SMA Expanded Dataset

Annual Report: Year 1

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Executive Summary

This report aims to summarise and discuss the progress made in Year 1 of the TREAT-NMD Expanded SMA Dataset Implementation Project, and to lay out key plans for Year 2.

8 registries were prioritised for support during year 1, and at the end of the reporting period all 8 registries had started collecting the expanded dataset for new or follow-up patients. Dataset compliance is high; with an average of 98% for mandatory items and 90% for highly encouraged items.

A range of support packages, events, tools and processes have been developed to support the registries and the dataset itself, including a dataset manual, annual Curator Workshops, financial bursaries, an SMA Outcome Measure Library and a formalised dataset revision process.

10 registries will take part in year 2; some of which have already started work on implementing the dataset, and will benefit from a more structured communications approach and the lessons learnt from year 1.

Financial support for this project is provided by Biogen.

1. Introduction

In September 2018, following a pilot study, TREAT-NMD expanded its core SMA dataset for collection by its global network of SMA Registries. The purpose of the expansion was to better inform on the natural history of SMA, provide context to understand the safety and effectiveness of new treatments, and support post marketing surveillance (PMS) for those new treatments.

The results from the pilot study informed the final contents of the dataset as well as a plan for the 3-year phased implementation project. During year 1 (May 2019 – May 2020) the project team worked with and supported 8 registries in the TREAT-NMD network to successfully adopt the expanded SMA dataset in their data collection activities.

2. Deliverables

Table 1: Year 1 deliverables

Deliverable	Due	Completion date
D1: Dataset Manual	M6 (Nov 2019)	13-12-2019
D2: Year 1 workshop for dataset implementation support/harmonisation	M6 (Nov 2019)	13-12-2019
D3: Financial bursaries available for year 1 registries not receiving direct Biogen funding	M6 (Nov 2019)	23-12-2019
D4: Establishment of formalised annual review process and mechanism for stakeholder input	M8 (Jan 2020)	13-12-2019
D5: Outcome measure toolkit (as defined in appendix 1)	M12 (May 2020)	15-05-2020
D6: Year 1 Project Report	M12 (May 2020)	31-07-2020 (extension)

D1: Dataset manual

The Dataset Manual was written to support healthcare professionals (HCPs) and Registry Curators/Data Managers in the collection of the SMA Core Dataset. It is openly available on the SMA Dataset Project web page is made up of the following elements:

- Background and context information on the Expanded SMA Dataset
- Data Dictionary (definitions of all data items and guidance on collection and reporting)
- Suggested standard wording/templates for consent information and ethical approval applications

The dataset manual was prepared in advance of the Year 1 workshop (December 2019) and a dedicated interactive session gathered detailed stakeholder feedback (available in appendix 2 of workshop report). This feedback is being addressed as part of the formal revision of the dataset and its supporting documents. It is anticipated that all information will be incorporated into a single source file which can be used to provide tailored views of the dataset according to need.

D2: Year 1 Workshop

The first annual TREAT-NMD SMA Dataset workshop was held on Friday 13th December 2019 at Leiden University in the Netherlands. The workshop provided information, support and discussion for Registry Curators and other stakeholders on the implementation of the expanded core dataset to date.

The full workshop report which provides an overview of the discussions and recommendations made during the workshop can be found on the SMA Dataset Project web page.

D3: Financial Bursaries

SMA registries in the TREAT-NMD network are being asked to significantly increase their data collection activities in order to comply with the expanded SMA Dataset. Work of this nature often has considerable time and/or cost implications. A financial bursary is therefore available for any registries not already receiving direct financial support from Biogen for their data collection activities.

Bursary amount

Up to €8,000 (EURO) per registry is available, in 2 parts (part A and part B) of €4,000 each.
(Both parts may be claimed together if all Part B conditions can already be met.)

Bursary timelines

Part A: 50% (€4,000) is available when the registry starts work on implementing the expanded SMA Dataset (available immediately if work has already begun)

Part B: 50% (€4,000) is available when the registry provides:

1. Evidence that data collection has begun for all relevant mandatory data items (e.g. a copy of the new registry questionnaire or case report form).
2. Feedback (provided in Part B of the Bursary Request Form) on:
    a. Benefits of / issues with the expanded dataset
    b. Suggested improvements for the expanded dataset
    c. The process of implementation and support received.

