Timeboxing Use Case Review

RCKMS Educational Session

June 1, 2023

Agenda

- Review timeboxing definitions
- Describe how timeboxing impacts triggering and the reportability determination
- Discuss use cases for timeboxing
- Timeline for the initial rollout of timeboxing
- Questions

What is Timeboxing?

What RCKMS Timeboxing is…

- Timeboxing is an effort to reduce the number of eICR messages that are determined to be reportable to PHAs based on Encounter Diagnoses or Problem list entries that may not be related to the current instance of disease.

- This is accomplished by including date-based logic in RCKMS rules to assess the interval between two key dates from the eICR message.

Timeboxing Definitions

Timeboxing = Evaluation of the duration between Date A and Date B**

- Date A = eICR Document Date
- Date B = EffectiveDateTime/Low of the current encounter (for Encounter Diagnosis) or of the Problem Concern Act Observation (for Active Problems)**

Timebox Duration = the maximum acceptable interval between the two dates, as defined by the PHA

Timebox Calculation: Date B >= (Date A – Timebox Duration)

***If the value for Date B (the EffectiveDateTime/Low) is NULL, the timebox calculation will not be performed. The criteria will be processed as though no timebox is set.*

Timeboxing Calculation

Example 1:

- Date A (Document Date) = 5/15/23
- Date B (Encounter Diagnosis Effective Date) = 5/10/23
- Timebox Duration = 7 days

Calculation:
5/10/23 >= (5/15/23 – 7 days)
5/10/23 >= 5/8/23 Rule Met

Example 2:

- Date A (Document Date) = 5/15/23
- Date B (Encounter Diagnosis Effective Date) = 5/2/23
- Timebox Duration = 7 days

Calculation:
5/2/23 >= (5/15/23 – 7 days)
5/2/23 ≱ 5/8/23 Not Met

What RCKMS Timeboxing is not…

- *Timeboxing will not change the content of eICRs*; historical data in problem lists will remain in the eICRs if they are “unresolved.”
- Timeboxing will not eliminate “resolved” problems being present in the eICR. EHR vendors are being asked not to trigger off of, or load, “resolved” problems; however, the vendor must exclude the “resolved” problems for them to be removed entirely from the eICR.
- For the initial rollout, timeboxing will not be applied to any other types of criteria (laboratory results, medication, pregnancy, hospitalization) aside from the “Condition (as a diagnosis or active problem).”

How does Timeboxing impact Triggering and the Reportability Determination?

What is eICR triggering?

- When certain data in the EHR are recorded or updated, they are checked against a series of “trigger codes” known as the Reportable Condition Trigger Codes (RCTC) value sets.
- If there are matches, there is one (or more) reportable condition that need(s) to be evaluated by RCKMS to confirm its reportability to Public Health.
- An eICR is “triggered” or generated and sent to the AIMS platform for determination of reportability when a diagnosis, a suspected diagnosis, a laboratory test name, a laboratory result code, a medication, etc. is matched to one of the specific trigger codes.

Timeboxing does not impact triggering eICRs from healthcare organizations

What is the reportability determination?

