

QS Domain: Challenges and Pitfalls

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Alun, living with Parkinson's disease



Overview

- Introduction
- PRO data from source to analysis
 - Data perspective
 - Standards perspective
 - Combining data and standards perspective
- Comprehensive Solution
- Summary

Introduction

➤ Patient Reported Outcomes

- Standardized questionnaire data
- Quality of Life, Mental Health, Disease Activity
- several levels of derivations are necessary

➤ CDISC standards:

- SDTM IG v3.1.2
- ADaM IG v 1.0

Introduction

Data Perspective vs. Standard Perspective

- Data Perspective: I have PRO data and I want to find a way to store it and to get the analysis done.
- Standards Perspective: I have a standard and how does the PRO data I collected fit into the standard structure without violating the rules.
- Combining both Perspectives: **How do I adhere to the standards and still get my analysis done?**

Data Perspective

Patient Reported Outcomes:

- Example: SF-36
- Health related quality of Life
- Standardized instrument
 - 36 items
 - 8 domains
 - 8 domains that could be adapted to population norms
 - 2 component scores



SF-36v2™

Your Health and Well-Being

This survey asks for your views about your health. This information will help keep track of how you feel and how well you are able to do your usual activities. *Thank you for completing this survey!*

For each of the following questions, please mark an ☒ in the one box that best describes your answer.

1. In general, would you say your health is:

Excellent	Very good	Good	Fair	Poor
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

2. Compared to one year ago, how would you rate your health in general now?

Much better now than one year ago	Somewhat better now than one year ago	About the same as one year ago	Somewhat worse now than one year ago	Much worse now than one year ago
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

Data Perspective: Levels of Derivation

SF 36

Source data

Original numeric response

PRO specific derivations

Rescaled Item Scores

Domain scores

Component scores

Analysis specific derivations

Imputed visits

Change from baseline

Responder analysis

...

Data listings

Tables, Figures

Standards Perspective: CDISC SDTM and ADaM

➤ SDTM

- "defines a standard structure for study data tabulations that are to be submitted as part of a product application to a regulatory authority,,
- SDTM IG v3.1.2

➤ ADaM

- "provides a framework that enables analysis of the data, while at the same time allowing reviewers and other recipients of the data to have a clear understanding of the data's lineage from collection to analysis to results. ,,
- ADaM IG v1.0

➤ Comparison

- "Whereas **ADaM is optimized to support data derivation and analysis**, CDISC's Study Data Tabulation Model (SDTM) is optimized to **support data tabulation**"

Standards Perspective: SDTM QS domain

➤ Result variables SDTM

- QSORRES → expected
- QSSTRESC → expected
- QSSTRESN → permissible

Standards Perspective: QSORRES

SDTM IG section 4.1.5.1.1.

- "The --ORRES variable contains the result of the measurement or finding as **originally received or collected.**"

Yes, limited a lot	Yes, limited a little	No, not limited at all
▼	▼	▼

- a Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports ☐₁ ☐₂ ☐₃
- b Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf ☐₁ ☐₂ ☐₃
- c Lifting or carrying groceries..... ☐₁ ☐₂ ☐₃

Standards Perspective: QSSTRESC / QSSTRESN

SDTM IG section 6.3.5

"Contains the finding for all questions or sub-scores, copied or derived from QSORRES in a standard format or standard units. QSSTRESC should store all findings in character format; if findings are numeric, they should also be stored in numeric format in QSSTRESN. If question scores are derived from the original finding, then the standard format is the score. Examples: 0, 1.

When sponsors apply codelist to indicate the code values are statistically meaningful standardized scores, which are defined by sponsors or by valid methodologies such as SF36 questionnaires, QSORRES will contain the decode format, and QSSTRESC and QSSTRESN may contain the standardized code values or scores ".

Standards Perspective: QSSTRESC / QSSTRESN

SDTM IG section 6.3.5

"Contains the finding for all questions or sub-scores, copied or derived from QSORRES in a standard format or standard units. QSSTRESC should store all findings in character format; if findings are numeric, they should also be stored in numeric format in QSSTRESN. If question scores are derived from the original finding, then the standard format is the score. Examples: 0, 1.