Of the bursary applications received so far, all have indicated that the true cost of implementation will be greater than €8000; although not significantly higher. Consistently, registries have reported that a substantial proportion of the bursary will be allocated to staff time for data entry and software development. All four have indicated that €1000 is needed for the training of staff, including physiotherapists and clinicians.

Table 2: Planned use of Bursary Funds (€)

	Registry 25	Registry 27	Registry 20	Registry 17
Software	3,500	3,000	3,000	2,000
Staff Time	2,000	2,000	3,000	6,000
Training	1,000	1,000	1,000	1,000
PM/Comms	500	3,000	3,000	400
Other	2,000*	0	0	1,000**
Totals	**9,000**	**9,000**	**10,000**	**10,400**

*Motor testing equipment
** Accounting services

D4: Revision Process

To ensure the TREAT-NMD SMA Dataset remains appropriate, feasible, collaborative, harmonised with other initiatives, and responsive to the needs of the whole SMA community, a formal Dataset Revision Process (hereafter the Revision Process) has been developed and can be found in full on the project web page.

Version 1 of the Core SMA Dataset was opened for consultation on 13-03-2020 with the intention for Version 2 to be released in draft for consultation in May 2020, and confirmed/published at the end of June 2020. These timelines were proven unfeasible due to the following:

- Unexpected volume of feedback received (over 650 individual comments)
- Limited availability of TGDOC Chairs to discuss feedback and make decisions.
- Home childcare commitments caused by COVID-19 during the key feedback review period

To mitigate these issues, the timelines and process were amended in the following ways. The TGDOC SMA Subgroup Leads were brought in to make the bulk of the decisions needed on dataset content, with only a final review needed from the TGDOC Chairs. A data expert was brought in to work through the feedback and improvements to the dataset structure. Dataset sections were prioritised so that those with the highest impact on critical data collection activities (e.g. Therapies and Medications) can be released earlier.

In addition to the proposed revisions to the content of the dataset, version 2 will benefit from significant improvements to the structure of the dataset, which will in turn improve the quality and accessibility of the data in the TREAT-NMD registries. Improvements include:

- Restructuring into a machine-readable format
- Standardised and clarified response options
- Properly defined data model and data types
- Stable and unique identifier for each data item
- A single source file (JSON) for the dataset containing all relevant information for each data item (descriptions, definitions, response options, applicability, implementation notes,

conditional logic, suggested wording for CRFs and example data representations). This is supported by:

- A web-based editing tool for the project team to use for future revisions
- The ability to quickly generate different views of the dataset according to need, for example mandatory items only, patient-reported items only, high level view or full detail, example CRF view and so on.

This work will result in:

- A more clearly defined and well-structured version 2 dataset to support accurate and standardised data collection and improve efficiency of future data analysis.
- Example CRF questions for each data item and example data representations to demonstrate best practise.
- A repository of high quality data items and groups which can be shared or re-used in other areas as needed.
- Links and references to international coding standards where relevant.
- Improved FAIRification of the registries collecting SMA dataset (FAIR = Findable, Accessible, Interoperable, Reusable)
- Reduced duplication and capacity for error due to multiple dataset-related documents

The version 2 draft will now be released in August 2020 for a second round of stakeholder consultation, with the final version 2 planned for release by the end of September 2020. We will also provide an updated version of the feedback log including the outcome of each suggestion (accepted/declined) and explanations where relevant. Registries will be asked to implement any relevant changes to their data collection forms within 6 months of the release date, and to keep us informed of this progress.

Based on the lessons learnt from this first formal revision, the process for future revisions will be streamlined and improved. Key changes will include:

- Stakeholders will need to include justification (e.g. an effort/benefit analysis) for each suggestion submitted.
- Stakeholders will be ranked according to their interest in and influence on the core dataset. Suggestions will be ranked using effort/benefit analysis and the stakeholder rankings.
- A Delphi-style stakeholder workshop will generate a comparatively quick consensus on the prioritised suggestions and relieve pressure on any one individual.

D5: Outcome Measure Toolkit

Renamed the SMA Outcome Measure (OM) Library, this is a quick-reference tool primarily for patient registries in the TREAT-NMD Network, to support independent decision-making and implementation of the most appropriate OMs for their patients. This is an open resource and may also prove useful to other organisations or individuals with an interest in OMs relevant to SMA.

To develop the OM Library structure and content, the project team conducted independent research and worked with Consultant Neuromuscular Research Physiotherapist, Anna Mayhew.