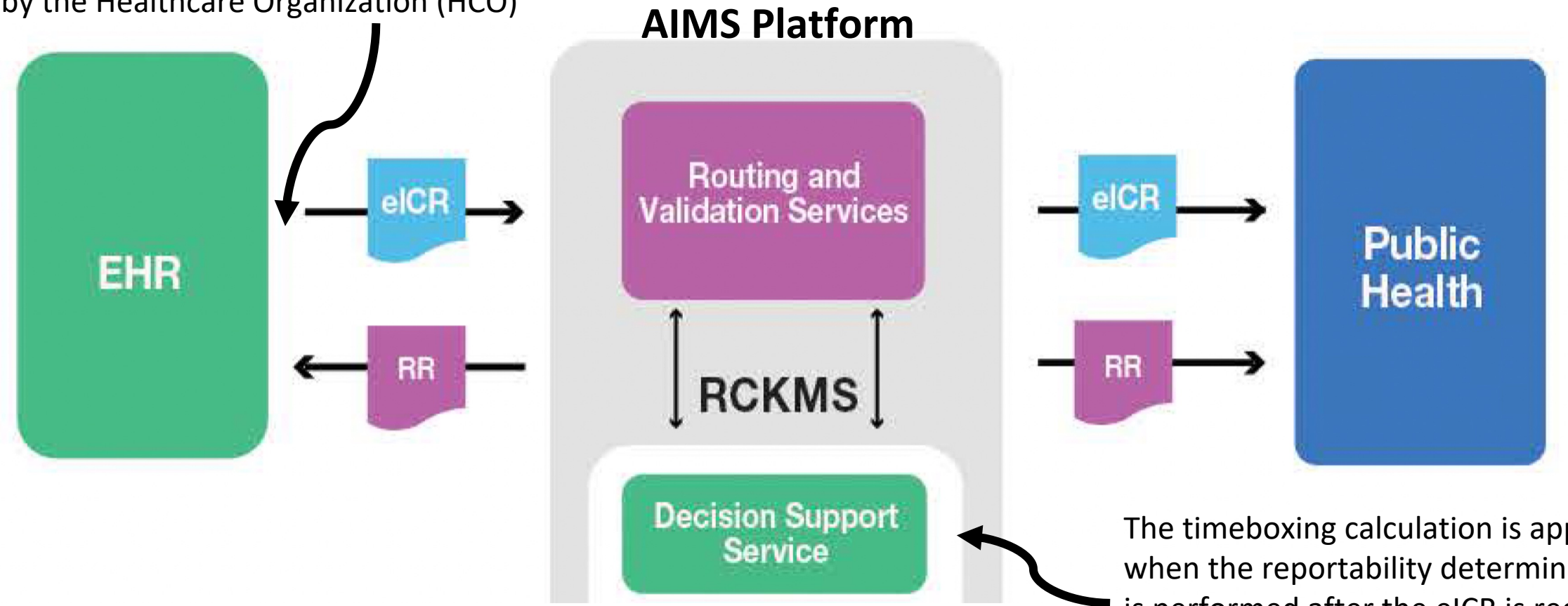
- Reportability determination = the result of the evaluation of a given eICR indicating if it “meets” the rules for case ascertainment published by the relevant PHA(s) in RCKMS

- The following are true for all eICRs processed by RCKMS:
  - An eICR may be triggered based on one condition, but the eICR will be evaluated against *all of the rules published* by the relevant PHA for *any condition*.
  - An eICR may be found reportable for a condition other than the triggering condition.
  - An eICR may be found to be reportable for one or more conditions.
  - An eICR may be found to *not* meet any rules for a condition in RCKMS (including the triggering condition), depending on the reporting rules published by the relevant PHA(s).

Timeboxing does impact the reportability determination

Path of an eICR

The presence of a “trigger code” in the EHR determines when an eICR is sent (“triggered”) by the Healthcare Organization (HCO)



The timeboxing calculation is applied when the reportability determination is performed after the eICR is received at the AIMS platform

Triggering vs. the Reportability Determination

Triggering is…

- Based on the presence of trigger codes in the EHR
- The sending of the eICR from the HCO to the AIMS platform
- NOT impacted by the timebox calculation

The timeboxed reportability determination is…

- Based on the dates associated with the condition diagnosis/problem observation codes in the eICR
- Dependent on the rules and timebox duration authored by the PHA in RCKMS
- Based on the evaluation of the timebox calculation
- Not dependent on what triggered the eICR to be sent

The timebox duration is considered in the reportability determination, when the following is true:

The condition is eligible for timeboxing

- ✓ Timeboxing is enabled and a duration is set
- ✓ The timeboxed criterion is active and has an S, N, O designation
- ✓ The logic set that includes the timeboxed criterion is implementable (i.e., none of the criteria included in the logic set are marked as “Not Yet Implementable”)

The timebox duration is NOT considered in the reportability determination, when the following is true:

The latest version (which includes timeboxing) of the 5 conditions is NOT published to production

- ✓ Timeboxing is NOT enabled
- ✓ No timebox duration is set
- ✓ The EffectiveDateTime/Low of the current encounter (for Encounter Diagnosis) or of the Problem Concern Act Observation (for Active Problems) is NULL

How does Timeboxing work?

