THE LEONA M. AND HARRY B. HELMSLEY CHARITABLE TRUST

CDISC

CDISC Standards Development Project for Type 1 Diabetes

Pediatrics and Devices Scoping Summary Webinar

Thursday 4th October 2018

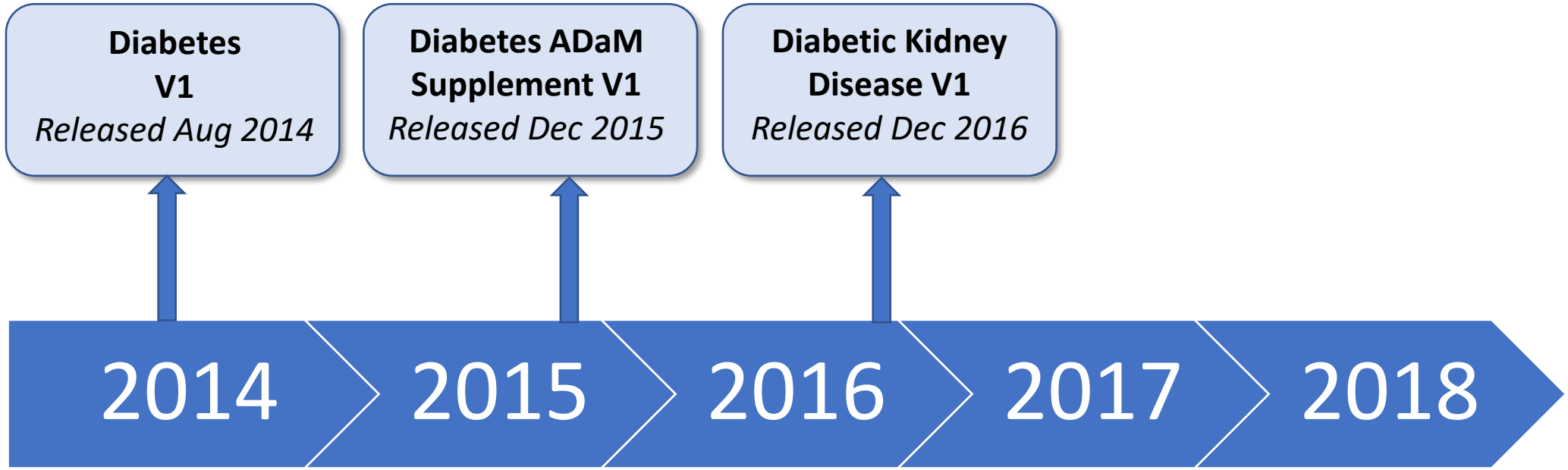
11:30-12:00 (CDT)

CDISC – What we do

- CDISC is a global, non-profit charitable organization
- Develop data standards to streamline clinical research
- Enable connections to healthcare
- Empowering the valuable information offered by patients participating in research studies around the world.