The Library contains the following information (where available) for each OM:

- Type of OM (Motor or PROM)
- Suitable age range / level of function
- Available languages
- Terms of use
- Link to scales
- Link to manual
- Training required
- Average time needed per patient
- Equipment needed
- 2 key references
- Notes or further information

There are some notable differences to what was originally envisaged:

1. We have included additional OMs rather than restricting to those listed in the core dataset, for 3 reasons:
    a. Registries may collect any validated OM appropriate for their patients/site, even if not listed in the dataset (and could still report the result to us using the 'Other' category), so we wanted to be able to provide information about as many options as possible.
    b. It's likely that the list of 'suggested' OMs in the core dataset will decrease, as greater consensus is reached and TREAT-NMD feels able to provide stronger guidance; however, we wish the Library to be a more comprehensive information resource about all possible validated OMs.
    c. The OM Library will be a working document, updated as often as needed, whereas the core dataset requires more stringent version control. We do not want to wait for the next dataset revision (possibly 2-yearly in future) to be able to update the information on OMs.
2. We have not yet needed to investigate the purchase of any central licenses, although this remains an option if needed in future (it would depend on which OMs become the 'recommended' TREAT-NMD measures).

In support of the information in the SMA OM Library, an SMA OM Decision Chart is also in development and will be added to the SMA Dataset Project web page as soon as it is finalised.

D6: Year 1 Report

This report includes for Year 1 of the Implementation Project:

a. Summary of activities and progress made.
b. Individual reports for each registry targeted or supported (removed for public version):
    a. Dataset implementation status (which data items are now included in the registries' data collection forms)
    b. Patient enrolment (number of patients included in registry and % covered by expanded dataset)
    c. Data completeness (identifying any notable gaps or problems with data collection)
c. "Proof of concept" analyses demonstrating annual progress towards collection of quality data among increasing numbers of SMA patients (with discussion of problematic data items, national considerations).
d. Confirmation of target registries for the coming year.

In preparation for this report the project team also consulted Biogen for any particular areas of interest or focus, in addition to those already agreed. They highlighted:

e. A clear picture of completeness and quality of the expanded dataset in the Year 1 registries.

f. Information about which validated motor measures are collected by which registries, or how they are otherwise tracking motor function.
g. Which registries are collecting data on hospitalisations, comorbidities and SAEs.
h. Qualitative information such as reasons behind problematic or missing data items, interpretation of questions etc.

To inform this project report, the project team conducted teleconference calls with each year 1 (n8) and pilot year (n10) registry to confirm progress, discuss issues, and collect information on dataset compliance. An agenda (appendix 1) was circulated in advance and used to structure the discussions. Also in advance of the calls, Curators were asked to provide patient numbers, expanded dataset coverage, and current data collection forms.

3. Proof of concept

Please note the information in this section was correct on the date of the individual telephone interviews.

2 of the 12 pilot registries did not respond to our request for an update call so the information in this section represents 18 registries (10 pilot and 8 year 1).

Theme 1: General overview of registries

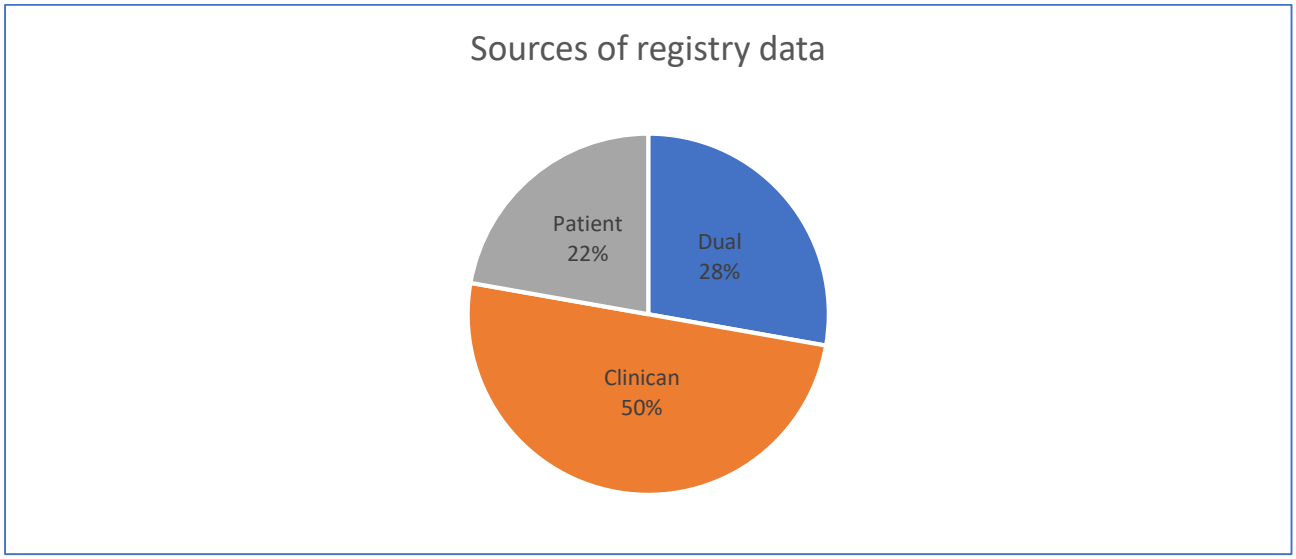
To date we have supported 20 registries to adopt the expanded SMA dataset (12 in the Pilot Project and 8 in Year 1 of the Implementation Project). 18 (90%) of those 20 have now started collecting the expanded dataset for new and follow-up patients. This 90% comprises all 8 of the Year 1 registries and 10 of the 12 pilot registries (with 2 registries yet to start data collection).