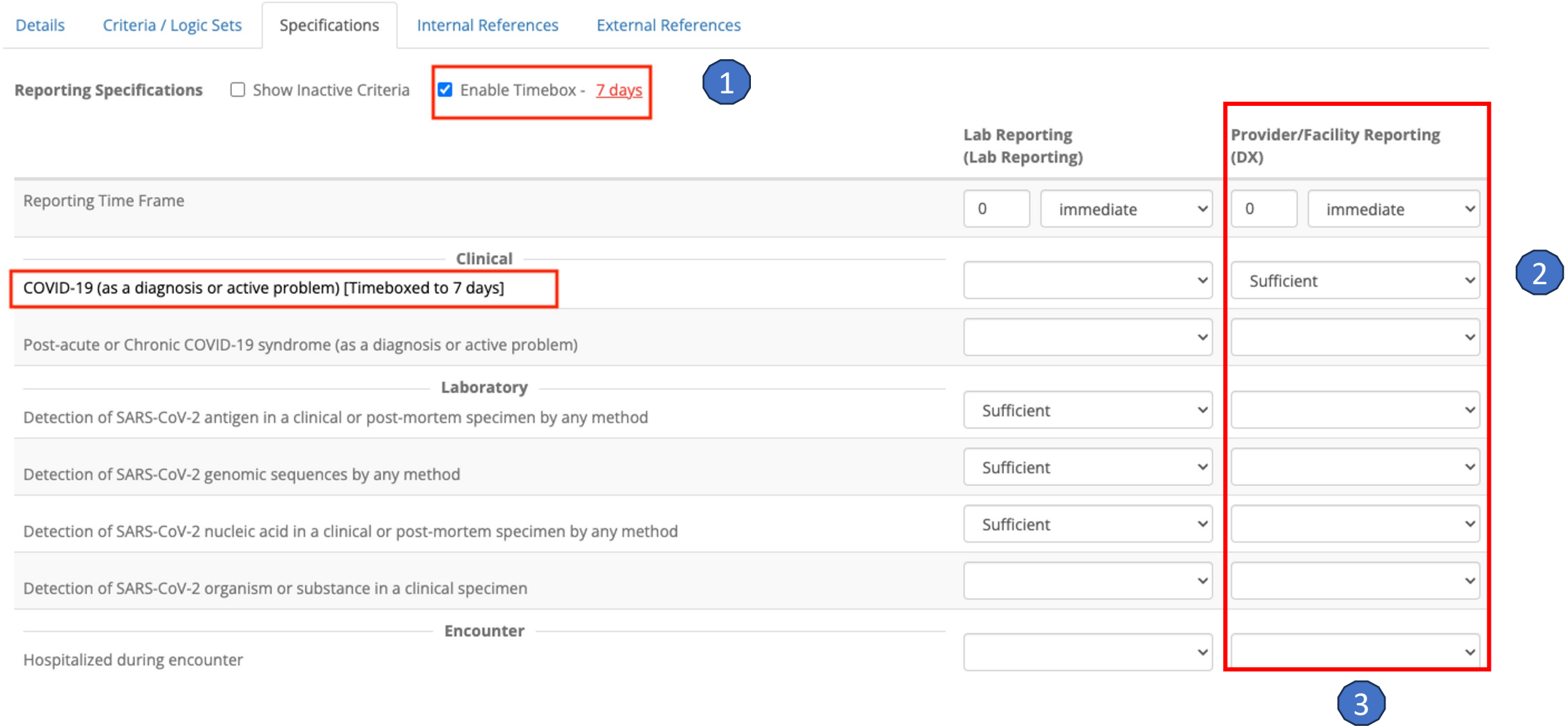
Use Case Review

Background for Use Cases

PHA has rules published for COVID-19 and Syphilis

1. Timeboxing has been enabled and the durations have been set for both conditions
    - COVID timebox duration = 7 days
    - Syphilis timebox duration = 14 days
2. The timeboxed “Condition (as a diagnosis or active problem)” criteria for each condition is marked as “Sufficient”
3. All of the criteria in the logic sets that include the timeboxed criteria are implementable

Published COVID-19 Rules



Published Syphilis Rules

Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 14 days (1)