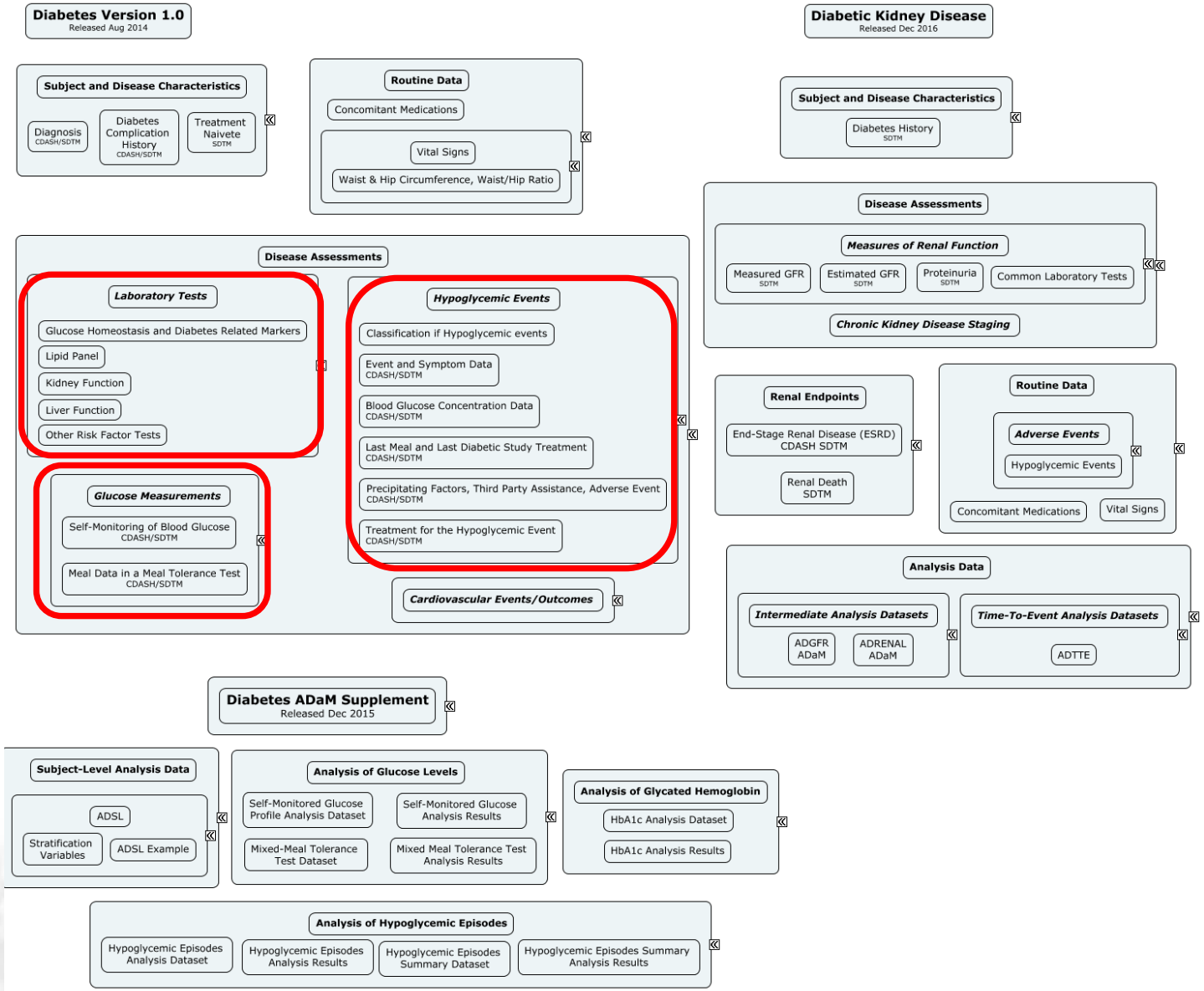
https://www.cdisc.org/about/what-we-do

Diabetes work done so far



https://www.cdisc.org/standards/therapeutic-areas/diabetes

Concepts already developed in Diabetes V1



Summary of the T1D Project

- Collaborative project between CDISC and The Leona M. and Harry B. Helmsley Charitable Trust
- Development of new T1D CDISC data standards
- Extending the published diabetes standards by developing metadata in the following focus areas:
  - Pediatrics
  - Devices
  - Prevention
  - Exercise