The total number of patients across the 18 registries is 4,402, with the number of patients per registry ranging from 15 to 862. Of the 4,402 patients, 43% are already covered by the expanded dataset at the time of writing this report.

Table 3: Patient numbers

Patient numbers	Number of Registries
Under 50	4
51 – 250	8
251 – 500	3
501 – 750	1
750 - 1000	2

Figure 1: Sources of registry data



Data collection varies by registry but of the 18 registries represented:

- 7 are using a bespoke software platform
- 6 are using REDCap
- 4 are using paper forms and/or Excel
- 1 is using Google Docs

The frequency of registry updates varied significantly, ranging from every visit (e.g. every few months for treated patients) to a minimum of once a year.

Of the 12 pilot registries, all were allocated a bursary. Of the 8 year 1 registries, 3 were eligible for a bursary and 5 are receiving direct funding from Biogen for their data collection activities.

Theme 2: Dataset compliance

Table 4: Average and range of dataset compliance across 10 pilot and 8 year 1 registries.

Compliance	Mandatory Items	Highly Encouraged Items
Average	98%	90%
Range	87% - 100%	70% - 100

*Figure 2: Missing **mandatory** data items by registry*

	Item:		Registry 1	Registry 2	Registry 3	Registry 4	Registry 7	Registry 8	Registry 9	Registry 10	Registry 11	Registry 12	Registry 13	Registry 14	Registry 15	Registry 16	Registry 17	Registry 18	Registry 19	Registry 20	% of registries not collecting item
Mandatoy	5.20 Name of main doctor															x					6%
	5.21 Name of main centre															x					6%
	7.03 Crawling on hands and knees																	x			6%
	7.04 Standing with assistance																	x			6%
	7.05 Standing alone (without assistance)																	x			6%
	10.02 Start date of IV															x					6%
	10.05 Start date of NIV															x					6%
	11.09 Following dosing schedule	cr														x					7%
	11.10 Reason for not following dosing schedule	cr														x					7%
	11.20 Therapise in last 12 months/last upgate																	x			6%
	Section 12																	x			6%
	12.02 Admission date															x					6%
	12.06 Acute hospitalisation = SAE?	cr			x											x					14%
	12.07 If SAE, in relations to which medication	cr			x											x					14%
	12.14 Comorbidity = SAE?	cr			x											x					14%
	12.15 if SAE, in relation to which medication	cr			x											x					14%
	13.02 Name of trial drug																		x		6%
	15.00-15.01 CGI-S	cr													x		x				14%
	15.02-15.03 TGI according to patient or parent				x	x								x	x						22%
	Compliance		100%	100%	94%	99%	100%	100%	100%	100%	100%	100%	100%	99%	98%	87%	99%	92%	99%	100%	

