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Disclosures

Nicholas Johnson

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Monica Visone

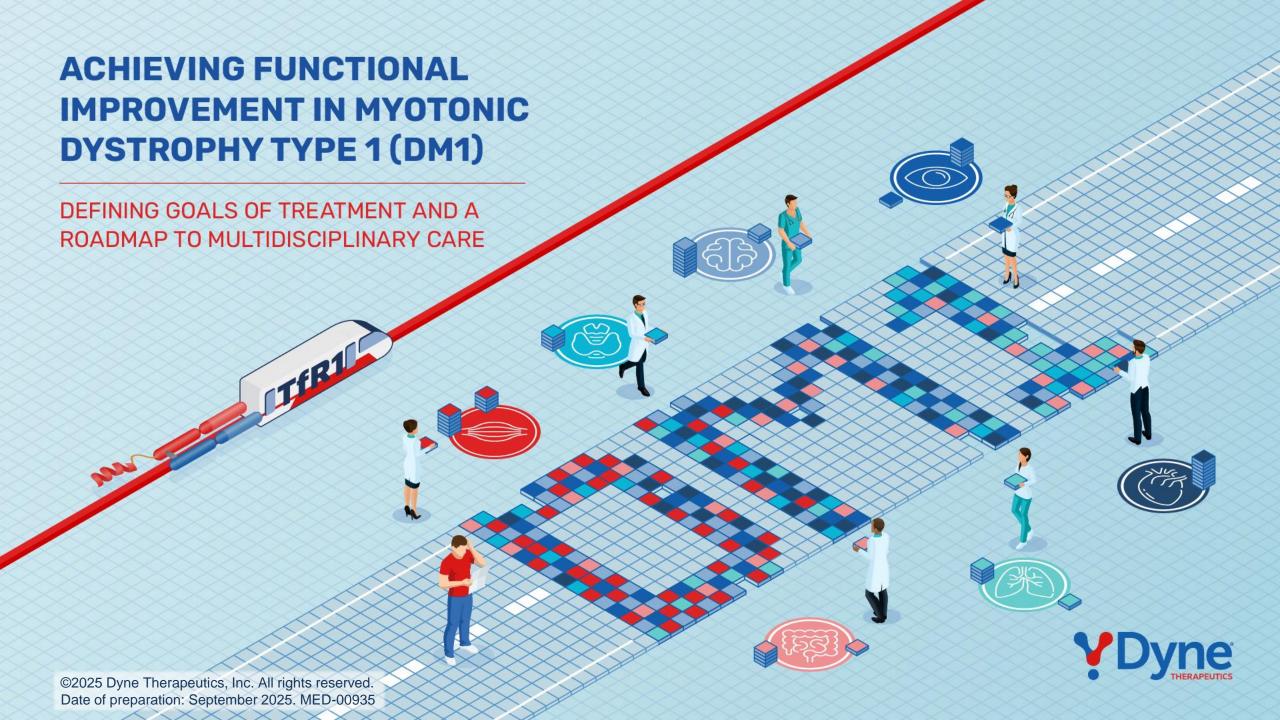
Nothing to declare

Lori Planco

o Participation in meetings for Alnylam Pharmaceuticals, Avidity Biosciences, and Dyne Therapeutics

Valeria Sansone

 Consultancy and participation in advisory boards for ARTHEx Biotech, Avidity Biosciences, Biogen, Dyne Therapeutics, Italfarmaco, Novartis, Roche, Sanofi, Scholar Rock, Solid Biosciences, and Vertex Pharmaceuticals



Today's faculty



Nicholas Johnson, MD, MSCI, FAAN (Chair)

Professor and Vice Chair of Research,
Director, Center for Inherited Myology
Research (CIMR),
George Bliley Research Chair,
Virginia Commonwealth University



Lori Planco

DM1 community member, Research Support Specialist, The RNA Institute



Monica Visone

DM1 community member, Attorney



Valeria Sansone, PhD, MD

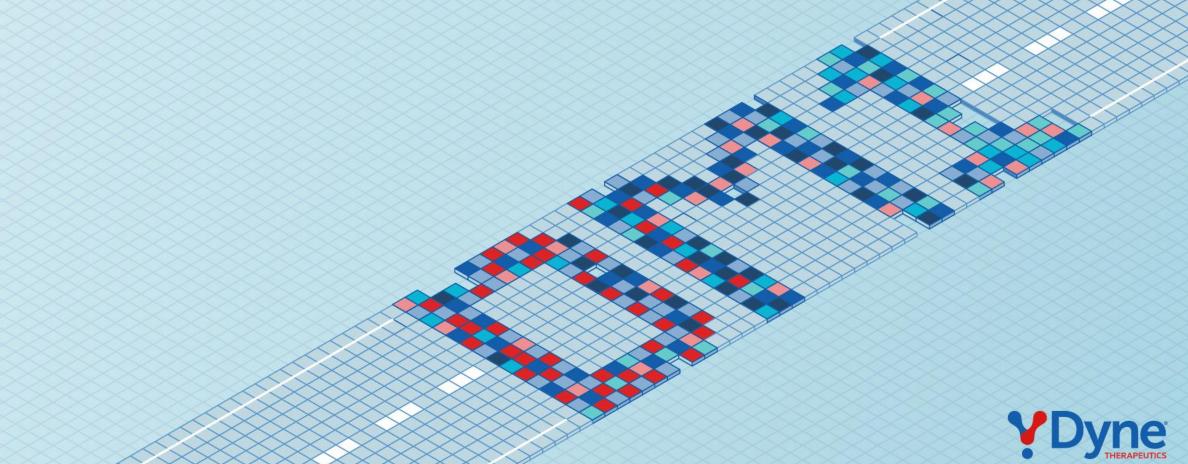
Full Professor of Neurology,
Neurorehabilitation Unit,
University of Milan,
Clinical & Scientific Director,
The NeMO Clinical Centre in Milan