https://www.cdisc.org/standards/therapeutic-areas/diabetes-type-1

Summary of the Project

Data Collection

CDASH

Data Tabulation

SDTM

Data Analysis

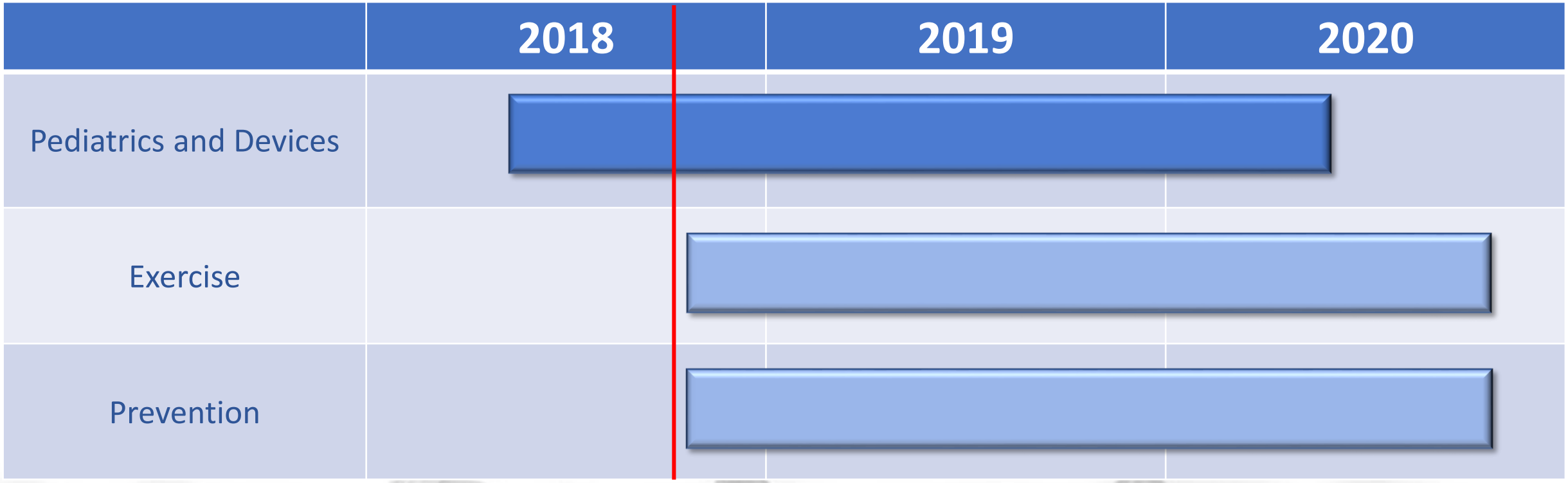
ADaM

Controlled Terminology

Beginning to End

https://www.cdisc.org/standards/foundational/cdash
https://www.cdisc.org/standards/foundational/sdtm
https://www.cdisc.org/standards/foundational/adam

Summary of the Project



CDISC Standards Development Process

Stage 0	Stage 1	Stage 2	Stage 3a	Stage 3b	Stage 3c	Stage 4
Scoping & Planning	Modeling of Biomedical Concepts	Development of Draft Standards	Internal Review	Public Review	Publication	Standard Maintenance

https://www.cdisc.org/sites/default/files/resource/CDISC-COP-001-Standards-Development-2017.pdf