Key: *Clinician Reported* *Dual Reported* *Patient Reported*

*Figure 3: Missing **highly encouraged** data items by registry*

	Item:		Registry 1	Registry 2	Registry 3	Registry 4	Registry 7	Registry 8	Registry 9	Registry 10	Registry 11	Registry 12	Registry 13	Registry 14	Registry 15	Registry 16	Registry 17	Registry 18	Registry 19	Registry 20	% of registries not collecting item
Highly Encouraged	2.02 First name at birth			x				x											x		17%
	5.04 last name at birth			x				x											x		17%
	2.06 Sex assigned at birth			x		x		x						x	x						28%
	2.13 Country of birth			x				x													11%
	2.14 City/town of birth			x				x						x	x				x		28%
	3.01 Date of death													x							6%
	3.02 Cause of death													x							6%
	4.01 Genetic test throguh screening	cr				x		x		x				x	x						36%
	4.04 Method of SMN1 testing	cr												x							7%
	4.08 Method of SMN2 testing	cr												x							7%
	5.03 Method of height measurement							x		x	x				x						17%
	5.05 Head circumference							x			x			x	x						17%
	5.06 Chest circumference at full expiration							x		x	x			x	x		x				28%
	5.07 Chest circumference at full inspiration							x		x				x	x		x				22%
	5.08 Shoulder contractures															x					6%
	5.09 Elbow contractures															x					6%
	5.10 Wrist contractures															x					6%
	5.11 Finger contractures															x					6%
	5.12 Hip contractures															x					6%
	5.13 Knee contractures															x					6%
	5.14 Ankle contractures															x					11%
	6.01 Cobb angle									x				x							11%
	6.03 Surgery technique									x				x	x						17%
	6.04 MM-YYYY of first surgery													x							6%
	10.07-10.11 Type of assistance															x					6%
	11.13 Allopatic drug start date						x				x				x	x					22%
	11.14 Allopatic drug stop date						x				x				x	x					22%
	15.04-15.05 TGI accrdingin to clinician	cr			x	x		x		x				x	x	x			x		57%
	16.00 Patient has had CMAP	cr								x					x						14%
	16.01 Patient has had DEXA	cr								x					x						14%
	16.02 Patient has had muscle imaging	cr								x					x						14%
	Compliance		100%	89%	98%	93%	95%	85%	100%	78%	85%	100%	100%	70%	70%	76%	96%	100%	91%	100%	

Key: *Clinician Reported* *Dual Reported* *Patient Reported*

The two items most frequently excluded from current data collection are TGI (Total Global Impression) according to the patient (mandatory), and TGI according to the clinician (highly encouraged). There seemed to be a lack of awareness that the TGI according to the patient was a mandatory item, even though it is marked as such within the dataset. It is hoped that the additional clarity provided in v2 of the dataset will address this issue. Another concern could be the relatively high number of registries not collecting items that would be used to generate a PPRL unique identifier. These items will become mandatory in v2 of the dataset.

Theme 3: Outcome measures

Table 5: Motor outcome measures used by registry

	Registry 1	Registry 2	Registry 3	Registry 4	Registry 7	Registry 8	Registry 9	Registry 10	Registry 11	Registry 12	Registry 13	Registry 14	Registry 15	Registry 16	Registry 17	Registry 18	Registry 19	Registry 20	Totals
Section 7	1	1	1		1	1		1	1	1	1	1	1	1	1		1	1	15
Modified HFMS	1																		1
CHOP-INTEND	1		1	1				1			1	1	1	1	1		1	1	11
PUL	1																		1
BOT (Hand function)	1																		1
HINE	1					1	1	1							1		1		6
Brooke	1						1												2
6MWT	1			1			1	1			1	1	1	1	1		1		10
10MWT	1												1						2
RULM			1				1	1		1	1	1		1	1		1		9
MFM32/20			1											1				1	3
TUG			1																1
HFMS				1		1	1	1		1	1	1	1	1	1		1	1	12
HFMS-E																	1		1
HNNE						1													1
WHO							1												1
Alberta													1						1
Gross Motor Functional measurement																		1	1

There appears to be a natural consensus emerging across the registries on motor measures, the most commonly used being CHOP-INTEND, HFMS, RULM, and 6MWT. These measures offer a wide coverage of potential patient cohorts and cover all function levels:

Table 6: Popular OM suitability (taken from OML)

Outcome Measure (OM)	Suitable age ranges				Suitable function levels		
	≤2 yrs	3-5 yrs	6-17 yrs	≥ 18 yrs	Non-sitter	Sitter	Walker
6MWT	No	Yes[1]	Yes	Yes	No	No	Yes
CHOP-INTEND	Yes	Yes[1]	No	No	Yes	No	No
HFMS	No[1]	Yes	Yes	Yes	Yes	Yes	No
RULM	No	Yes	Yes	Yes	Yes	Yes	Yes

During the individual calls, registries were specifically asked 'Do you think TREAT-NMD should give stronger guidance about which motor measures to collect, with the ultimate decision still being at the discretion of the treating clinician?'. The majority felt that it would be useful and would help those who are new to outcome measures as well as facilitating future comparison of data.