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Standards Perspective: QSSTRESC / QSSTRESN

BP01

7. How much bodily pain have you had during the past 4 weeks?

None	Very mild	Mild	Moderate	Severe	Very Severe
▼	▼	▼	▼	▼	▼
☐ ₁	☐ ₂	☐ ₃	☐ ₄	☐ ₅	☐ ₆

Pre-coded and Final Values For BP01

Response Choices	Pre-coded Item Value	Final Item Value
None	1	6.0
Very mild	2	5.4
Mild	3	4.2
Moderate	4	3.1
Severe	5	2.2
Very severe	6	1.0

Not at all	1	2 through 6	5
Not at all	1	2 through 6	5
A little bit	2	1 through 6	4
Moderately	3	1 through 6	3
Quite a bit	4	1 through 6	2
Extremely	5	1 through 6	1

No 1 – 1 map !

Standards Perspective – Derived Scores

- ▶ SDTM IG provides examples where the SF36 domain scores are also part of the QS dataset

BUT

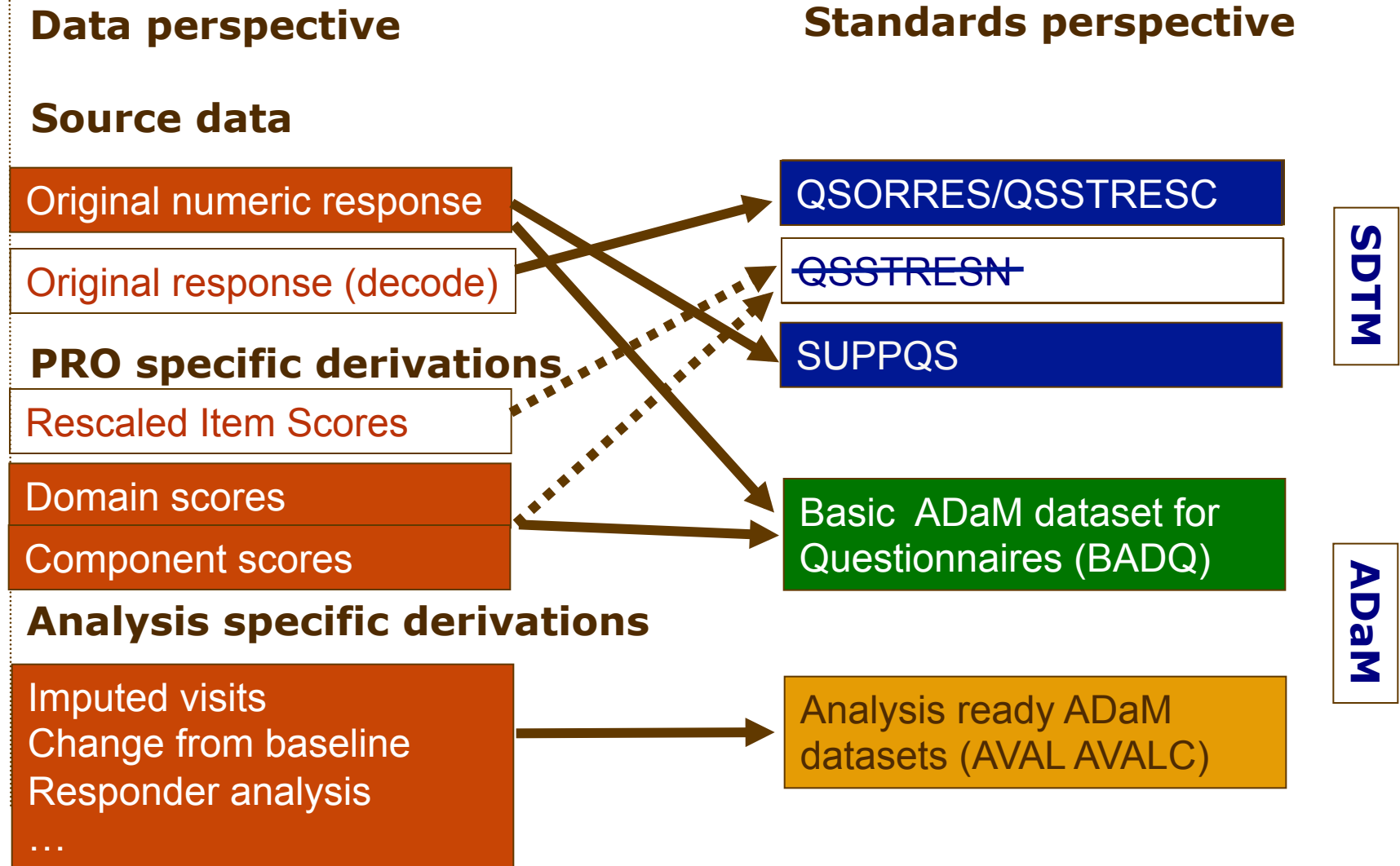
- ▶ Domain scores may contain implicit or explicit imputations (missing item responses)
 - ▶ Imputations are strongly discouraged by the CDER Guidance to Review Divisions regarding CDISC Data (FDA, 2011)
- No derived scores in SDTM QS (?)

