

Baseline characteristics of GUARDIAN study (NCT06713135) cohort

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Background

- Vamorolone is a dissociative corticosteroid approved for treatment of Duchenne muscular dystrophy (DMD) in the USA (in patients aged ≥2 years) and the EU, the UK, and Canada (in patients aged ≥4 years).¹⁻⁴
- Vamorolone has shown comparable short-term efficacy to prednisone and a more favorable safety profile.⁵

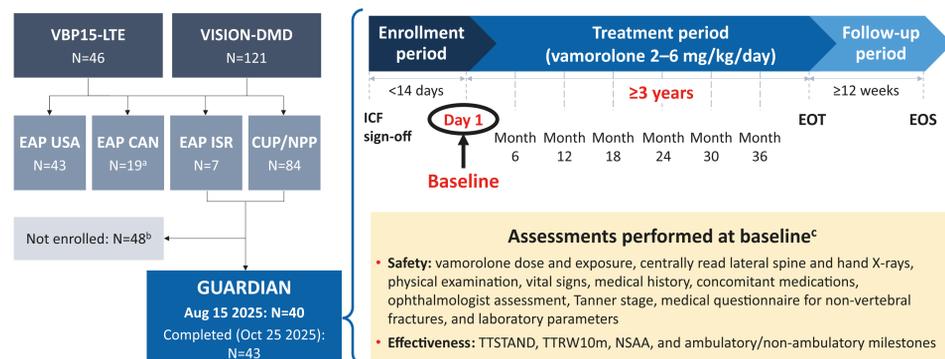
Objective

- To describe the baseline characteristics of patients enrolled in the prospective, open-label, multi-center GUARDIAN study (NCT06713135, ClinicalTrials.gov⁶), which aims to assess the safety and effectiveness of long-term vamorolone treatment in boys with DMD.

Methods

- Patients enrolled in GUARDIAN completed prior vamorolone studies (VISION-DMD [NCT03439670] or VBP15-002/003/LTE [NCT02760264/NCT02760277/NCT03038399]) and continued treatment at participating sites through access programs: a compassionate use program (CUP) or named patient program (NPP) in the EU, the UK, or New Zealand; or an expanded access protocol (EAP) in Israel (Figure 1).
- This analysis includes baseline data from the first 40 patients enrolled in GUARDIAN as of August 15, 2025; enrollment was closed with N=43 (Figure 1).

Figure 1. Overview of patient flow and baseline assessments



^aDoes not include patients who transitioned from VBP15-006 to EAP CAN; ^bIncludes patients who discontinued the CUP, NPP, or EAP and patients who themselves or whose site declined participation in GUARDIAN; ^cAll assessments except X-rays were performed annually, with some also at Month 6 and then annually (X-rays were collected at baseline and then every 2 years). CAN, Canada; CUP, compassionate use program; EAP, expanded access protocol; EOS, end of study; EOT, end of treatment; ICF, informed consent form; ISR, Israel; NPP, named patient program; NSAA, North Star Ambulatory Assessment; TTRW10m, time to run/walk 10 m; TTSTAND, time to stand; USA, United States of America.

Results

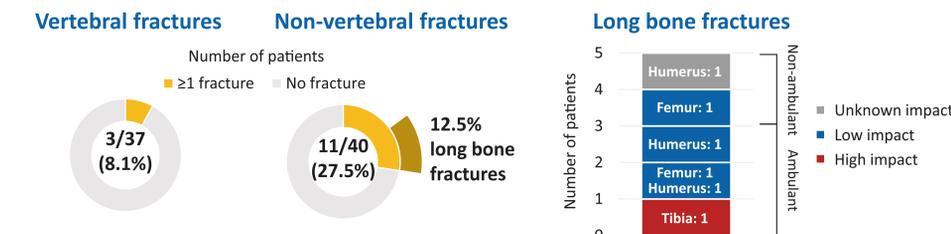
Table 1. Demographics, anthropometrics, and muscle function after 4–8 years of vamorolone exposure