A need for access to training on outcome measures for both physiotherapists and physicians was also a consistent theme in this area.

Theme 4: Therapy availability

17 of the 18 registries reported some level of national availability of a disease modifying therapy, however the level of access varies significantly from country to country. The country with no reported access is Egypt.

Of the 17 countries with access, nusinersen is available on some level in all, but often with restrictions in place depending on age or SMA type, and often only through an EAP / MAP / CUP.

5. Looking ahead to Year 2

A further 10 registries have signed up for Year 2 of the Expanded SMA Dataset Implementation Project which runs from 01-06-2020 to 31-05-2021. These include registries from South America, Europe and Asia.

Communications and support

There will be a more structured communication and support approach in year 2; this will maintain more frequent contact with the registries, improve availability of support from the project team, create a greater feeling of community between the registries, and address any issues as soon as they arise. New initiatives include a Year 2 Launch Meeting and monthly Project Support Drop-ins when the project team will be available to discuss progress, give updates, or answer questions.

Table 6: Year 2 key events:

Date	Title of Event	Details	Target Audience
June 2020	Bursaries available for Year 2 registries	€8000 per registry	Year 2 registries meeting TGDOC membership requirements
Aug 2020	Year 2 Launch Meeting	Virtual meeting	SMA registries involved in year 2 of the project
Sept 2020	V2 Dataset Confirmed	Online resource	TGDOC SMA Registries, however will be publicly available
Sep 2020	Deliverable: SMA Dataset Workshop	Virtual Meeting	Primarily Year 2 Curators, however others may be invited participate
Nov 2020	TGDOC workshop	Virtual Meeting	TGDOC curators

Monthly	Support Calls	Virtual Drop-in Sessions	Primarily Year 2 Curators, however others may be invited participate
Mar/Apr 2021	Year 2 Individual registry calls	Teleconference and/or questionnaire	Pilot, Y1 and Y2 Registries
May 2021	Year 2 Project Report	Written report	Biogen

Launch meeting

The Launch meeting on Thursday 13th August at 10:00 BST will officially welcome year 2 registries to the project and address any early questions. The draft agenda (appendix 3) includes an overview of the project, requirements of participation, support available, and a Q&A session.

Support available:

- A bursary of €8000 (if eligible) to support their work in adopting the expanded dataset.
- Access to a support network of registries and curators who have already successfully implemented the expanded dataset.
- Monthly project support drop-in sessions to discuss progress, give updates, or answer questions.
- 2020 SMA Dataset Workshop.
- Additional resources available on the project web page.
- Direct linkage and alignment with other TREAT-NMD Dataset projects (DMD and LGMD).

What we ask in return:

- Start collecting all relevant mandatory items from the expanded dataset by end May 2021.
- Open communication:
  - Tell the project team about any delays or issues.
  - Tell the project team about any items not feasible to collect.
- If receiving a bursary, report on how it is spent and how it helps their registry.
- Re-confirm their TGDOC membership (or join, if new to the network).

Year 2 Deliverables

Table 7: Year 2 deliverables

Deliverable	Due	Completion date
D7: Financial bursaries available for year 2 registries not receiving direct Biogen funding	M13 (June 2020)	30-06-2020
D8: Year 2 workshop for dataset implementation support/harmonisation	M16 (Sep 2020)	
D9: Year 2 Project Report	M24 (May 2021)	

6. Additional considerations

Other data collection initiatives

There are several other notable data collection initiatives across the world, such as those coordinated by the International SMA Consortium (iSMAC), Cure SMA, the Muscular Dystrophy Association (MDA) and AveXis (the RESTORE Global SMA Study). We have reached out to all of these groups and are working as closely as possible with those who are responsive, to harmonise our data collection efforts. Feedback for the v2 revision has also been sought from all of the above stakeholders.

Universal Registry Platform

A common barrier to expanded dataset compliance is the lack of a suitable data collection platform. TREAT-NMD are trying to meet this need by developing a Universal Registry Platform (URP) which will (a) be available for member registries to use as their own data collection tool, and (b) facilitate the safe and efficient submission of data for TREAT-NMD Global Registry enquiries.

