

Partnerships with Patient Advocacy Groups (PAGs) to advance Clinical development programs: Spotlight to Duchenne Muscular Dystrophy (DMD).

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Poster presented at 10th European Conference on Rare Diseases & Orphan Products (ECRD) (14-15 May 2020).

01 Introduction

What is Duchenne Muscular Dystrophy (DMD)?

DMD is a genetic, degenerative disease that is inherited in an X-linked recessive mode with an incidence of up to **1 in 3,500** live born males worldwide.^{(1) to (4)} DMD causes a progressive loss of muscle strength since boys diagnosed with DMD have a lack of a protein called dystrophin. Dystrophin protects muscle fibers from breaking down. Usually the leg muscles are affected first, resulting in children losing the ability to walk by the age of **7-13 years**. As boys grow older, the heart and respiratory muscles are affected⁽²⁾.

Where do we stand in terms of clinical research in the field of DMD?

Clinical research investigating potential treatments for DMD is a rapidly changing field. Currently, the Duchenne Drug Development Pipeline is composed of 39 potential treatments that are being tested⁽³⁾. Among them, the SIDEROS trial. SIDEROS is a phase III clinical trial, evaluating the efficacy of the investigational drug idebenone compared to a placebo, in delaying the loss of respiratory function in patients with DMD receiving glucocorticoid steroids⁽⁴⁾.

Why is respiratory health important in DMD?

Duchenne affects muscles — including those important for breathing. Lung muscles will get weaker as the patient grows older. Patients with DMD are at high risk of respiratory complications as their clinical condition deteriorates due to progressive loss of respiratory muscle strength. Indeed, respiratory complications are a major cause of morbidity and mortality in DMD.^{(4) and (6)}

Which respiratory symptoms may DMD boys experience?

a) Inability to cough properly; b) Fatigue and/or problems concentrating; c) Frequent chest infection; d) Morning headaches. If a DMD patient experience any of these warning signs of respiratory dysfunction, a pulmonologist should be notified.

What was the purpose of this project?

This study aimed at providing:

- An understanding of motivations and barriers behind participation in clinical trials;
- An understanding of the patient-friendliness of information on clinical trials in DMD (Spotlight on SIDEROS trial).