Scoping Process

Prior research into the proposed standard

Research into scientific/medical literature

Public Database Searches

Regulatory Requirements

Other global requirements/ Initiatives

Implementation Issues with V1.0 from user community

Updates to standards since release of V1.0

Deferred concepts From V1.0

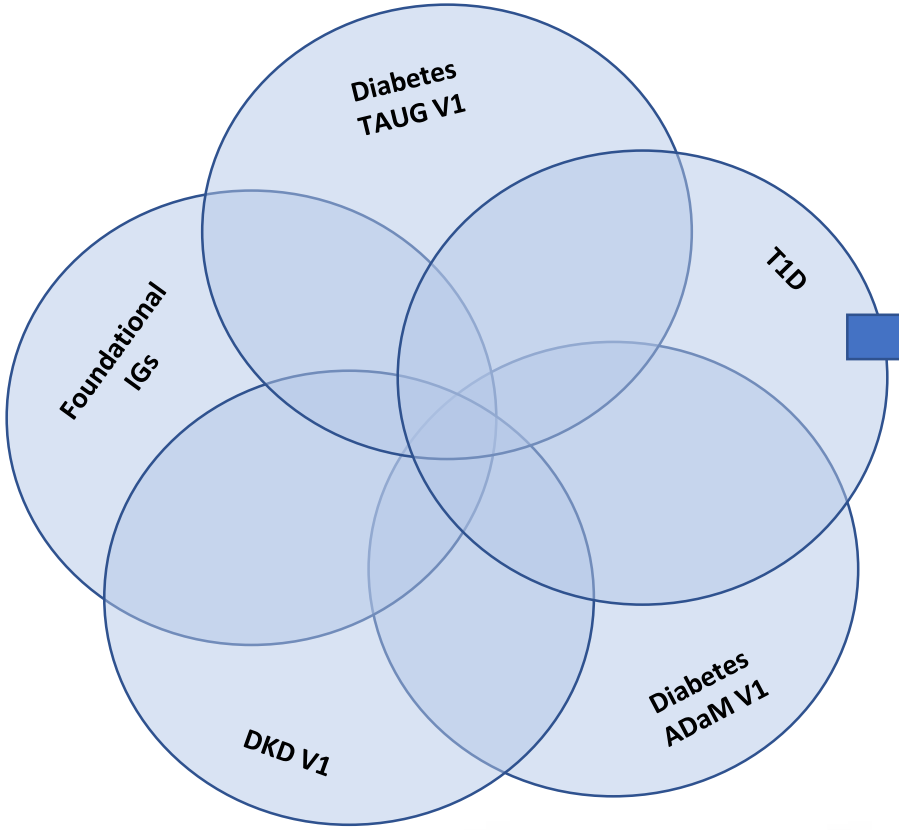
Evaluation against existing content (gap analysis)