Standards Perspective - ADaM

- ADaM BDS structure is more flexible than SDTM
- Tailored to the need of the analysis
- "Analysis-ready" = one procedure away from the result

Where to store what and how?

Combining both Perspectives



Combining both Perspectives

▶ SDTM

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- SDTM IG v3.1.2

▶ ADaM

- "provides a framework that enables analysis of the data, while at the same time allowing reviewers and other recipients of the data to have a clear understanding of the data's lineage from collection to analysis to results. „
- ADaM IG v1.0

▶ Comparison

- **"Whereas ADaM is optimized to support data derivation and analysis, CDISC's Study Data Tabulation Model (SDTM) is optimized to support data tabulation"**

Comprehensive Solution

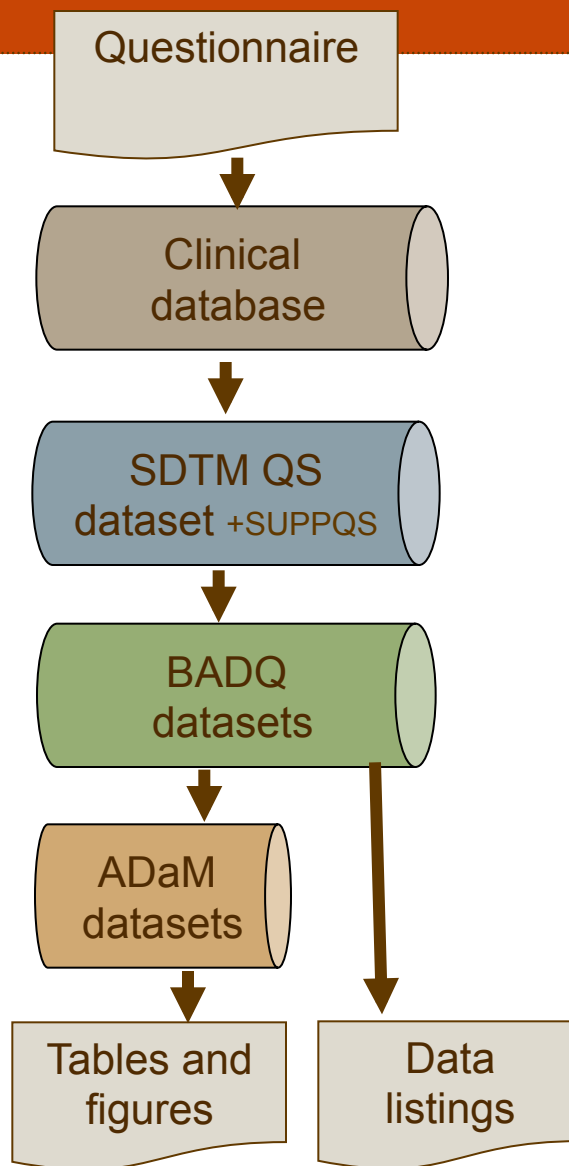
Data entry / RDC

SDTM mapping

PRO specific derivations

Analysis specific derivations

Statistical analysis



Summary

- PRO data
- SDTM QS:
 - Original responses in decode format
 - SUPPQS may contain the original numeric responses
 - Source data (Data in, data out)
 - No complex derivations
- BADQ:
 - Intermediate ADaM dataset
 - BDS structure
 - Provides complete PRO data for any further use
- ADaM:
 - "Classic" analysis-ready datasets
 - Use BADQ as source dataset

Questions?