Agenda

Session	Speaker
Unravelling the impact of spliceopathy in DM1	Nicholas Johnson
Fireside chat: What's the real impact of DM1?	All
Multidisciplinary management of DM1: are we getting it right?	Valeria Sansone
Addressing the multisystem manifestations of DM1 with DYNE-101 to deliver functional improvement	Valeria Sansone
Q&A and close	Nicholas Johnson

Unravelling the Impact of Spliceopathy in DM1

Nicholas Johnson, MD, MSCI, FAAN

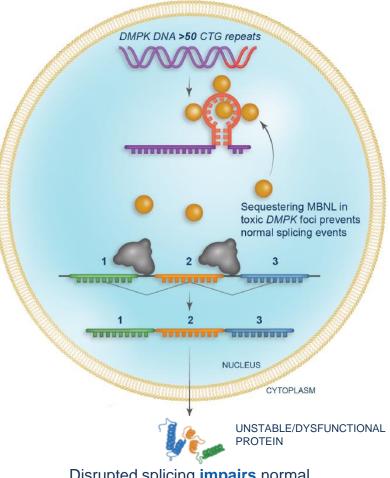


Myotonic Dystrophy Type 1 (DM1) is a Spliceopathy

Normal Splicing DMPK DNA <35 CTG repeats -MBNL MBNL is a spllcing factor Under normal circumstances, MBNL regulates splicing NUCLEUS CYTOPLASM **NORMAL PROTEIN**

Normal splicing leads to appropriate protein synthesis

DM1 Spliceopathy



Disrupted splicing **impairs** normal **protein synthesis**

Abnormal Splicing in Multiple Tissues Drives Multisystem Disease Manifestations



CNS¹⁻⁴

- Fatigue
- Excessive daytime sleepiness
- Difficulty concentrating
- Behavioral/personality changes



Ocular1-4

- Cataracts
- Ptosis



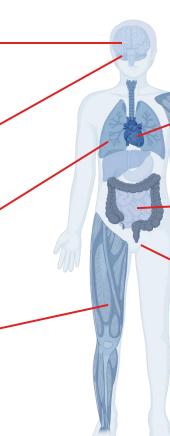
Skeletal muscle (respiratory)¹⁻⁴

- Restrictive ventilatory pattern
- Shortness of breath



Skeletal muscle¹⁻⁴

- Muscle weakness
- Myotonia
- Balance issues
- Muscle pain
- Atrophy





- Conduction disturbances
- Arrythmia
- Cardiomyopathy
- Sudden cardiac death



Smooth muscle¹⁻⁴

- Dysphagia
- Constipation
- Heartburn
- Regurgitation



Endocrine¹⁻⁴

- Thyroid disorders
- Diabetes
- Male hypogonadism
- Vitamin D deficiency

Slide does not represent an exhaustive list of symptoms.

CNS, central nervous system.

Image from BioRender.

Muscle Weakness, Fatigue, and Daytime Sleepiness Are the Most Prevalent and Impactful Symptoms Reported by Individuals With DM1

Top 10 Most Commonly Reported DM1 Symptoms and Their Impact*

Prevalence, %	
94	Muscle weakness (dystrophy)
93 †	Fatigue
93	Daytime sleepiness
88 †	Myotonia (difficulty relaxing muscles)
79	Balance issues



Muscle aches (cramps)	79
Difficulty swallowing (dysphagia)	73
Muscle pain	72
Constipation	68 [†]
Droopy eyelids (ptosis)	66

Prevalence, %

Maximum impact

Minimum impact

Symptom Impact Scale

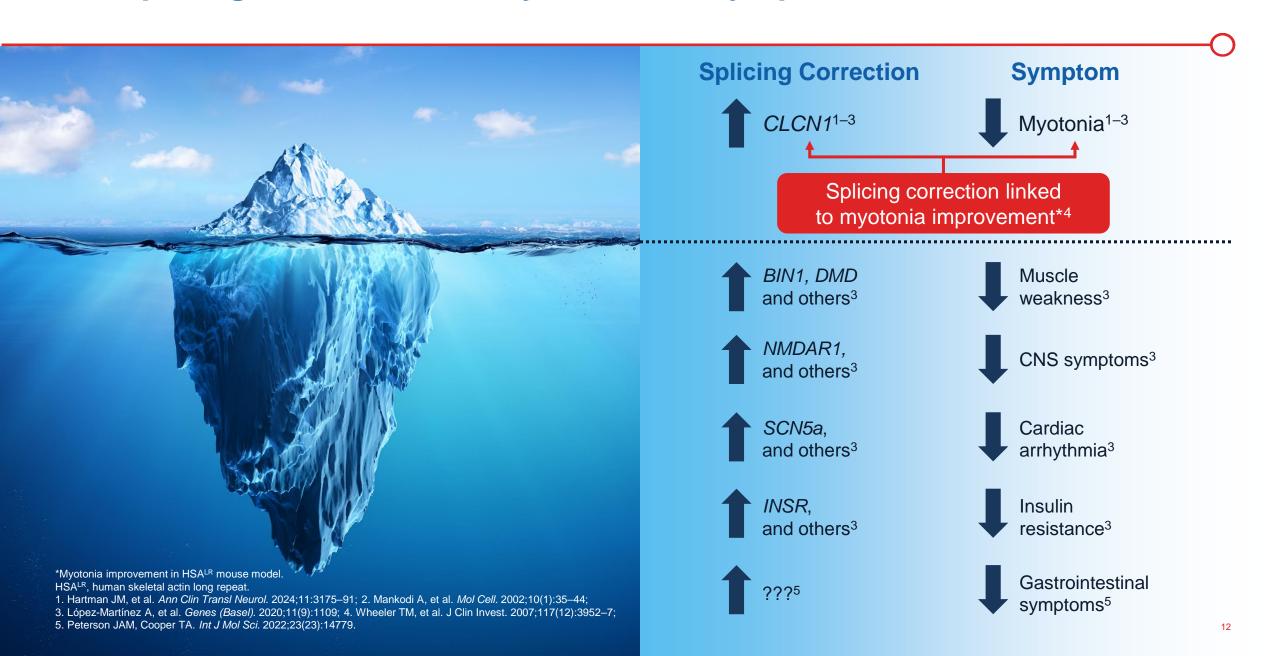
DM1, myotonic dystrophy type 1.