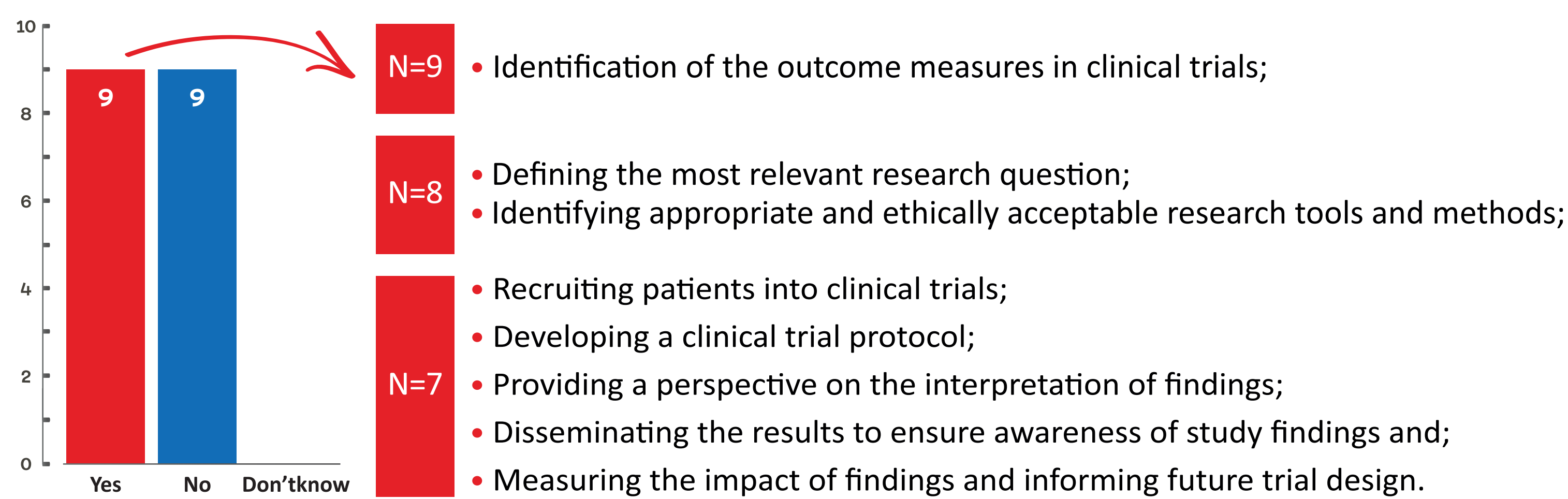
02 Materials and Methods

18 participants from 16 countries - Participants' countries of origin included: **Australia** (n=1), **Austria** (n=1), **Czech Republic** (n=1), **Germany** (n=1), **Greece** (n=1), **Hungary** (n=1), **Ireland** (n=1), **Italy** (n=1), **Poland** (n=1), **Portugal** (n=1), **Romania** (n=1), **Spain** (n=1), **Sweden** (n=1), **Switzerland** (n=1), **The United Kingdom** (n=3), and the **United States of America** (n=1).

Methods - Quantitative research: 1) A survey was designed; 2) The data was collected; 3) Questionnaire data was analysed using descriptive statistical presentations, with the assistance of the software Survey Monkey.

03 Results - General information about the participation in clinical trials on DMD

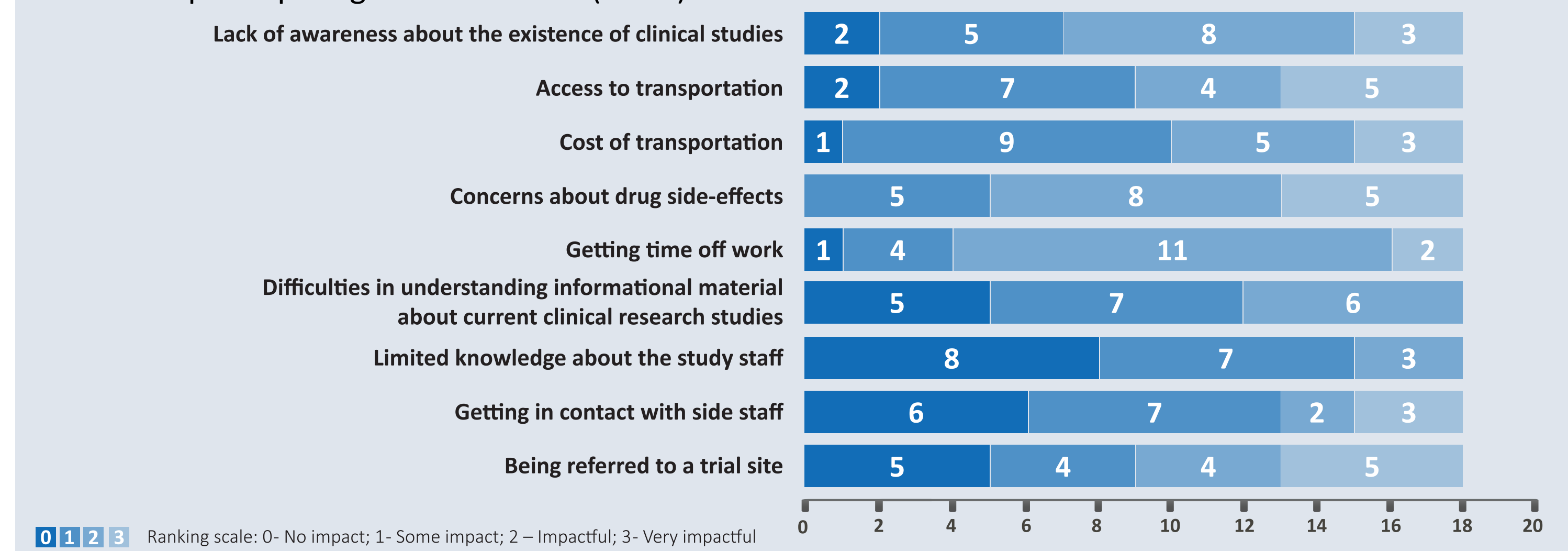
The results show that nine out of eighteen participants were involved in designing and/or planning of DMD clinical trials.



