CDSi Version 3.0: Updates and Enhancements

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Agenda

❑ **Scope change between versions 2 and 3**

❑ **Changes in the CDSi Resources**

  ▪ Supporting Data, Logic Specification, Test Cases, Training Materials

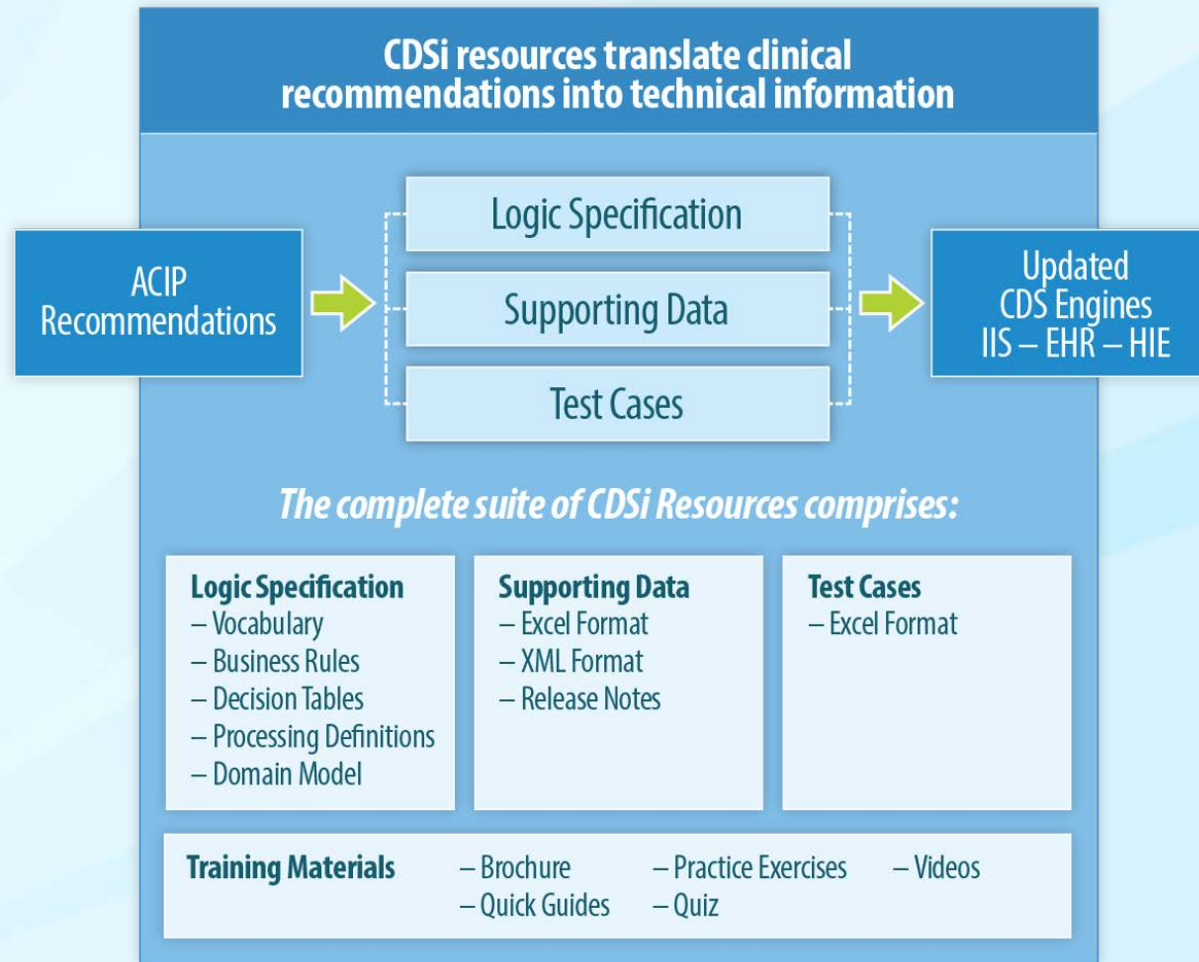❑ **Successes and challenges**

❑ **The future**

Scope Change

❑ **Version 2**
- Standard age based recommendations (childhood)
- Standard adult recommendations (Pneumococcal 65+)

❑ **Version 3**
- Risk related recommendations
  - Codified observations about the patient
  - Medical conditions, occupational risks, behavioral risks, etc
- Updated recommendations