Image from BioRender.

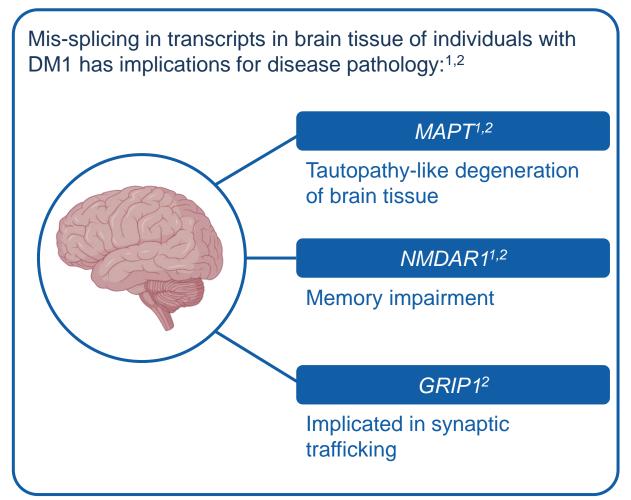
^{*}Respondents were from the United States and Canada. Statistics were controlled for age differences, and a Bonferroni correction for multiple comparisons was applied. Prevalence calculations were based on n=457. Impact score ranged from 0 to 4. †Significantly higher prevalence or impact of symptoms in females (p<0.05).

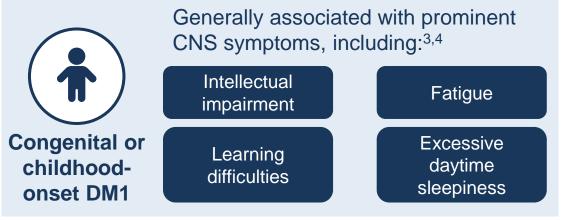
Hagerman KA, et al. *Muscle Nerve*. 2019;59(4):457–64.

Mis-splicing Has Been Directly Linked to Symptoms in DM1^{1,2}



Mis-splicing in the Brain Contributes to Cognitive and Neurodegenerative Pathology in DM1¹







Associated with multiple CNS manifestations, including:^{3,5}

Excessive daytime sleepiness

Fatigue

Cognitive impairment

CNS, central nervous system; DM1, myotonic dystrophy type 1. Image from BioRender.

^{1.} López-Martínez A, et al. *Genes (Basel)*. 2020;11(9):1109; 2. Berglund AJ, et al. J Neuromuscul Dis. 2025;22143602251365101; 3. Hagerman KA, et al. *Muscle Nerve*. 2019;59(4):457–64; 4. Ho G, et al. *World J Clin Pediatr*. 2015;4(4):66–80; 5. De Antonio M, et al. *Rev Neurol (Paris*). 2016;172(10):572–80.

DM1 Presents With Varying Disease Phenotypes Based on Age at Symptom Onset

Congenital^{1–3} (<1 month)



- Hypotonia
- Respiratory distress
- Cognitive defects
- Motor and developmental delays
- Feeding difficulties

Childhood-onset^{1–3} (1 month–18 years)



- Facial weakness
- Cognitive defects
- Psychosocial issues
- Incontinence
- Muscle weakness

Adult-onset^{1–3} (18–40 years)



- Myotonia
- Muscle weakness
- Cognitive defects
- Cataracts
- Conduction defects
- Insulin resistance
- Respiratory failure

Late-onset adult^{1–3} (40+ years)