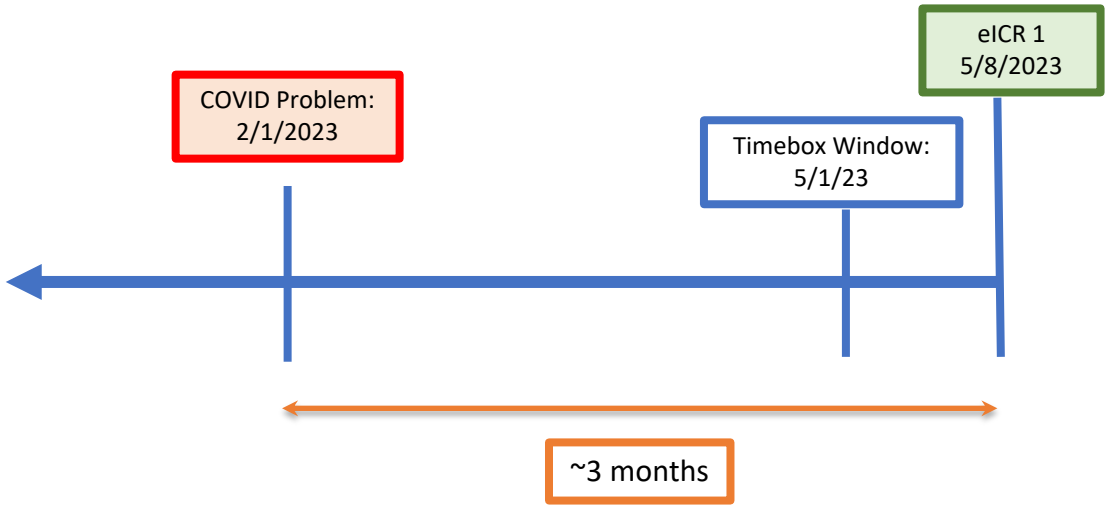
	Lab Reporting (Lab Reporting)	Provider/Facility Reporting (DX)
Reporting Time Frame	0	0
Clinical		
Syphilis (as a diagnosis or active problem) [Timeboxed to 14 days]		Sufficient (2)
Laboratory		
Detection of Treponema pallidum nucleic acid in a clinical specimen by any method	Sufficient	
Detection of treponemal or non-treponemal antibody in a clinical specimen by any method (e.g., Rapid Plasma Reagin (RPR), Venereal Disease Research Laboratory (VDRL), Fluorescent Treponemal Antibody Absorbed (FTA-ABS), T. pallidum Particle Agglutination (TP-PA), Enzyme Immunoassay (EIA), Chemiluminescence Immunoassay (CIA), or equivalent serologic methods)	Sufficient	
Microscopic observation of Treponema pallidum in a clinical specimen (e.g., darkfield microscopy, immunohistochemistry, and special stains)	Sufficient	
Negative results for tests for detection of treponemal or non-treponemal antibody in a clinical specimen by any method (i.e., RPR, VDRL, FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods)		

(3)

Use Case #1: Previous Problem list entry for COVID

Desired Reportability Determination:
No Rule Met for COVID

Use Case #1 – Previous Problem List Entry for COVID



Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 7 days

	Lab Reporting (Lab Reporting)		Provider/Facility Reporting (DX)	
Reporting Time Frame	0	immediate	0	immediate
Clinical				
COVID-19 (as a diagnosis or active problem) [Timeboxed to 7 days]			Sufficient	
Post-acute or Chronic COVID-19 syndrome (as a diagnosis or active problem)				
Laboratory				
Detection of SARS-CoV-2 antigen in a clinical or post-mortem specimen by any method	Sufficient			
Detection of SARS-CoV-2 genomic sequences by any method	Sufficient			
Detection of SARS-CoV-2 nucleic acid in a clinical or post-mortem specimen by any method	Sufficient			
Detection of SARS-CoV-2 organism or substance in a clinical specimen				
Encounter				
Hospitalized during encounter				

Timebox Calculation:

2/1/23 >= (5/8/23 – 7 days)

2/1/23 ≯= 5/1/23 Not Met

The COVID Problem list entry is ”outside” of the timebox window

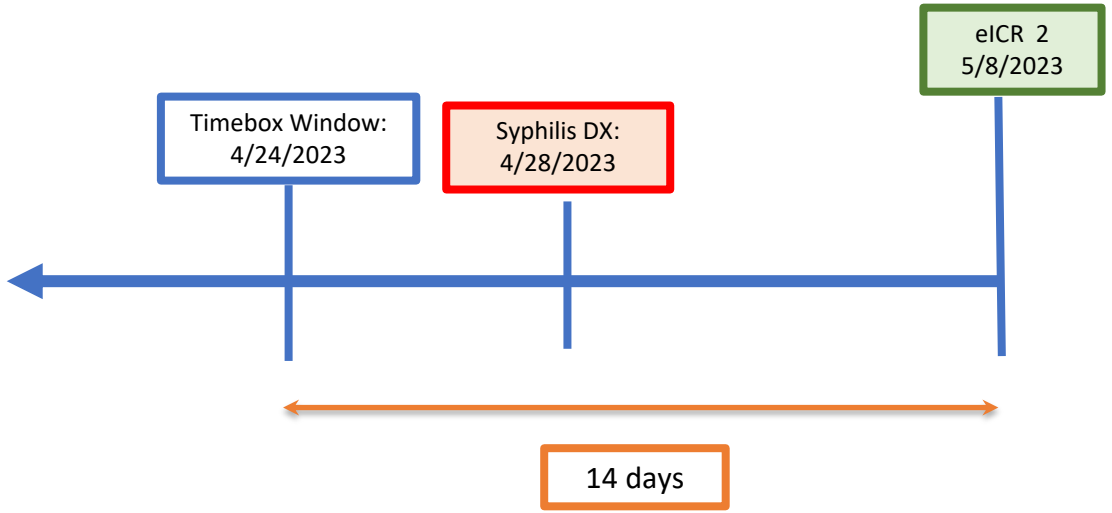
Reportability Determination:

- No rule met for COVID
- eICR is NOT reportable to PHA

Use Case #2: Current diagnosis of Syphilis

Desired Reportability Determination:
Rule Met for Syphilis

Use Case #2 – Current Syphilis Diagnosis



Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 14 days

	Lab Reporting (Lab Reporting)	Provider/Facility Reporting (DX)
Reporting Time Frame	0	0
Clinical		
Syphilis (as a diagnosis or active problem) [Timeboxed to 14 days]		Sufficient
Laboratory		
Detection of Treponema pallidum nucleic acid in a clinical specimen by any method	Sufficient	
Detection of treponemal or non-treponemal antibody in a clinical specimen by any method (e.g., Rapid Plasma Reagin (RPR), Venereal Disease Research Laboratory (VDRL), Fluorescent Treponemal Antibody Absorbed (FTA-ABS), T. pallidum Particle Agglutination (TP-PA), Enzyme Immunoassay (EIA), Chemiluminescence Immunoassay (CIA), or equivalent serologic methods)	Sufficient	
Microscopic observation of Treponema pallidum in a clinical specimen (e.g., darkfield microscopy, immunohistochemistry, and special stains)	Sufficient	
Negative results for tests for detection of treponemal or non-treponemal antibody in a clinical specimen by any method (i.e., RPR, VDRL, FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods)		

Timebox Calculation:

4/28/23 >= (5/8/23 – 14 days)

4/28/23 >= 4/24/23 Rule Met

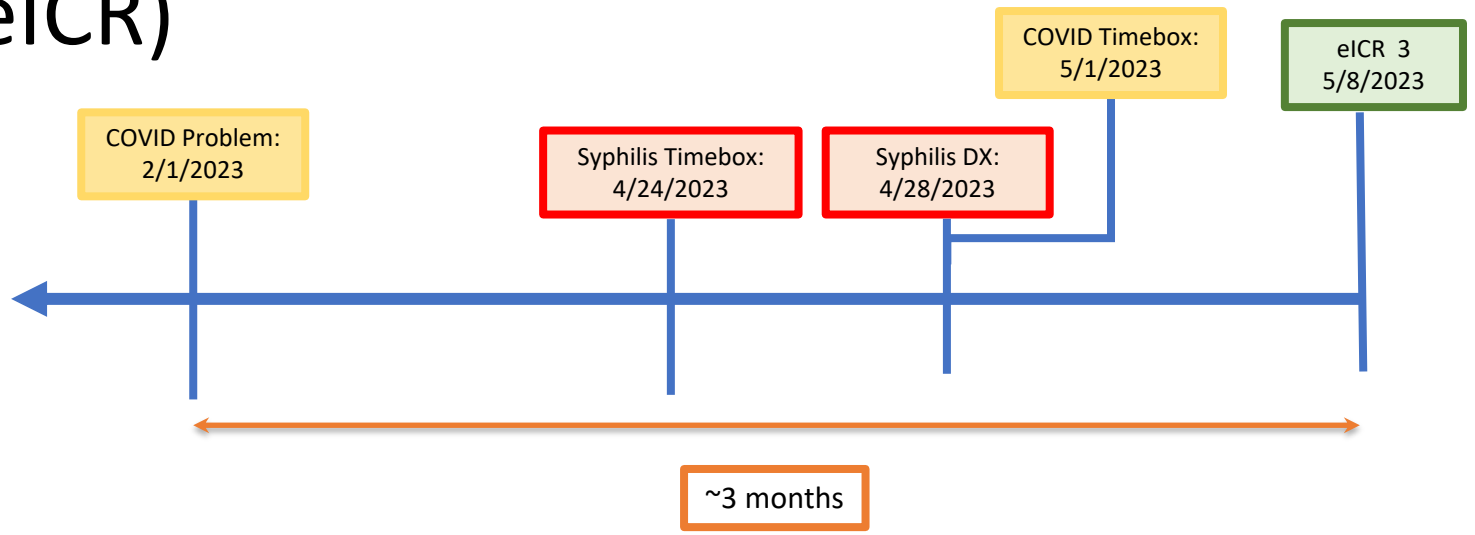
Reportability Determination:

- Rule met for “Syphilis (as a diagnosis or active problem)”
- eICR is reportable to PHA

Use Case #3: Previous problem list entry for COVID and current diagnosis of Syphilis in the same eICR