Identify new concepts for development

Narrow scope to a smaller, meaningful, set of concepts

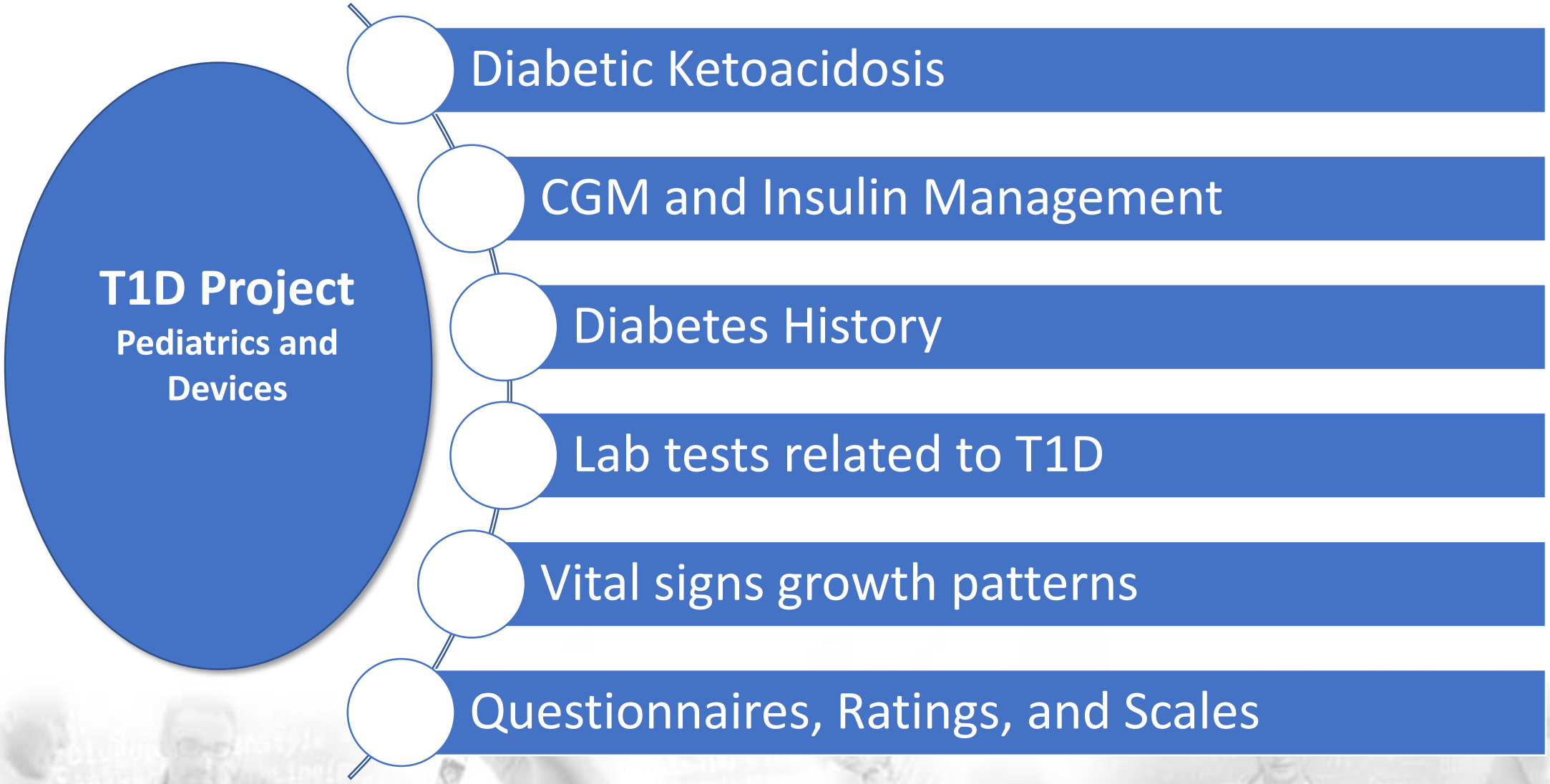
T1D P&D
Project Charter Package

T1D Standards Development



SCOPE = New T1D Concepts for Pediatrics & Devices
(not already covered in previous guides)

Summary of the T1D Scope



Diabetic Ketoacidosis (DKA)

- Signs and symptoms leading up to a DKA event
- Device information during the event
- Treatments
- Outcome

CGM and Insulin Management

- Continuous Glucose Monitors
  - Representing devices and device properties
  - Data from glucose measurements
  - Raw data versus summary data
  - Data transfers from CGM devices
  - Calibration
- Insulin Management
  - Type of insulin delivery
  - Type of insulin
  - Basal/Bolus dosing and total daily dose
  - Management of dose changes
  - Correction factors
  - Algorithms for frequency/size of meals
  - Events related to infusion set/injection site

Diabetic History

- Antibodies for diagnosis of T1D
- Severe DKA at diagnosis
- Duration of diabetes
- History of other auto-immune diseases
- Pubertal status
- Family history of T1D
- Family history of autoimmune disease
- History of exposure to viral diseases
- Diabetes treatment history (including diet and exercise)
- Hypoglycemic unawareness

Lab tests related to T1D

- HLA typing (pharmacogenomics)
- Sexual development hormones (Testosterone, LH)
- T1D Antibodies
- Lab related data from CGM devices (raw versus summary)