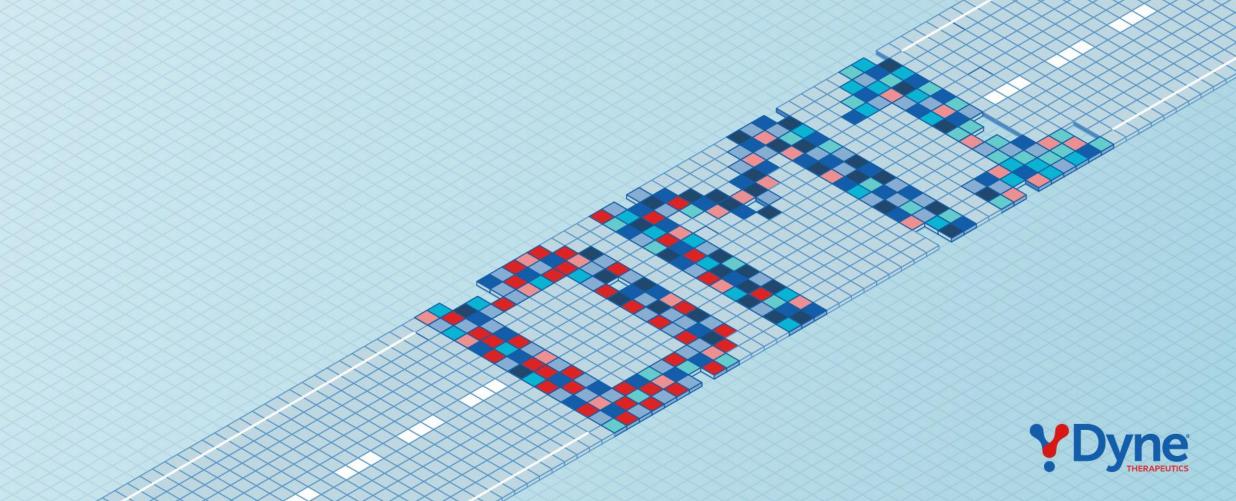


- Mild myotonia
- Cataracts
- Cardiac defects

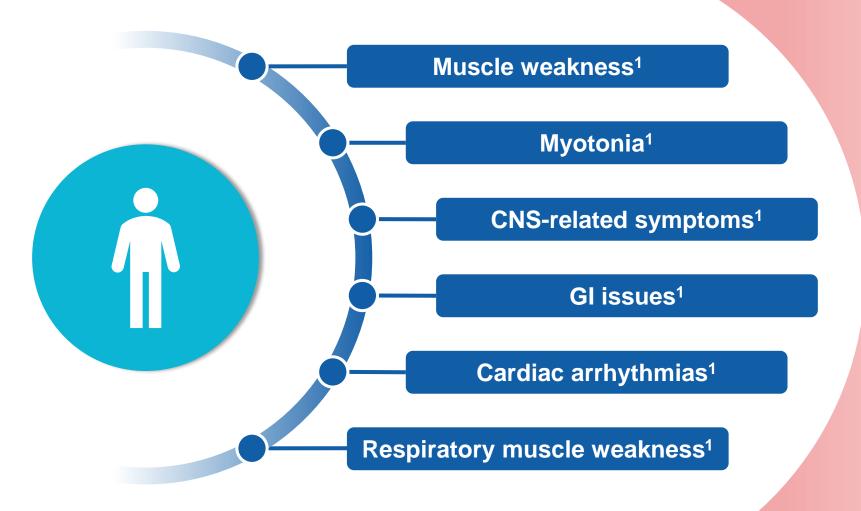
DM1, myotonic dystrophy type 1.

Multidisciplinary Management of DM1: Are We Getting It Right?

Valeria Sansone, PhD, MD



Management of DM1 Should Address the Range of Symptoms That Impact the Daily Lives of Individuals Living with the Disease



Management goals^{2,3}

Management by a multidisciplinary team to support multisystem involvement and reduce the risk of complications

Therapeutic
approaches that
address the totality of
symptoms

Slide does not represent an exhaustive list of symptoms.

CNS, central nervous system; DM1, myotonic dystrophy type 1; GI, gastrointestinal.

^{1.} Hagerman KA, et al. *Muscle Nerve*. 2019;59(4):457–64; 2. Gutierrez Gutierrez G, et al. *Neurologia (Engl Ed)*. 2020;35:185–206;

^{3.} Ho G, et al. World J Clin Pediatr. 2015;4(4):66–80.

The NeMO Model: Multidisciplinary, Holistic Care That Addresses the Needs and Priorities of Individuals with DM1



Cross-specialty assessments



A reference network for the diagnosis, treatment, and research of NMD



Mobility/ independence



Orthosis/ independence



Cardiac





The NeMO Model in Practice: Meet the Patient



Gender: Female

Age: 45 years

Occupation: School teacher

History:

- Diagnosed with DM1 at 20 years of age
 - 530 CTG repeats
 - Paternally transmitted
 - First symptom: hand myotonia
- Lost her job because of the disease
- Using a wheelchair due to foot fracture after a fall

Present day:

- Very depressed
- Feeling more fatigued
- Weight constantly increasing, despite episodes of choking



The NeMO Model in Practice: The Patient's Care Needs Are Assessed in the Mobility/Independence Outpatient Clinic



Gender: Female

Age: 45 years

Occupation: School teacher

Care needs:

- Neurologist + PT: due to loss of ability to stand and walk unaided
- Pulmonologist + respiratory PT: for assessment of pulmonary function and potential need for a ventilator
- Psychologist: as additional mental health support is required
- Nutritionist: to investigate the disconnect between choking and increased weight

INPATIENT
STAY PLANNED

The NeMO Model in Practice: The Multidisciplinary Care Team Manages The Patient's Symptoms During Her Inpatient Stay



Neurologists, physiatrist, and PTs

 Motor rehabilitation program to regain walking ability initiated



Pulmonologists and respiratory PTs

- → Ventilatory parameters assessed to see if patient meets criteria for NIV
 - Improvement of nocturnal saturimetry and reduced clusters observed
 - Ventilatory parameters were not quite right
- CT scan of thorax showed food in the esophagus
- → Qualitative sleep assessment undertaken, using PROs



Psychology team and neuropsychologists

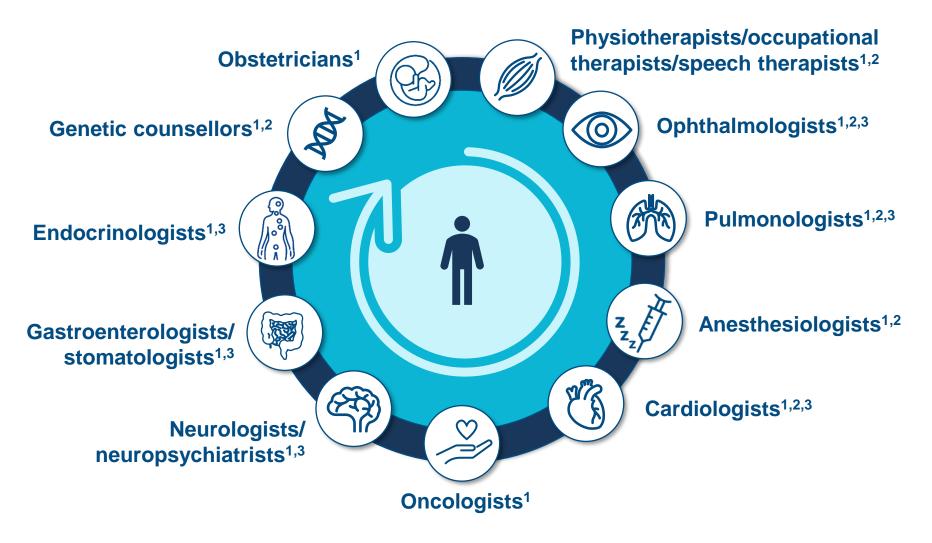
- Interviews to address depression
- Medication discussed with neurologists
- → Battery of NPS tests completed
- → Brain MRI showed multiple white matter hyperintense lesions, but NPS tests were within normal range



Nutritionist, speech therapist, and ENT

- → FEES showed achalasia
- Overweight: diet consistencies and postural modifications