The URP project has been significantly delayed due to a funding shortfall and is therefore not yet available for registries to use; although the intention is still to realise this vision. Some registries were waiting for the URP to become available before they could start collecting the expanded dataset, so this delay has had a knock-on effect on dataset compliance. Of these registries, some have since found alternative platform solutions so are now working towards compliance; however, some registries are still in need of a platform solution.

Project team coverage

At the start of Year 1 (May 2019) project team coverage was limited. The Project Manager was on maternity leave from April to October 2019 and the maternity cover left the role early leaving not enough time to appoint a replacement. The Project Coordinator was not in post until November 2019. The wider TREAT-NMD Secretariat team covered the essential aspects of the project however resources were limited. Although these issues caused inevitable delays in some areas, the project team have made a great effort over the remaining months to ensure it has not been to the detriment of project delivery.

COVID-19

The UK went into lockdown on 23rd March 2020 with the university limiting face to face contact from Tuesday 17th March by asking all staff to work from home. This is still the case for office-based staff and there is currently no clear indication from the university of when this might change. Additional difficulties caused by the closure of childcare provision had a significant impact on the operational delivery of the project. These issues were overcome wherever possible by making adjustments such as:

- Working hours and patterns have been adjusted and are more flexible
- Reduced hours where necessary to accommodate additional commitments
- Increased utilisation of MS Teams and other shared working tools such SharePoint
- All meetings are now virtual

Additionally, COVID-19 impacted the registries with many having to suspend clinical appointments, during which they would usually have assessed patients and updated their registry information. Many

clinicians were pulled away from their normal work which required more flexibility for the individual teleconference calls (sometimes evening or weekends) for the collection of information for this report.

7. Discussion & conclusions

Year 1 of the expanded SMA dataset implementation generally progressed according to plan despite several unexpected difficulties, with no significant barriers or concerns identified and an excellent level of dataset compliance (average 94%). All 8 of the year 1 registries have started collecting the expanded dataset (at least the mandatory items) for new and follow-up patients, and 9 of the 10 year 2 registries have been confirmed with 1 doing final checks. All of the deliverables have been achieved.

The expanded dataset represents a marked increase in the minimum numbers of data items to be collected by a large number of very diverse registries, and therefore inevitably presents more of a challenge to some than others. The bursaries provide an invaluable source of funding and are predominantly used for additional staff time and platform software development. In addition to the bursaries, registries appreciated the intensive discussion and support during the Year 1 SMA Dataset Workshop, as well as the opportunity to learn and seek advice from other registries.

Extensive stakeholder consultation on the dataset itself has occurred during year 1 and is being processed in order to generate v2 of the dataset later this year which will include updated content and improved structure to support data quality and accessibility.

Overall the project team are delighted with the progress made and the results from year 1 of the implementation project, and are looking forward to continuing the success into year 2.

The project team and the TGDOC Chairs would like to express their thanks to Biogen for funding this important initiative and for their support of TREAT-NMD.

Appendix 1: Curator Call Agenda

TREAT-NMD Expanded SMA Dataset Implementation

Year 1 Registry update calls – guidance for discussions

In preparation for this call, please:

a. be familiar with your registry data, and/or have it with you for the call.
b. review the 'Areas for discussion' below and consult colleagues if needed.
c. send us your case report form (empty form – no data) and have it with you for the call.
d. complete these tables and send to Joanna.

Patient numbers	Expanded dataset	Old dataset	Total
SMA 0			
SMA 1			
SMA 2			
SMA 3			
SMA 4			

Patient numbers	Expanded dataset	Old dataset	Total
Adult			
Paediatric			

Areas for discussion on the call:

1. Confirm registry type and method of collection:
    a) **Clinician-reported**:
        - How is data collected? (Curator reviews clinical notes? Clinicians complete 'live' in clinic? Clinicians send forms to Curator?)
        - How often updated?
    b) **Patient-reported**:
        - How is data collected? (Patients enter data online? Curator telephones patients?)
        - How often updated?
    c) **Combined**:
        - Which items are reported by which group?
        - How is the data collected from each group?
        - How often updated?

2. Do you use an IT platform (if so which one) or Excel / paper?
    a) Are you waiting for the URP (Universal Registry Platform)?
    b) Would a temporary electronic data collection tool be of interest?*

3. Which SMA therapies are available in your country?

4. Have you now added all (relevant) mandatory items from the expanded dataset?

a) If so, when did this start and when do you think all patients will be covered?
b) If not, when do you think you will start/finish? What is holding it up? Do you see any barriers to achieving it?
c) Are there any issues we can help with?