CDSi Resources

CDSi resources translate clinical recommendations into technical information

ACIP Recommendations → Logic Specification / Supporting Data / Test Cases → Updated CDS Engines IIS – EHR – HIE

The complete suite of CDSi Resources comprises:

Logic Specification
– Vocabulary
– Business Rules
– Decision Tables
– Processing Definitions
– Domain Model

Supporting Data
– Excel Format
– XML Format
– Release Notes

Test Cases
– Excel Format

Training Materials
– Brochure   – Practice Exercises   – Videos
– Quick Guides   – Quiz

Changes in the Schedule Data Files

❑ **New list of Coded Observations about the patient**
  ▪ Medical conditions, occupational, behavioral, adverse reactions, etc
  ▪ None are intrinsically indications or contraindications
  ▪ Codes are not semantically meaningful
  ▪ Where possible, observations have been mapped to external code sets
    • SNOMED, CVX, PHIN VS
    • Mappings are not comprehensive and are meant to aid in understanding the concepts
  ▪ Coded Observations are used elsewhere in the supporting data

Observation Code	Observation Title	Indication Text Description	Contraindication Text Description	Clarifying Text	SNOMED (Code)	CVX (Code)	PHIN VS (Code)
017	Chronic lung disease	Administer to persons who have chronic lung disease.	n/a	e.g. chronic obstructive lung disease, emphysema but not asthma	Chronic lung disease [disorder] (413839001);Chronic obstructive lung disease [disorder] (13645005);Pulmonary emphysema [disorder] (87433001)	n/a	n/a
027	Asthma	Administer to persons who have asthma.	Do not vaccinate if the patient has asthma.	n/a	Asthma finding [finding] (390798007); Asthma [disorder] (195967001)	n/a	n/a
028	Intussusception	n/a	Do not vaccinate if the patient has intussusception.	Includes history of uncorrected congenital malformation of the gastrointestinal tract that would predispose the infant to intussusception or history of intussusception.	Intussusception [morphologic abnormality] (35327006);Intussusception of intestine [disorder] (49723003)	n/a	Previous history of intussusception (VXC21)

Changes in the Supporting Data Files

❑ **New Risk Series have been added**

- Series Type
- Indications
- Series Group
- Administrative Guidance

Series Name	HPV risk male 3-dose series							
Target Disease	HPV							
Vaccine Group	HPV							
Administrative Guidance	Text							
	The recommendation for a 2-dose schedule does not apply to children aged less than 15 years with asplenia, asthma, chronic granulomatous disease, chronic liver disease, chronic lung disease, chronic renal disease, CNS anatomic barrier defines (e.g., cochlear implant), complement deficiency, diabetes, heart disease, or sickle cell disease.							
Series Type	Type							
	Risk							
Equivalent Series Groups	Series Groups							
	1							
Gender	Required Gender							
	Male							

Select Patient Series	Default Series	Product Path	Series Group Name	Series Group	Series Priority	Series Preference	Minimum Age To Start	Maximum Age To Start
	No	No	Increased Risk	2	A	1	n/a	27 years

Indication	Observation (Code)	Text Description	Indication Begin Age	Indication End Age (less than)	Administrative Guidance			
Indication	Men who have sex with men (036)	Administer to men who have sex with men.	21 years	n/a	Includes gay, bisexual, and other men who have sex with men			
Indication	Transplantation (157)	Administer to persons who have received a transplant.	9 years	n/a	n/a			
Indication	Radiation therapy (159)	Administer to persons who are undergoing radiation therapy.	9 years	n/a	n/a			

Changes in the Supporting Data Files

❑ **New antigens**
  - Japanese Encephalitis
  - Meningococcal B (including new 2-dose series)
  - Rabies
  - Typhoid
  - Yellow Fever

❑ **Updated recommendations (Abridged)**
  - HPV 2-dose
  - 2016-2017 influenza
 - 5-dose IPV series
  - OPV changes

Changes in the Supporting Data Files

❑ **Other changes**

- Gender moved to the Series level (no longer at the Dose level)
- Inadvertent Vaccine section added
  - Inadvertent doses may be repeated immediately (Td/Tdap, OPV)
- Immunity now references a Coded Observation
- Contraindications moved from Schedule Supporting Data into the Antigen Supporting Data using Coded Observations
  - Contraindications can be at the antigen level or the vaccine level
- FAQ section added