Several forms of designing and/or planning DMD clinical trials have been identified: (N=9).

Form	n
Identification of the outcome measures in clinical trials	9
Defining the most relevant research question	8
Identifying appropriate and ethically acceptable research tools and methods	8
Recruiting patients into clinical trials	7
Developing a clinical trial protocol	7
Providing a perspective on the interpretation of finding	7
Disseminating the results to ensure awareness of study findings and	7
Measuring the impact of findings and informing future trial design	7
Developing clinical trial participant materials	6
Conducting the trial in a participant friendly and ethically acceptable way	5
Donating tissue/blood/DNA samples for research	4
Other(s)	0

Access to transportation, drug side-effects and being referred to a trial site were considered the major barriers to participating in clinical trials (N=18).



The main motivations for taking part in clinical trials were altruism and improving health status (N=18).

Motivation	n
Altruistic reasons	17
To help improve your personal condition	16
Physician influence	15
To receive expert medical care at leading healthcare facilities while participating in important edical research	12
To have access to health care	9
Other(s)	0

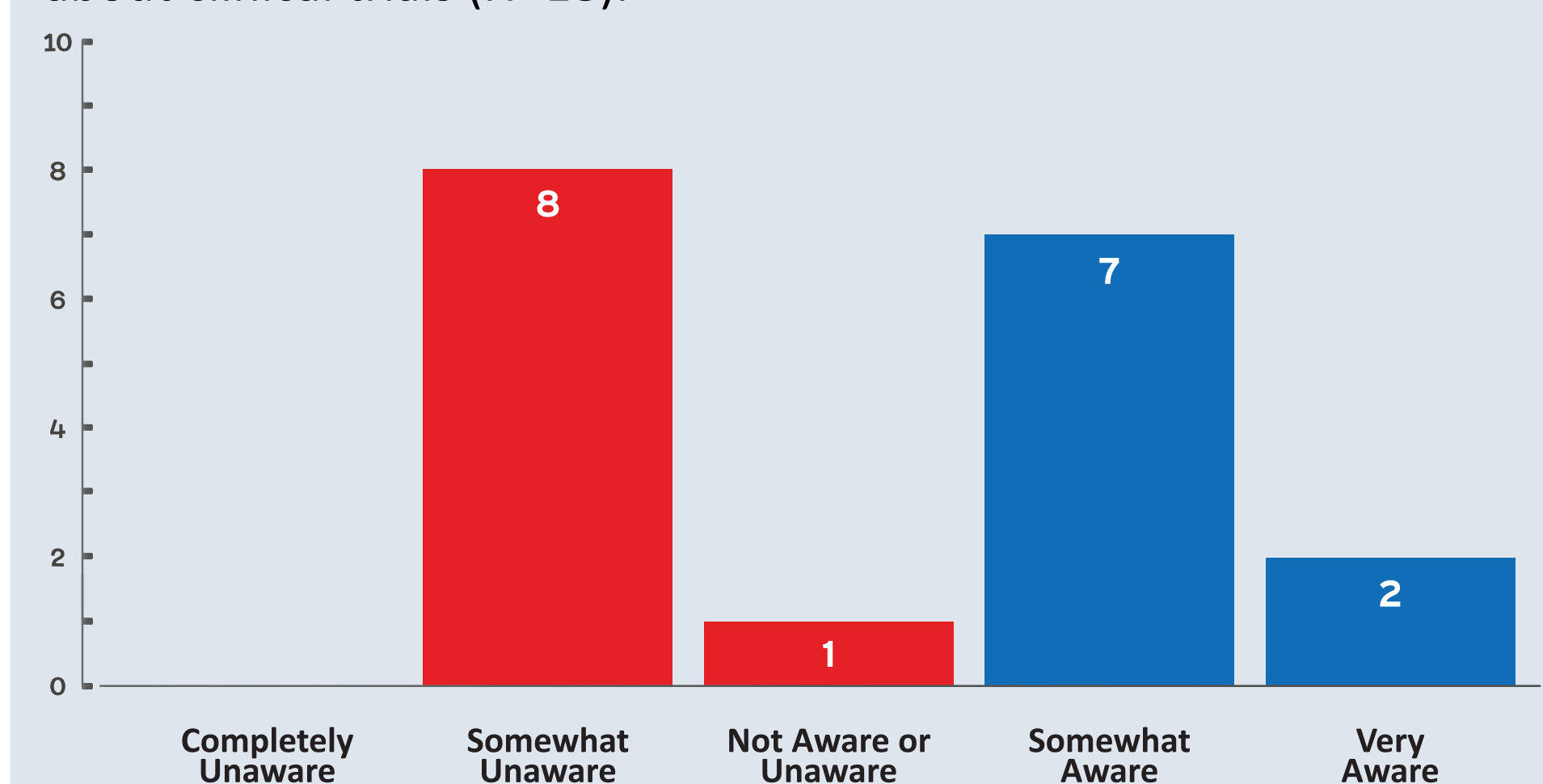
04 Results - Resources to disseminate ongoing clinical trials