The Goal of Current DM1 Management is Symptom Relief But There is a Need for Treatment That Addresses the Totality of Symptoms

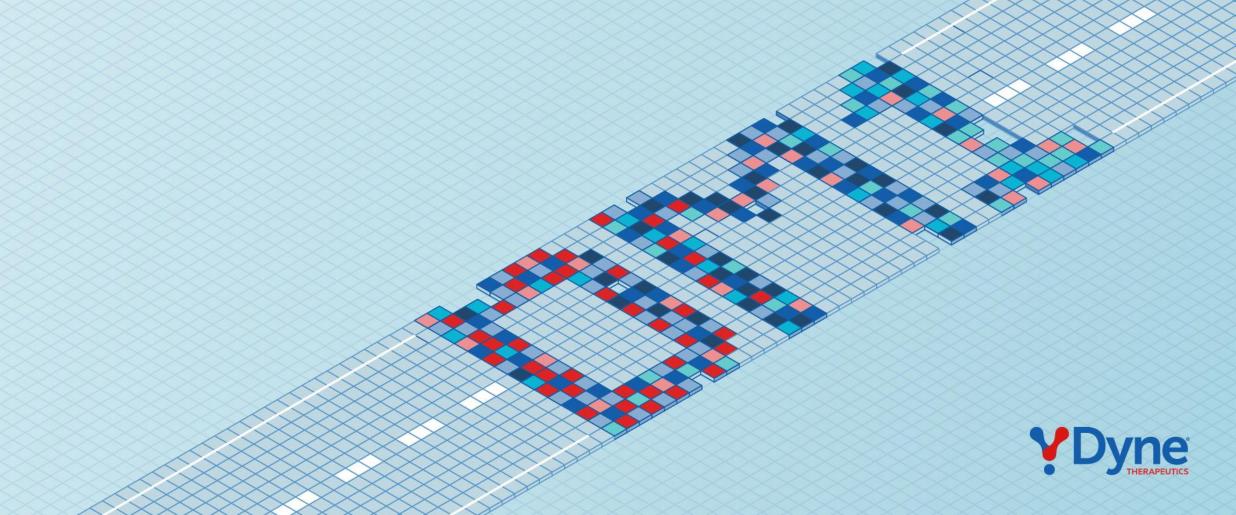


DM1, myotonic dystrophy type 1.

^{1.} Gutiérrez Gutiérrez G, et al. Med Clin (Barc). 2020;153(2):82.e1-82.e17; 2. Ashizawa T, et al. Neurol Clin Pract. 2018;8:507–20; 3. Bird TD. Myotonic Dystrophy Type 1. 1999 Sep 17 [Updated 2021 Mar 25]. In: Adam MP, Everman DB, Mirzaa GM, et al., editors. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993–2022.

Addressing the Multisystem Manifestations of DM1 with DYNE-101 to Deliver Functional Improvement

Valeria Sansone, PhD, MD



zeleciment basivarsen (z-basivarsen, Formerly Known as DYNE-101) Addresses the Central Pathobiology of DM1 to Enable Broad Functional Improvement

Robust and widespread delivery

ASO conjugated

to Fab targeting

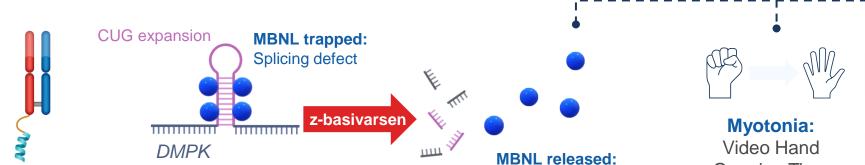
TfR1

DMPK degradation in the nucleus

MBNL release and splicing correction

Early clinical effect

Broad functional improvement



Differentiated MOA z-basivarsen

Opening Time (vHOT)

Muscle strength:

Quantitative Muscle Testing



Functional assessments:

10-Meter Walk/Run: 5 Times Sit-to-Stand



Patient-reported outcomes:

Myotonic Dystrophy Health Index (MDHI)



z-basivarsen is an investigational medicine being evaluated in the ongoing ACHIEVE trial and has not received approval by the FDA, EMA, or any other regulatory authorities. Image depicts the intended z-basivarsen mechanism of action.

ASO, antisense oligonucleotide; DM1, myotonic dystrophy type 1; DMPK, dystrophia myotonica protein kinase; Fab, antigen-binding fragment; MBNL, muscleblind-like; MOA, mechanism of action; TfR1, transferrin receptor 1. 1. Lilleker J. et al. Oral presentation at the MDA Clinical and Scientific Conference, Dallas, TX, USA, March 16–19, 2025, Oral O44; 2. Sansone V. et al. Poster presentation at the Annual International Congress of the WMS. Vienna, Austria, October 7-11, 2025. Poster 380P.

Splicing corrected

The Safety and Efficacy of z-basivarsen are Being Investigated in the Phase 1/2 ACHIEVE Trial: MAD Portion Overview



Population^{1,2}

- Adult patients living with DM1
- Ages 18 to 49 years

Primary Endpoints^{1,2}

Safety and tolerability

Key Secondary Endpoints^{1,2}

- Pharmacokinetics
- Change from baseline of:
 - Splicing
 - DMPK RNA expression
 - Multiple assessments of muscle strength and function
 - Patient-reported outcomes, including MDHI

Stages of ACHIEVE^{1,2}

- Multiple ascending dose (MAD): 24 weeks
- Open-label extension (OLE): 24 weeks
- Long-term extension (LTE): 96 weeks

Data from the MAD portion of the study used to select the registrational dose and dose regimen^{1,2}

z-basivarsen is an investigational medicine being evaluated in the ongoing ACHIEVE trial and has not received approval by the FDA, EMA, or any other regulatory authorities. DM1, myotonic dystrophy type 1; *DMPK*, dystrophia myotonica protein kinase; MDHI, myotonic dystrophy health index. Additional endpoints include select secondary and exploratory endpoints.