Changes in the Logic Specification

- Relevant Patient Series are selected from the total list of Antigen Series based on standard recommendations, patient gender and observations about the patient
- Scorable Patient Series are selected from the evaluated and forecasted Relevant Patient series
- A single Prioritized Patient Series is selected for Series Group based on score
- One or more non-redundant Best Patient Series are selected from the Prioritized Patient Series
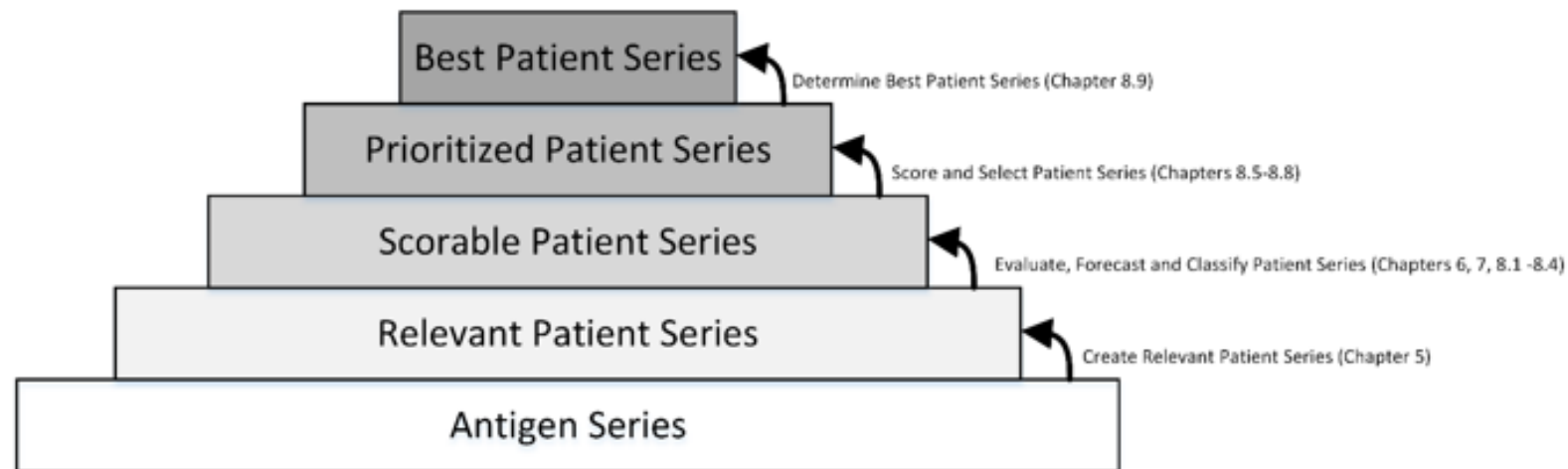
Changes in the Logic Specification

❑ **Pre-filtering of series at the start**
  ▪ Gender, underlying risk indicators, etc

❑ **Core Evaluation and Forecast logic is unchanged**
  ▪ But it needs to be run for each Series Group
  ▪ One prioritized series for each Series Group