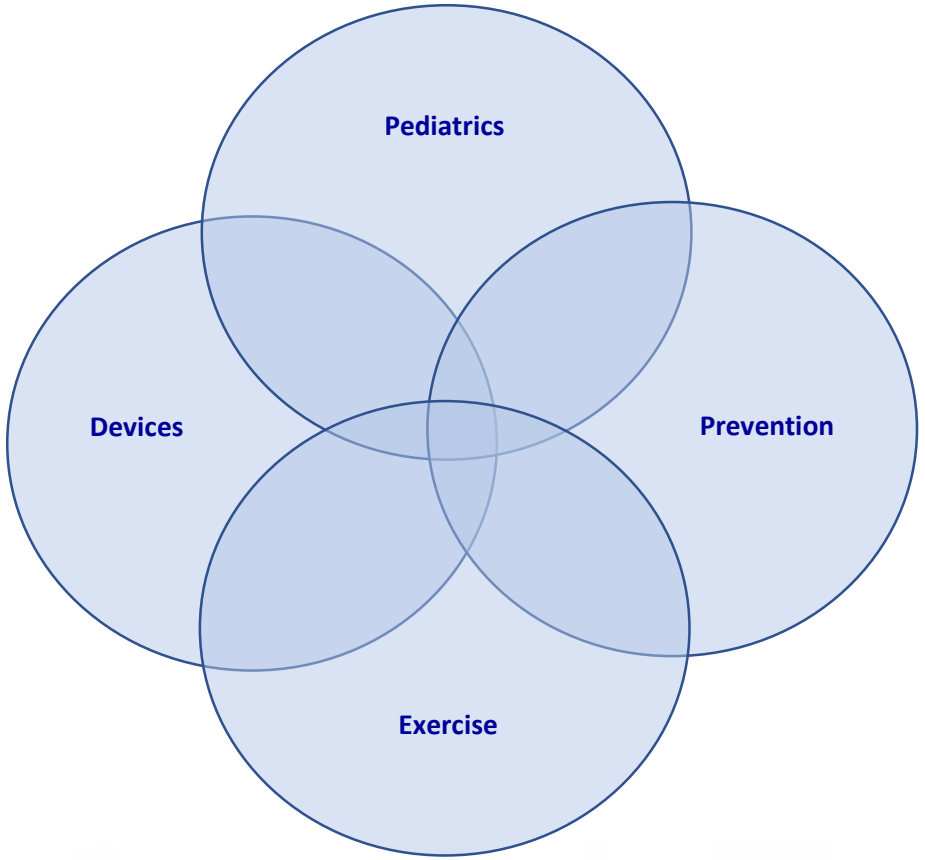
Vital signs growth patterns

- Height/Weight BMI for abnormal growth patterns
- Analysis: percentiles of BMI and blood pressure specific for pediatrics (for example US CDC percentile)

Questionnaires, Ratings and Scale

- Final scoping for Pediatrics & Devices will be combined with the scoping of Exercise to provide a final list of QRS instruments to develop CDISC data standards supplements for
- Scoping for the exercise component of the project will start at the end of October 2018

Pediatrics, Devices, Prevention and Exercise

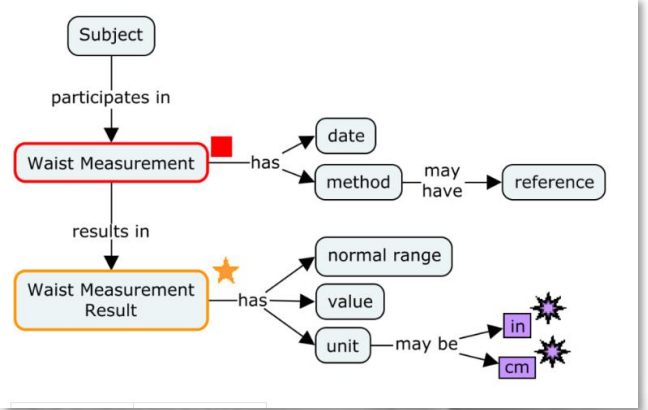


Next steps

Stage 0	Stage 1	Stage 2	Stage 3a	Stage 3b	Stage 3c	Stage 4
Scoping & Planning	Modeling of Biomedical Concepts	Development of Draft Standards	Internal Review	Public Review	Publication	Standard Maintenance

Modeling of Biomedical Concepts

- Develop an approach for meeting the initial requirements
- Define in more detail the information that will comprise the proposed new or enhanced standard, including comparisons to existing standards.
- Developing concept maps to facilitate semantic understanding of new information requirements where appropriate.