1. Lilleker J, et al. Oral presentation at the MDA Clinical and Scientific Conference, Dallas, TX, USA, March 16–19, 2025. Oral O44; 2. Sansone V, et al. Poster presentation at the Annual International Congress of the WMS, Vienna, Austria, October 7–11, 2025. Poster 380P.

z-basivarsen Showed a Favorable Safety Profile^a with No Serious Related TEAEs

Summary of Treatment Emergent Adverse Events (TEAEs)^a

	Participants with ≥1 TEAE – n (%)					
TEAE Category	1.8 mg/kg Q4W+Rec. N=16	3.4 mg/kg Q4W+Rec. N=16	3.4 mg/kg Q8W N=8	5.4 mg/kg Q8W N=8	6.8 mg/kg Q8W N=8	Overall (N=56)
Any TEAE	16 (100)	16 (100)	8 (100)	8 (100)	8 (100)	56 (100)
Any related TEAE	9 (56)	10 (63)	3 (38)	6 (75)	6 (75)	34 (61)
Any serious TEAE	4 (25)	0	1 (13)	0	0	5 (9)
Any serious related TEAE	0	0	0	0	0	0
Any TEAE leading to withdrawal from study	0	0	0	0	0	0
Any TEAE leading to death	0	0	0	0	0	0

Most TEAEs Were Mild or Moderate in Intensity^a

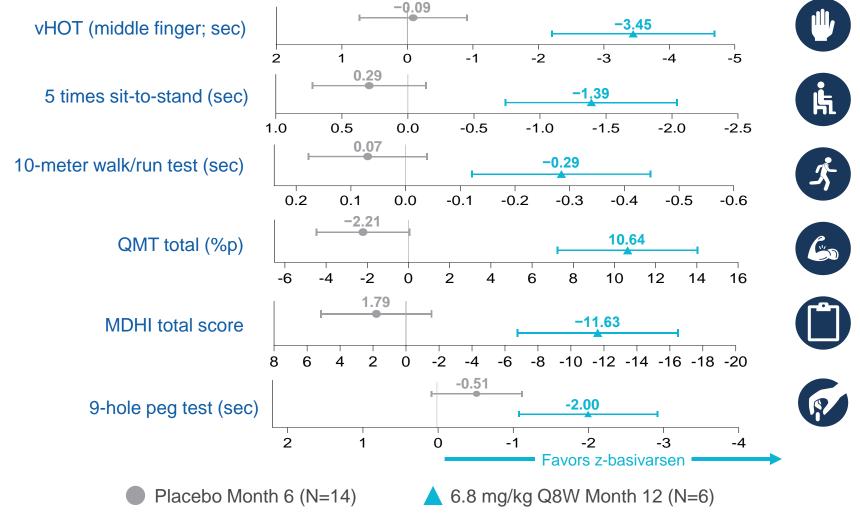
- 6 serious TEAEs unrelated to study drug
 - Atrioventricular block first degree (1)^b
 - Pneumonia (2 events in same participant)
 - Pulmonary embolism (1)^c
 - Hyponatremia (1)
 - Influenza (1)
- Most common TEAEs (≥20% participant incidence)d
 - Nasopharyngitis (41%)
 - Procedural pain (34%)
 - Influenza (30%)
 - Infusion-related reaction (29%)
 - Headache (27%)
 - Diarrhea (23%)

Additional Safety Data

- Liver enzyme elevations have been observed in a minority of participants
 - No impact on liver function (bilirubin or coagulation)
 - Interpretation is complicated by underlying disease and elevated baseline values up to ~2.5x greater than the upper limit of normal
- No participants have demonstrated persistent related anemia or thrombocytopenia

~1000 doses of study drug administered to date representing 93 patient-years of follow-up¹

z-basivarsen Led to Functional Improvement Across Several Clinical Measures



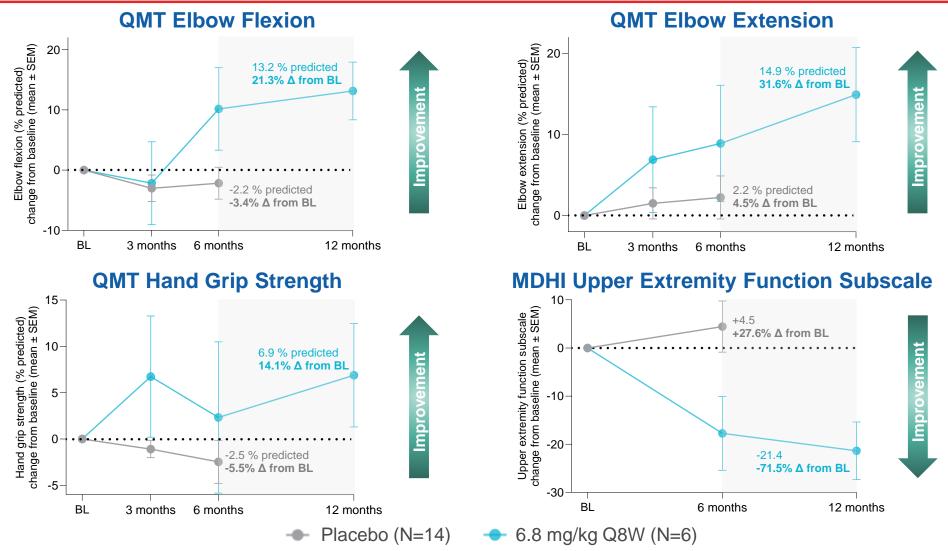
z-basivarsen is an investigational medicine being evaluated in the ongoing ACHIEVE trial and has not received approval by the FDA, EMA, or any other regulatory authorities.

MDHI, myotonic dystrophy health index; Q8W, every 8 weeks dosing; QMT quantitative muscle testing; SEM, standard error of the mean; vHOT, video hand opening time.

Mixed model for repeated measures (MMRM) fixed effects: dose, visit, baseline, dose by visit interaction, baseline by visit interaction. All dose groups except recovery group; excluding placebo data after 6 months; Data presented are least squares (LS) mean change from baseline ± SEM; 6 months = 169 days, 12 months = 337 days.