❑ **A given patient may have one or more best series at the end of the process**
  ▪ Standard series and risk series are not always equivalent and one of each type of series may be needed
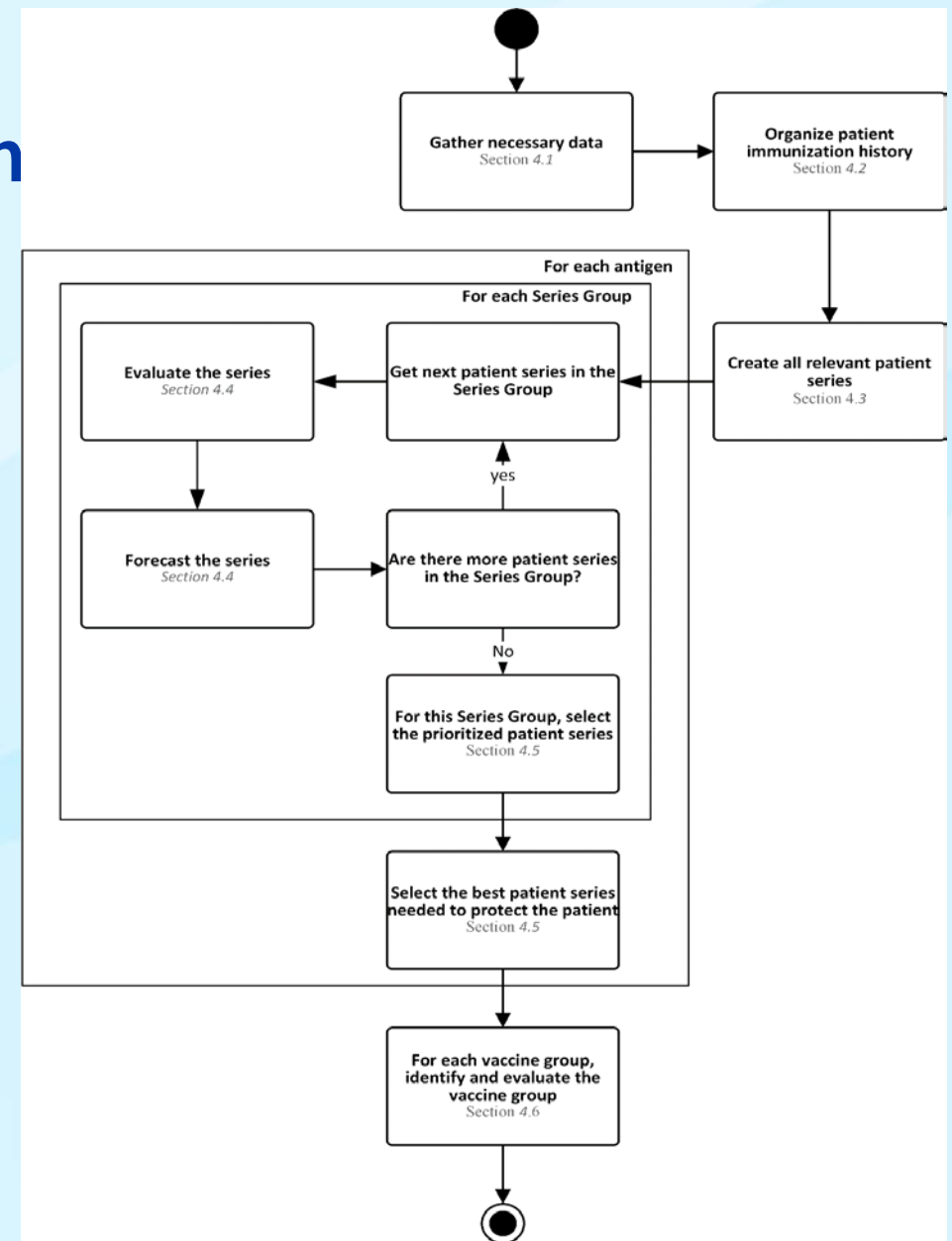
Changes in the Test Cases

❑ **Clarifications and updates as recommendations evolve**

❑ **Separate spreadsheets for age-based recommendations and risk-based recommendations**

- 203 new risk-based scenarios
- Risk-based test cases are fundamentally similar to the age-based test cases, but include relevant observations

Changes in the Training Materials

❑ **Introductory material**

- Overview video
- Infographic
- Miniguide
- Common misconceptions

❑ **Training materials**

- Self-assessment
- Date calculation guide
- Test case quick guide
- Supporting data quick guide
- Practice exercises

Successes and Challenges

❑ **The CDSi resources now more fully reflect the ACIP recommendations**

❑ **We now have a starting list of patient observations that impact a patient's immunization requirements**

❑ **But…**

- Many CDS engines (even in EHRs) won't have all the necessary patient information
- Many observations are still quite vague
- Many variations between ACIP recommendations in terms of wording and concepts
- Many questions about how to display multiple series to providers

The Future

- ❑ **Ongoing maintenance and optimization**
- ❑ **Working with ACIP on harmonizing recommendations and previewing recommendations before publication**
  - ▪ Indications and contraindications
  - ▪ Intervals and ages
- ❑ **Leverage this work elsewhere**
  - ▪ Patient observation exchange using HL7
- ❑ **Interoperability specs**
  - ▪ FHIR projects to optimize resources and create FHIR profiles/implementation guides

CDSi Contributors

CDSi panel/informational group

CDC vaccine group SMEs

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Thoughts? Suggestions? Questions?