Characteristic (N=40, unless specified otherwise)	Vamorolone (2–6 mg/kg/day)
Duration of treatment (years), mean (SD); min, max	5.2 (0.97); 4.0, 8.1
Average daily dose (mg/kg/day), mean (SD); min, max	4.7 (0.92); 2.5, 6.0
Age (years), mean (SD); min, max	11.0 (1.34); 9.3, 14.7
Age at first DMD symptoms (years), mean (SD); min, max	2.5 (1.63); 0.0, 5.6
Age at vamorolone initiation (years), mean (SD); min, max	5.8 (0.86); 4.2, 7.7
Time since first DMD symptoms (years), mean (SD); min, max	8.5 (1.86); 5.5, 13.7
Height (z-score), ^a mean (SD); min, max (N=38)	-0.6 (1.10); -3.0, 1.5
Weight (z-score), mean (SD); min, max	1.0 (1.32); -2.7, 3.0
BMI (z-score), ^a mean (SD); min, max (N=38)	1.3 (1.12); -2.0, 2.6
Ambulatory status	
Yes, n (%) Age (years), mean (SD); min, max	31 (77.5) 10.5 (0.83); 9.3, 12.9
No, n (%) Age (years), mean (SD); min, max	9 (22.5) 12.4 (1.76); 9.7, 14.7
Loss of ability to stand from floor, n (%)	23 (57.50)
TTSTAND (s), (N=17)	
mean (SD); min, max	8.4 (4.86); 4.0, 23.0
median (Q1; Q3)	7.3 (5.1; 9.0)
TTRW10m (s), (N=30)	
mean (SD); min, max	9.5 (7.33); 4.0, 42.3
median (Q1; Q3)	7.1 (5.5; 10.5)
NSAA (total score), (N=36)	
mean (SD); min, max	13.1 (8.96); 0.0, 33.0
median (Q1; Q3)	13.5 (5.0; 20.0)

^aIf no standing height, then based on ulnar length. BMI, body mass index; DMD, Duchenne muscular dystrophy; NSAA, North Star Ambulatory Assessment; Q1, quartile 1; Q3, quartile 3; SD, standard deviation; TTRW10m, time to run/walk 10 m; TTSTAND, time to stand.

- In standard-of-care cohorts, the mean NSAA total score 24 months before losing ambulation was 13/34.⁷

Figure 2. Bone fractures



- In total, 3/37 (8.1%) patients with available spine X-rays had vertebral fractures, and 11/40 (27.5%) patients had non-vertebral fractures, including 5/40 (12.5%) with long bone fractures (Figure 2).
- Non-vertebral fracture rates on classic corticosteroids reported in the literature vary, with long bone fractures typically accounting for the majority (reported rates range from 16.6% to 38.7%).^{8,9}
- No patients had both vertebral- and non-vertebral fractures; one patient had both a long bone and another non-vertebral fracture.

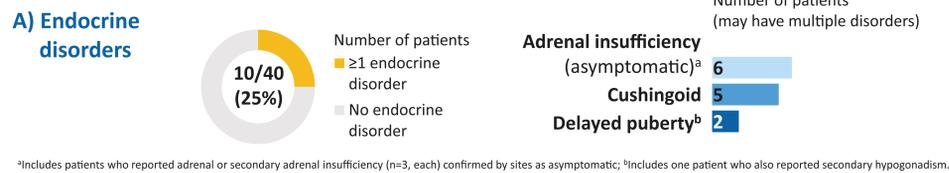
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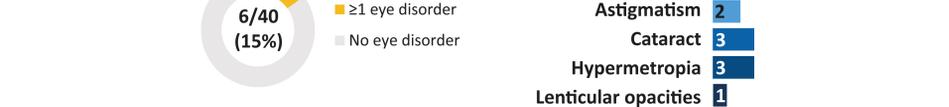
Figure 3. Ongoing medical conditions



^aIncludes patients who reported adrenal or secondary adrenal insufficiency (n=3, each) confirmed by sites as asymptomatic; ^bIncludes one patient who also reported secondary hypogonadism.

