndromes.

- Filière de santé FAVA-Multi https://favamulti.fr/, rare vascular disorders with multisystemic involvement (France), including vascular Ehlers-Danlos syndrome and other vascular connective tissue disorders (e.g. Marfan, Loeys-Dietz, etc).

- The ILC Charitable Foundation – Past Conferences (theilcfoundation.org) (Canada). Conférences de médecins et professionnels de la santé, experts sur différents aspects des SED.

- *EDS Awareness* Webinars (chronicpainpartners.com). Conférences sur différents aspects du SED.

- Protocole national de diagnostic et de soins (France) : Haute Autorité de Santé - Syndrome d'Ehlers-Danlos Non Vasculaire (SED NV) (has-sante.fr)

- ❖ Filière OSCAR https://www.filiere-oscar.fr/ : l'une des « Filière santé maladies rares » de la France pour les maladies rares de l'os, du calcium et du cartilage, incluant les syndromes d'Ehlers-Danlos non vasculaires.

- ❖ Filière de santé FAVA-Multi, maladies vasculaires rares avec atteinte multisystémique (France) https://favamulti.fr/ , incluant syndrome d'Ehlers-Danlos type vasculaire et autres maladies du tissu conjonctif vasculaires (ex. Marfan, Loeys-Dietz, etc.).

Educational documents by Dr Leslie Russek, physiotherapist and EDS expert:

- Hypermobility/Ehlers-Danlos Syndrome Educational Handouts
- For children and teenagers : https://webspace.clarkson.edu/~lrussek/docs/hypermobility/RussekHSDKids.pdf
- Therapy by movement to help with hypermobility : Jeannine Di Bon Website Youtube videos

To help children in school:

- School Toolkit for pupils with joint hypermobility and EDS

Patient organizations and support groups:

- ❖ Canada: EDS Canada Foundation (formerly the ILC Charitable Foundation)

- ❖ *The Ehlers-Danlos Society* : https://www.ehlers-danlos.com/

- ❖ ***Consult our website for other information and resources: https://rgmo.org/en/ehlers-danlos-syndromes-and-hypermobility/***

Publications of the *International Ehlers-Danlos Syndrome Consortium:*

- ❖ EDS classification and diagnostic criteria: The 2017 international classification of the Ehlers–Danlos syndromes - Malfait - 2017 - American Journal of Medical Genetics Part C: Seminars in Medical Genetics - Wiley Online Library

- Hypermobile EDS (more frequent type of EDS): Hypermobile Ehlers–Danlos syndrome (a.k.a. Ehlers–Danlos syndrome Type III and Ehlers–Danlos syndrome hypermobility type): Clinical description and natural history - Tinkle - 2017 - American Journal of Medical Genetics Part C: Seminars in Medical Genetics - Wiley Online Library

- First special issue of the American Journal of Medical Genetics (open-access): The Ehlers-Danlos Syndromes: Reports from the International Consortium on the Ehlers-Danlos Syndromes: American Journal of Medical Genetics Part C: Seminars in Medical Genetics: Vol 175, No 1 (wiley.com)

- Second special issue: Ehlers-Danlos syndromes, Hypermobility Spectrum Disorders, and Associated Co-Morbidities: Reports from EDS ECHO: American Journal of Medical Genetics Part C: Seminars in Medical Genetics: Vol 187, No 4 (wiley.com)

- All medical publications: Ehlers-Danlos syndrome – Search Results – PubMed (nih.gov)

- Review publications: Ehlers-Danlos syndrome – Search Results – PubMed (nih.gov)

References in this document

[i] The 2017 international classification of the Ehlers–Danlos syndromes - Malfait - 2017 - American Journal of Medical Genetics Part C: Seminars in Medical Genetics - Wiley Online Library https://onlinelibrary.wiley.com/doi/full/10.1002/ajmg.c.31552

[ii] Diagnosed prevalence of Ehlers-Danlos syndrome and hypermobility spectrum disorder in Wales, UK: a national electronic cohort study and case–control comparison https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6858200/

[iii] Hypermobile Ehlers–Danlos syndrome (a.k.a. Ehlers–Danlos syndrome Type III and Ehlers–Danlos syndrome hypermobility type): Clinical description and natural history - Tinkle - 2017 - American Journal of Medical Genetics Part C: Seminars in Medical Genetics - Wiley Online Library https://onlinelibrary.wiley.com/doi/full/10.1002/ajmg.c.31538

[iv] Frequency and co-occurrence of comorbidities in the Ehlers-Danlos syndrome https://www.researchgate.net/publication/350756903_Frequency_and_co-occurrence_of_comorbidities_in_the_Ehlers-Danlos_syndromes

[v] The most common comorbidities in patients with Ehlers-Danlos syndrome: a 15-year nationwide population-based cohort study https://pubmed.ncbi.nlm.nih.gov/32412854/

[vi] Mast cell activation disease and immunoglobulin deficiency in patients with hypermobile Ehlers-Danlos syndrome/hypermobility spectrum disorder https://pubmed.ncbi.nlm.nih.gov/34747107/

This document was written by Gail Ouellette, Ph.D. in Molecular Genetics and M.Sc. in Genetic Counselling. She is the former president, co-founder and scientific director of the Quebec Coalition of Orphan Diseases (*Regroupement québécois des maladies orphelines, RQMO*). The RQMO's iRARE Centre has received approximately 1,000 requests about EDS. Gail Ouellette is a member of the Groupe d'étude et de recherche sur le syndrome d'Ehlers-Danlos (GERSED) and has participated in conferences of the International Ehlers-Danlos Syndrome Consortium and of the ILC Charitable Foundation/Ehlers-Danlos syndrome (Canada). She has taught courses on the molecular and genetic aspects of EDS as part of the University Certificate on Ehlers-Danlos syndrome offered at the Faculty of Medicine of Paris-Est University, Créteil.

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Our iRARE CENTRE (for support and information on all rare diseases)

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