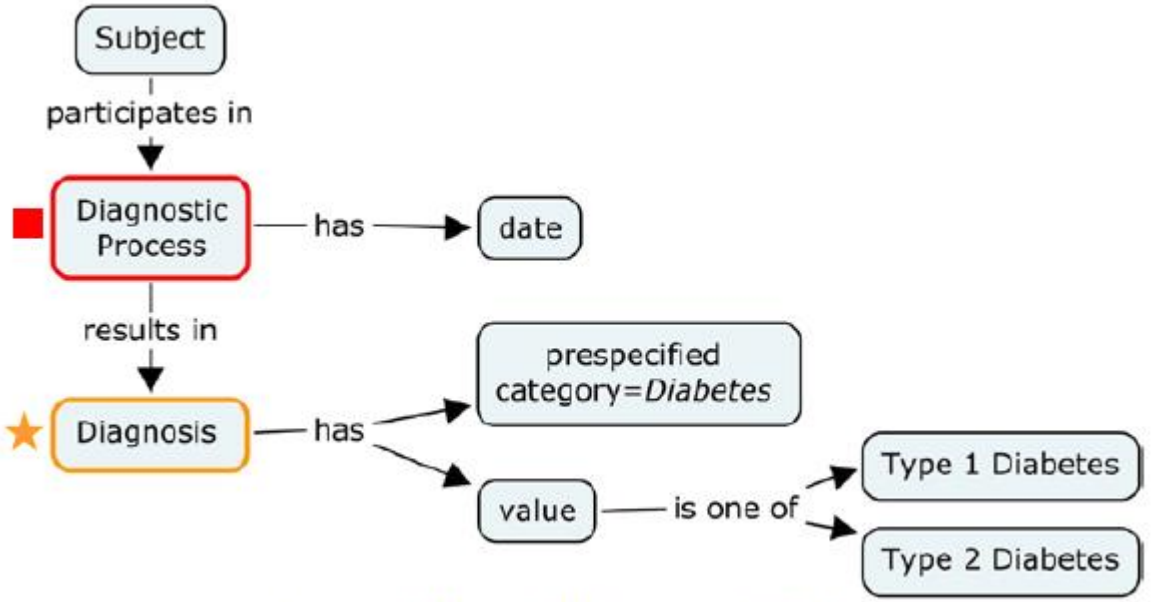


Q&A Session

Please direct any off-line questions or comments to John Owen (jowen.external@cdisc.org)

Back-up slides

Concept Map Example - Diabetes Diagnosis



Concept Map 1: Diagnosis of Diabetes

CDASH Example – Diabetes Diagnosis History

Annotated CRF: Diabetes History

Enter the date of diagnosis of diabetes.	Diagnosis Date MHSTDAT MHSTDTC	dd/mm/yyyy
	MHEVDTYP *Hidden/pre-populated*	DIAGNOSIS
Select the specific type of diabetes.	Type of Diabetes MHTERM	○ Type 1 Diabetes ○ Type 2 Diabetes
	MHPRESP *Hidden/pre-populated*	◉ Yes ○ No
	MHOCCUR *Hidden/pre-populated*	◉ Yes ○ No
	MHCAT *Hidden/pre-populated*	DIABETES

View CRF Metadata

Question Text	Prompt	Type	CDASH Variable Name	CDASH Core	SDTM Variable Name	SDTM Core	Case Report Form completion instructions	Mapping Instructions	Implementation Instructions	Permissible Values	Pre-specified Value	Hide?
Date of Diagnosis of Diabetes	Diagnosis Date	date	MHSTDAT	HR	MHSTDTC	Perm	Enter the date of diagnosis of diabetes.	Map directly to SDTM. Also maps to QVAL in SUPPMH with QNAM= MHDXDTC and QLABEL= Date of Diagnosis	Full Date Optional, Year expected.			
N/A	N/A	text	MHEVDTYP	O	MHEVDTYP	Perm			DIAGNOSIS		DIAGNOSIS	Y
Type of Diabetes		text	MHTERM	HR	MHTERM	Req	Select the specific type of diabetes.	Map directly to SDTM	Examples of codelist could be "Type 1 Diabetes" and "Type 2 Diabetes", which types to collect is a judgment to be made by the sponsor.	Type 1 Diabetes;Type 2 Diabetes		
N/A	N/A	boolean	MHPRESP	R/C	MHPRESP	Perm	Pre-specified = Y	Map directly to SDTM	When MHTERM is pre-specified, this value is "Y".		Y	Y
N/A	N/A	boolean	MHOCCUR	R/C	MHOCCUR	Perm		Map directly to SDTM	When MHTERM is pre-specified, this value is "Y".		Y	Y
N/A	N/A	text	MHCAT	R/C	MHCAT	Perm	Pre-specified = DIABETES	Map directly to SDTM			DIABETES	Y