Sansone V, et al. Poster presentation at the Annual International Congress of the WMS, Vienna, Austria, October 7-11, 2025. Poster 380P.

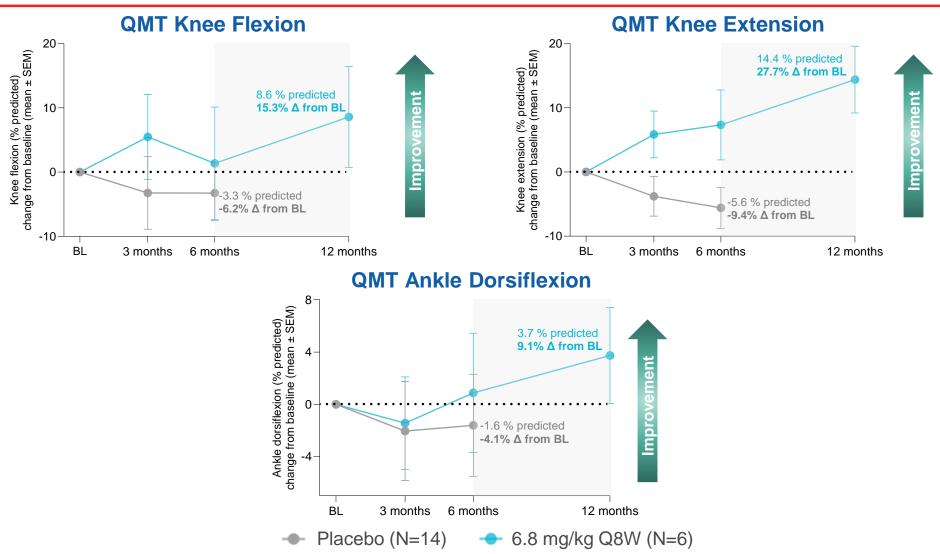
Improvement in Strength in Proximal and Distal Muscles of the Upper Body Were Supported by Patient-Reported Improvement in Upper Extremity Function



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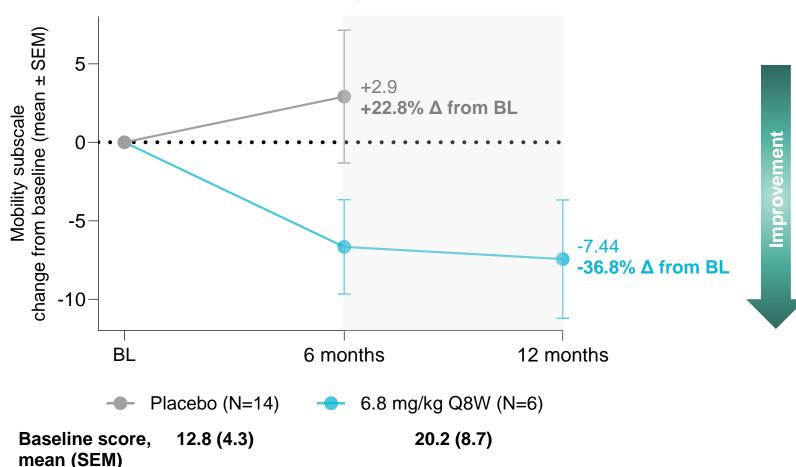
BL, baseline; MDHI, myotonic dystrophy health index; Q8W, every 8 weeks dosing; QMT, quantitative muscle testing; SEM, standard error of the mean. 3 months = 85 days; 6 months = 169 days; 12 months = 337 days. Sansone V, et al. Poster presentation at the Annual International Congress of the WMS, Vienna, Austria, October 7–11, 2025. Poster 380P.

Strength Improvement Was Also Noted In Proximal and Distal Muscles of the Lower Body Through 12 Months



Lower Extremity Strength and Ambulation Improvement Was Supported By Patient-Reported Improvement in Mobility





MDHI Mobility Subscale

How much do the following impact your life now?

- Difficulty staying in a standing position
- Difficulty walking long distances
- 3) Difficulty with stairs
- Inability to walk fast
- Difficulty with balance
- Impaired walking
- Difficulty rising from a seated position
- Inability to run
- Ankle weakness
- 10) Tripping
- 11) Falls
- 12) Difficulty getting up from a lying position
- 13) Limitations with your mobility or walking

Response options

It affects my life severely It affects my life very much

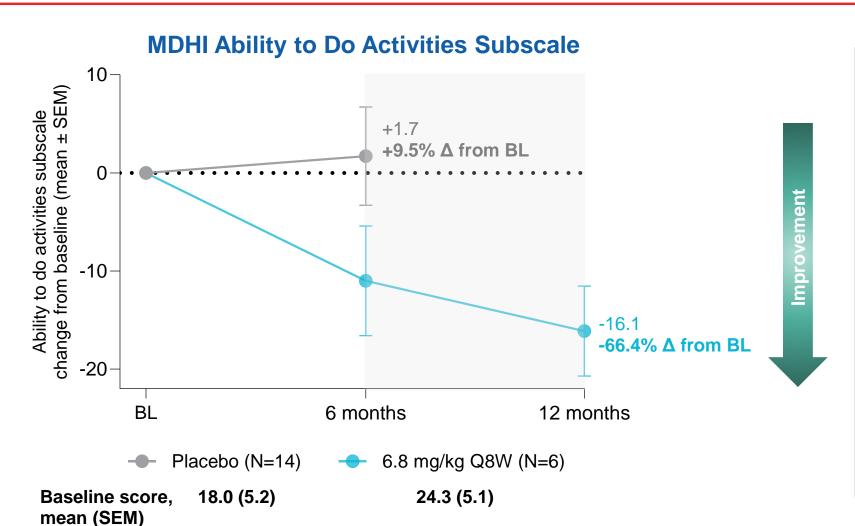
It affects my life moderately

It affects my life a little

I experience this but it does not affect my life

I don't experience this

Strength and Function Improvement Was Associated With Patient-Reported Improvement in Ability to Perform Activities