5. For each data item:
    a) Have you started (or were you already) collecting this item?
        - If yes:
            - For how many patients do you have this data available?
            - Are there any issues with completion/accuracy?
        - If no:
            - Why not?
            - Can it be added?

6. Have you experienced any notable challenges not already discussed?

7. Funding**:**
    a) **Biogen funded**: Have you received your Biogen funding yet?
    b) **Bursary funded:** any update needed? Status of bursary request?

8. Motor Function:
    a) **Clinician-reported/combined**: Which motor measures are you collecting from your patients? (If none, how do you track motor function?)
        i. Do you think this will change?
        ii. Do you think TREAT-NMD should give stricter direction about which motor measures to collect?
        iii. Do you need any help in this area?
    b) **Patient-reported**: How do you track motor function?

9. Are you collecting any PROMS / QoL data? If so, which measures?

10. Any further feedback regarding implementation of the expanded dataset or the project in general? Advice for other registries who have not yet started the work?

** Due to the delayed development of the TREAT-NMD URP (Universal Registry Platform) we have been working on a basic electronic data capture form which would allow data for each patient to be entered via a secure web form, and then saved as an excel/pdf document on your local server. The data would not get saved anywhere else. This is not a perfect or long-term solution because (a) each patient entry would be saved in a separate excel sheet, and (b) entering followup/update data would not be straightforward. However; it may help as a <u>temporary</u> option for some registries. It is not yet completed but if there is enough demand, we will try to invest the extra time/resource.*

Appendix 2: Welcome Meeting Draft Agenda

TREAT-NMD SMA Dataset Welcome Meeting

Thursday 13th August 2020
MS Teams: 10:00 BST

This meeting is to welcome the new curators to the TREAT-NMD SMA Dataset Project, introduce them to the team and provide a brief project overview and introduction to the support and tools available.

Agenda

45 min agenda plus 15 mins Q&A

Agenda:

- Introductions (**5 mins**)
- Project overview and context – why are we doing it. Scope and purpose (**5 mins**)
- Dataset (**20 mins**)
    - v1 and revision preview / highlights
    - Clarity on requirements (mandatory/HE etc) and on motor measures and PROMS
        - OML & decision tree (can Anna join for 5 mins in case of questions?)
    - Feedback – revision process
- Support available and what is required from you (**10 mins**)
    - Bursaries
    - Project support calls
    - Workshop
    - Webpage and Data collection forms
- Platform update (**5 mins**) - Ben?

Q&A (**15 mins, optional**)

Appendix 3: Expert guidance supporting the core project team

	**Victoria Hodgkinson: TGDOC SMA Subgroup Lead** Dr Hodgkinson is the National Program Manager for the Canadian Neuromuscular Disease Registry, where she oversees the scientific management and coordination of national patient registries in neuromuscular disease. Her work involves management of the registry network, development and review of registry datasets, and research project design and scientific analyses. She is actively engaged in global collaborative projects to share data for common purposes, and improve registry design and utility worldwide.
	**Miriam Rodrigues: TGDOC SMA Subgroup Lead** Miriam Rodrigues is a genetic counsellor whose dedication to rare neuromuscular disorders began when she was appointed Membership Services Manager at the Muscular Dystrophy Association of New Zealand (MDA NZ) in 2006. She is the Coordinator of the New Zealand Neuromuscular Disease Registry and Neuromuscular Disease Research Associate at Auckland District Health Board.
	**Marcel Heidemann: IT consultant** Marcel Heidemann is an IT consultant and software developer who has been involved with neuromuscular registries since 2008. He developed the patient registry platform for the LMU Munich hospital which is now used for 12 neuromuscular registries based in Munich and Newcastle. Marcel holds a Master's degree from LMU Munich in philosophy, biology and political science.
	**Anna Mayhew: Specialist Neuromuscular Physiotherapist** Dr Anna Mayhew is a Consultant Research Physiotherapist at The John Walton Muscular Dystrophy Research Centre at Newcastle University, UK. She has a special interest in development of robust and clinically relevant functional outcome measures for all types of neuromuscular disorders as well as suitable patient reported outcome measures. Anna is involved in training clinical evaluators for clinical trials both in DMD and SMA and in the ongoing development of clinically relevant measures for use in neuromuscular trials.