Desired Reportability Determination:
No Rule Met for COVID
Rule Met for Syphilis

Use Case #3 – Syphilis DX & Previous COVID Problem (same eICR)



COVID Timebox Calculation:

2/1/23 >= (5/8/23 – 7 days)

2/1/23 >= 5/1/23 Not Met

Syphilis Timebox Calculation:

4/28/23 >= (5/8/23 – 14 days)

4/28/23 >= 4/24/23 Rule Met

COVID Reportability Determination:

- No rule met for COVID
- eICR is NOT reportable to PHA

Syphilis Reportability Determination:

- Rule met for “Syphilis (as a diagnosis or active problem)”
- eICR is reportable to PHA

Use Case #4: Previous diagnosis of Syphilis plus treatment information in the same eICR

Desired Reportability Determination:
Rule Met for Syphilis

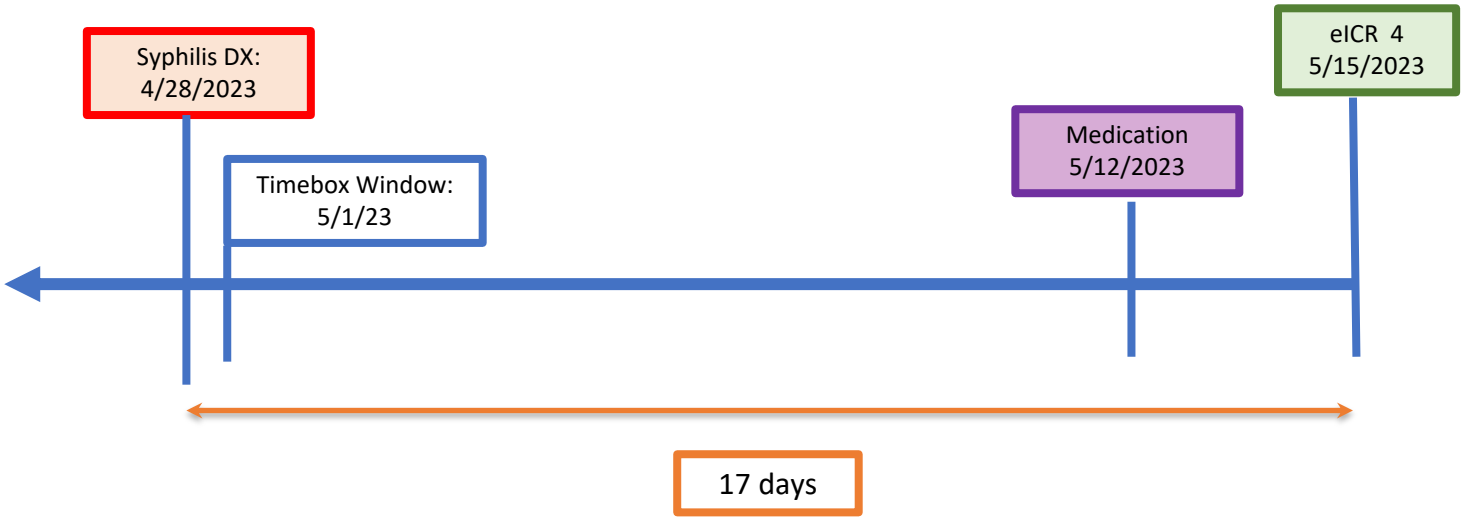
NEW published Syphilis Rules

Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 14 days

	Lab Reporting (Lab Reporting)	Provider/Facility Reporting (DX)	Provider/Facility Reporting (LAB)	Provider/Facility Reporting (MED)
Reporting Time Frame	0	0	0	0
Clinical				
Syphilis (as a diagnosis or active problem) [Timeboxed to 7 days]		Sufficient		
Laboratory				
Detection of Treponema pallidum nucleic acid in a clinical specimen by any method	Sufficient		Sufficient	
Microscopic observation of Treponema pallidum in a clinical specimen (e.g., darkfield microscopy, immunohistochemistry, and special stains)	Sufficient		Sufficient	
Negative results for tests for detection of treponemal or non-treponemal antibody in a clinical specimen by any method (i.e., RPR, VDRL, FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods)				
Medication				
Aqueous crystalline penicillin G administered parenterally				Sufficient

Use Case #4 – Syphilis DX & Medication (same eICR)