SDTM Example – Diabetes Diagnosis History

mh.xpt

mh.xpt

Row	STUDYID	DOMAIN	USUBJID	MHSEQ	MHTERM	MHCAT	MHPRESP	MHOCCUR	MHDTC	MHSTDTC	EVDTYP
1	XYZ	MH	XYZ-001-001	1	TYPE 1 DIABETES	DIABETES	Y	Y	2010-09-26	2010-03-25	DIAGNOSIS
2	XYZ	MH	XYZ-001-002	1	TYPE 2 DIABETES	DIABETES	Y	Y	2010-10-26	2010-04-25	DIAGNOSIS

MH NSV Metadata

Variable	Label	Type	Role	Origin
EVDTYP	Event Date Type	text	Non-Standard Record Qualifier	CRF

ADaM Example – Hypoglycemic events

Table 3.1.1: ADHYPO Analysis Dataset

Row	STUDYID	USUBJID	MIDS	CEDECOD	WASAEYN	ASTDTM	TRTEMFL	SELFTRFL	SYMPFL	NOCTFL	GLUCSTD	GLUCCONV	ASTDY	LMLDTM
1	XYZ	000001	HYPO 1	Hypoglycemia	Y	07Sep2012 22:29:00	Y	N	Y	N	2.8	52	3	07Sep2012 20:33:00
2	XYZ	000001	HYPO 2	Hypoglycemia	N	10Sep2012 09:12:00	Y	Y	N	N	2.6	48	6	10Sep2012 08:15:00
3	XYZ	000001	HYPO 3	Hypoglycemia	N	10Sep2012 23:05:00	Y	Y	Y	Y	3.3	60	6	10Sep2012 21:06:00
4	XYZ	000001	HYPO 4	Hypoglycemia	N	11Sep2012 15:24:00	Y	Y	Y	N	3.9	71	7	11Sep2012 14:40:00
5	XYZ	000001	HYPO 5	Hypoglycemia	N	18Sep2012 11:39:00	Y	Y	N	N	3.9	71	14	18Sep2012 08:27:00
6	XYZ	000002	HYPO 1	Hypoglycemia	N	22Oct2012 13:28:00	Y	Y	N	N	3.4	62	6	22Oct2012 09:58:00
7	XYZ	000002	HYPO 2	Hypoglycemia	N	25Oct2012 13:59:00	Y	Y	Y	N	2.4	45	9	25Oct2012 10:50:00
8	XYZ	000002	HYPO 3	Hypoglycemia	N	17Nov2012 05:01:00	Y	N	N	Y	2.8	51	32	17Nov2012 03:30:00

Row	LMLRELTM	LMLRELTU	LEXDTM	LEXRELTM	LEXRELTU	ASEV	ASEVGR1	TRTA
1 (cont)	116	Minutes	07Sep2012 20:29:00	120	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug A
2 (cont)	57	Minutes	10Sep2012 8:12:00	60	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug A
3 (cont)	119	Minutes	10Sep2012 20:05:00	180	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug A
4 (cont)	44	Minutes	11Sep2012 14:26:00	58	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug A
5 (cont)	192	Minutes	18Sep2012 07:29:00	250	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug B
6 (cont)	210	Minutes	22Oct2012 09:31:00	237	Minutes	Pseudo-Hypoglycemia	Asymptomatic Hypoglycemia, Probable Symptomatic Hypoglycemia or Pseudo- Hypoglycemia	Drug B
7 (cont)	189	Minutes	25Oct2012 10:29:00	210	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug B
8 (cont)	91	Minutes	17Nov2012 03:25:00	96	Minutes	Severe Hypoglycemia	Documented Symptomatic or Severe Hypoglycemia	Drug B

The Global Team

Doers

- Forms the core standards development Team
- CDISC standards development experts
- Diabetes SMEs from external organizations

Reviewers

- Provide concepts from Real World Data
- Forms the global standards review community
- Leads to consensus based standards