- Morning cortisol levels were centrally evaluated and results were available to the investigators.
- A total of 4/8 (50%) patients aged ≥12 years reached Tanner genital (G) stage ≥2.
- All three patients aged ≥14 years reached Tanner G≥2, one of whom reached Tanner G3, had a record of delayed puberty and secondary hypogonadism, and received testosterone for pubertal induction.

B) Eye disorders



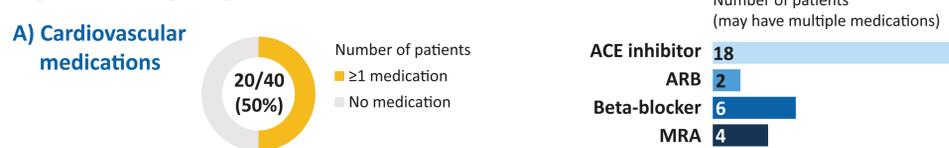
- In total, 2/38 (5.3%) patients with available data had cataracts, excluding one patient who had cataract before vamorolone treatment start.
- Intra-ocular pressure ≥21 was reported in two patients in both eyes; no glaucoma was reported.

C) Cardiac disorders



- In addition to the five patients who reported cardiac disorders, one patient reported hypertension.
- Mean (SD) Left Ventricular Ejection Fraction (%) was 59.3 (8.74) in 27 patients with available data and 59.2 (13.04) in six patients aged ≥12 years.

Figure 4. Ongoing medications



ACE, angiotensin-converting enzyme; ARB, angiotensin receptor blocker; MRA, mineralocorticoid receptor antagonist.

B) Musculoskeletal medications



^aIncludes patients who received zoledronic acid (n=2) and zoledronic acid monohydrate (n=1).

Table 2. Laboratory parameters

Parameter (N=40, unless specified otherwise)	Mean (SD)	Low, n (%)	Normal, n (%)	High, n (%)
Cholesterol (mmol/L)	4.2 (0.72)	2 (5.0)	37 (92.5)	1 (2.5)
HDL cholesterol (mmol/L) (N=38)	1.2 (0.24)	8 (21.1)	30 (78.9)	0 (0.0)
LDL cholesterol (mmol/L) (N=38)	2.3 (0.65)	2 (5.3)	35 (92.1)	1 (2.6)
Triglycerides (mmol/L) (N=39)	1.4 (0.65)	0 (0.0)	29 (74.4)	10 (25.6)
Glucose (mmol/L) (N=39)	4.5 (0.37)	0 (0.0)	39 (100.0)	0 (0.0)
HbA1c (%)	5.4 (0.38)	0 (0.0)	39 (97.5)	1 (2.5) ^a
Morning cortisol (nmol/L) (N=38)	63.4 (69.95)	25 (65.8)	13 (34.2)	0 (0.0)
Alkaline phosphatase (IU/L)	113.0 (28.83)	36 (90.0)	4 (10.0)	0 (0.0)
Potassium (mmol/L)	4.2 (0.26)	0 (0.0)	39 (97.5)	1 (2.5) ^b
Sodium (mmol/L)	139.4 (1.47)	0 (0.0)	40 (100.0)	0 (0.0)

^aRepresents one patient who reported type 1 diabetes (HbA1c: 7.5%); ^bRepresents one patient who received spironolactone (potassium: 4.9 mmol/L). FSH, follicle-stimulating hormone; HbA1c, glycated hemoglobin A1c; HDL, high-density lipoprotein; LDL, low-density lipoprotein; LH, luteinizing hormone; SD, standard deviation.

- Glucose and lipid parameters were within normal ranges in the majority of patients (Table 2).
- Morning cortisol levels were indicative of adrenal suppression in the majority of patients (Table 2).

Conclusions

- At study entry into GUARDIAN after 4–8 years of vamorolone exposure, patients showed normal growth and metabolic parameters and a low prevalence of vertebral fractures and cataracts. Prevalence of non-vertebral fractures was in accordance with published literature; long bone fractures were at the lower end of reported rates, indicating a favorable profile for chronic use.
- Non-ambulatory rates were comparable to those observed with traditional corticosteroids.
- Future prospective GUARDIAN data will provide further evidence on the long-term effectiveness and safety of vamorolone treatment.

Disclosures

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