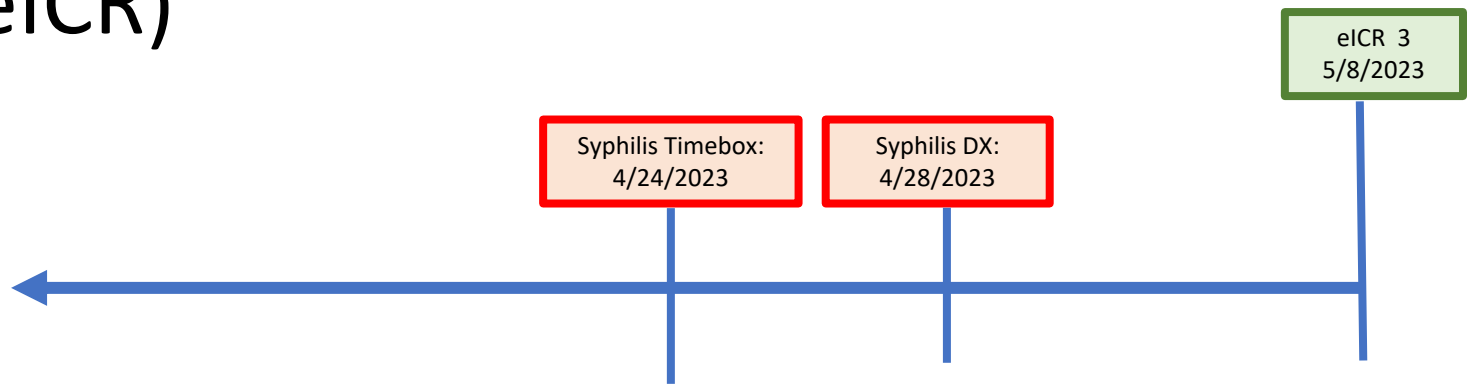
Timebox Calculation:

4/28/23 >= (5/15/23 – 14 days)

4/28/23 >= 5/1/23 Not Met

The Syphilis diagnosis is now “outside” of the timebox window.

Use Case #3 – Syphilis DX & Previous COVID Problem (same eICR)

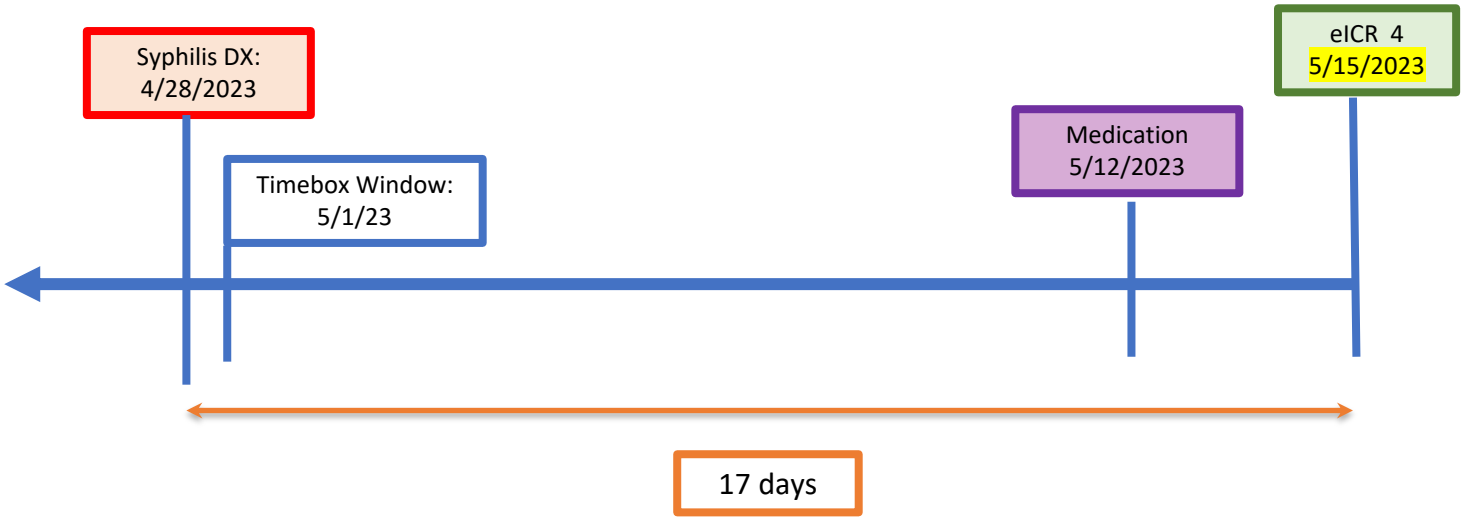


Syphilis Timebox Calculation:

4/28/23 >= (5/8/23 – 14 days)

4/28/23 >= 4/24/23 Rule Met

Use Case #4 – Syphilis DX & Medication (same eICR)



Timebox Calculation:

4/28/23 >= (5/15/23 – 14 days)

4/28/23 >= 5/1/23 Not Met

The Syphilis diagnosis is now “outside” of the timebox window.