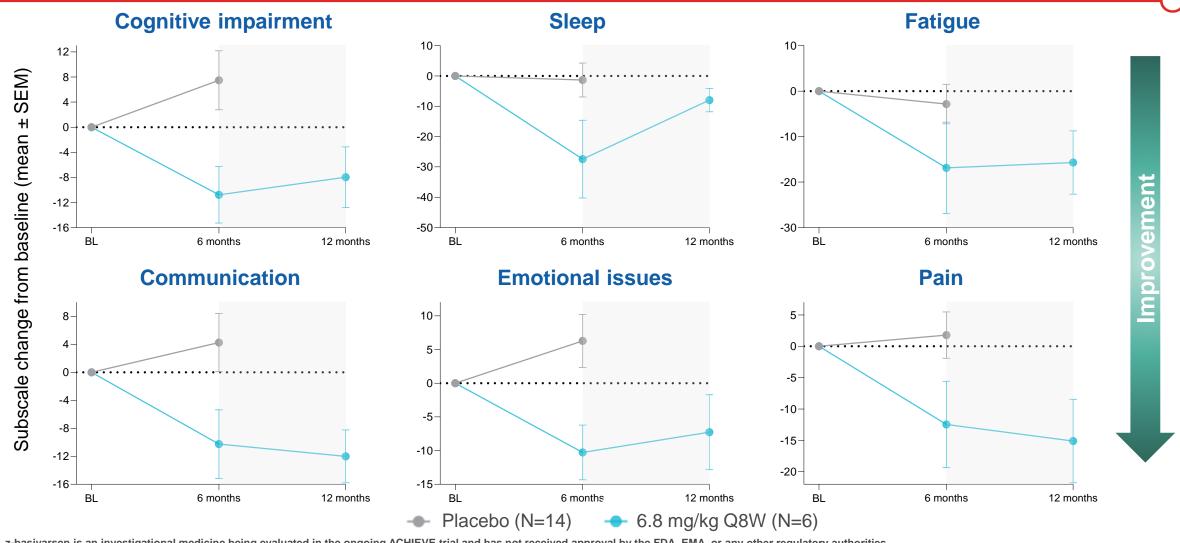
MDHI Ability to Do Activities Subscale

How much do the following impact your life now?

- 1) Inability to do activities
- 2) Difficulty opening jars or bottles
- 3) Difficulty playing sports
- Trouble going up step ladders
- 5) Inability to keep pace with friends while walking
- 6) Impaired dancing
- 7) Impaired ability to exercise
- 8) Difficulty using a hammer or other tool
- 9) Taking longer to do household chores
- 10) Impaired sexual function
- 11) Problems using buttons or zippers
- 12) Difficulty scrubbing surfaces
- 13) Difficulty cleaning a home
- 14) A change in your activities because of gastrointestinal symptoms

Response options
It affects my life severely
It affects my life very much
It affects my life moderately
It affects my life a little
I experience this but
it does not affect my life
I don't experience this

Sustained Improvement in CNS-related MDHI Subscales Was Seen Over Time



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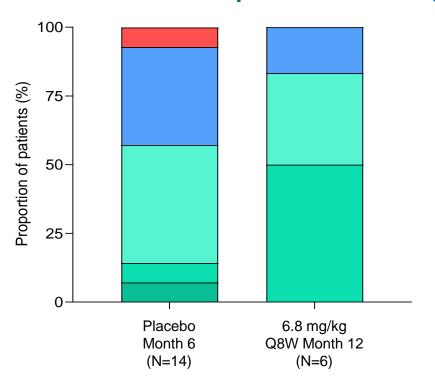
BL, baseline; CNS, central nervous system; MDHI, myotonic dystrophy health index; Q8W, every 8 weeks dosing; SEM, standard error of the mean.

Patient-reported outcomes (PROs) including MDHI collected at baseline, 6 months (169 days), and 12 months (337 days).

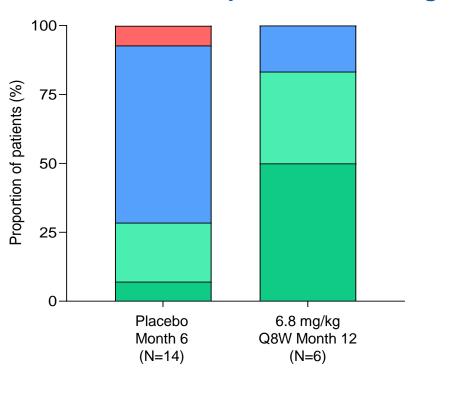
Sansone V, et al. Poster presentation at the Annual International Congress of the WMS, Vienna, Austria, October 7–11, 2025. Poster 380P.

Questionnaires Showed Improvements in Patient and Clinician Impressions of Global Functioning From Baseline

Patient Global Impression of Change



Clinician Global Impression of Change



Very much improved

Much improved

Minimally improved

No change

Minimally worse

Much worse

Very much worse

Summary

- z-basivarsen showed a continued favorable safety profile, with no serious related TEAEs^a
- Multisystem improvement in function and strength in upper and lower extremities was observed with z-basivarsen
 - This was supported by patient-reported outcomes, including CNS-related MDHI subscales
- The functional improvements seen with z-basivarsen translate into meaningful impact, as described by clinicians and their patients



Poster Session 3: Hall X1 (Friday, October 10 at 14.15–15.15)

380P – DYNE-101 Targets
the Underlying Cause of DM1
to Enable Multisystem
Functional Improvement in
the ACHIEVE Trial

^aData as of April 23, 2025.

CNS, central nervous system; DM1, myotonic dystrophy type 1; MDHI, myotonic dystrophy health index; TEAE, treatment-emergent adverse event.

Sansone V, et al. Poster presentation at the Annual International Congress of the WMS, Vienna, Austria, October 7–11, 2025. Poster 380P.

Q&A