Internet and patient organisations were considered the main sources of information about existing clinical trials.

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Source	n
Internet	17
Patient organisation	16
Social media	11
Medical staff	10
Pharmaceutical Industry	10
Other individuals/families with the condition	9
Webinars organised by a patient group	9
Health forum	8
Nurse	2
Member of a genetic team	0
Other(s)	0

Some DMD patients and/or families are still somewhat unaware about clinical trials (N=18).



Healthcare professionals (n=18), DMD patient advocacy groups (n=17) and scientific conferences (n=16) are the preferred source to receive information on current DMD clinical trials (N=18).

Source	n
Medical doctor or nurse that follows the patient	18
DMD patient advocacy group	17
Scientific conferences	16
Social media	12
Medical press	12
Online forums	11
Rare disease network	11
Pharmaceutical industry	10
Specific websites	2
Governmental organisations	7
General press	7
Books and leaflets	7
Other(s)	0

05 Results - Health information related to the existing SIDEROS study sources of material

The information regarding the SIDEROS trial was considered fairly easy or very easy to understand.

The SIDEROS study: evaluating DMD-associated respiratory impairment. <https://www.siderosdmd.com/>

Most helpful sections

- About idebenone
- SIDEROS trial overview

Least helpful sections

- Respiratory Function in DMD
- Trial Endpoints
- Trial locations

When asked about how to improve <https://www.siderosdmd.com/> website, some participants recommended:

- ☑ To include "The name of a contact in case of questions regarding SIDEROS"
- ☑ "To learn how the patients participating in the study will receive information regarding their participation? When will participants receive the data and outcomes?"
- ☑ "To include possibilities/ opportunities for parents to report the progress of the trial"
- ☑ To include "A section about Duchenne"
- ☑ To include "An explanation about %predicted in FVC"

06 Resources

To learn about respiratory symptoms, management & care

Organisations around the world play a key role in providing information to people affected by DMD. Patient organisations' preferred tools and materials to provide information about respiratory function decline include social media, scientific conferences, newsletters, group meetings, online forums and websites. Other resources are:

Duchenne Pulmonary Awareness Video Series at:

www.parentprojectmd.org/duchenne-pulmonary-awareness-video-series/

DMD Clinical Trial Updates - Clinicaltrials.gov is a good and trustworthy tool to look at ongoing studies in DMD.

07 Listening to the patient voice

"It is very good to see a trial open to adults, this is quite rare and means we haven't been very involved with most pharmaceutical companies. (Participant 3)"

08 Conclusions

- The results point out the appropriateness of including patients or patient representatives in designing and raising awareness for clinical trials.
- The findings also show the key role of patient organisations as a bridge for clinical trial dissemination.

09 References

- (1) Mendell JR & Lloyd-Puryear M. Muscle Nerve 2013; 48:21–26. (2) Passamano L, et al. Acta Myol 2012; 31:121–125. (3) Bushby K, et al. Lancet Neurol 2010; 9:77–93. (4) Timpani CA, et al. Med Hypotheses 2015 ; 85:1021–1033. (5) <https://takeabreathdmd.com> accessed 20 February 2020. (6) S. Khirani, A. Ramirez, G. Aubertin, et al. Respiratory muscle decline in Duchenne muscular dystrophy Pediatr Pulmonol, 2014; 49: 473-481.

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