However, the medication criterion is ”Sufficient” alone

Reportability Determination:

- Rule met for “Aqueous crystalline penicillin G administered parenterally”
- eICR is reportable to PHA

Use Case #5: Combining a timeboxed criterion with other criteria

Desired Reportability Determination:
Rule Met for Syphilis

Combined Logic Set for Syphilis

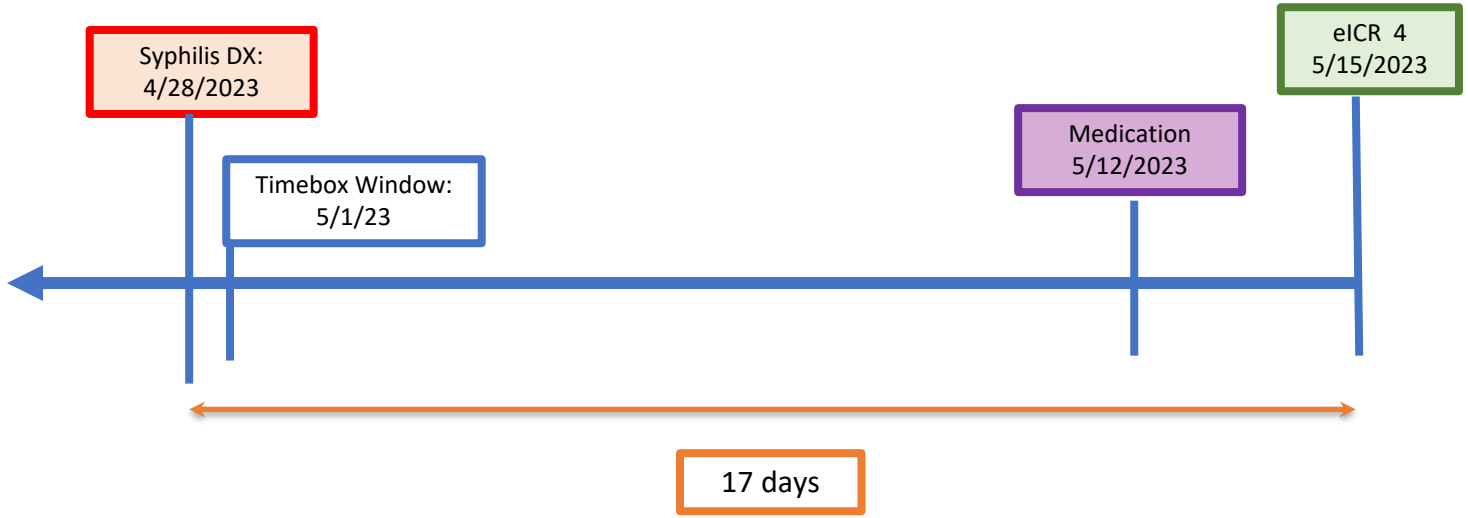
Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 14 days

	Lab Reporting (Lab Reporting)	Provider/Facility Reporting (CLIN+MED)	Provider/Facility Reporting (DX)
Reporting Time Frame	0	0	0
Clinical			
Syphilis (as a diagnosis or active problem) [Timeboxed to 14 days]		Necessary	Sufficient
Laboratory			
Detection of Treponema pallidum nucleic acid in a clinical specimen by any method	Sufficient		
Microscopic observation of Treponema pallidum in a clinical specimen (e.g., darkfield microscopy, immunohistochemistry, and special stains)	Sufficient		
Negative results for tests for detection of treponemal or non-treponemal antibody in a clinical specimen by any method (i.e., RPR, VDRL, FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods)			
Medication			
Aqueous crystalline penicillin G administered parenterally		Necessary	

RISK: both "Necessary" elements have to be present in the SAME eICR to meet the rule

Use Case #5 – Syphilis DX & Medication are both “Necessary” (same eICR)



Timebox Calculation:

4/28/23 >= (5/15/23 – 14 days)

4/28/23 >= 5/1/23 Not Met

The Syphilis diagnosis is “outside” of the timebox window.

To meet the CLIN+MED logic set, both rules

- “Syphilis (as a diagnosis or active problem)” criterion AND
- " Aqueous crystalline penicillin G administered parenterally” criterion

MUST be met in the SAME eICR

Reportability Determination: No Rule Met

How do we resolve it?

1. Author the timeboxed criterion as “Sufficient” without additional criteria being “Necessary” or “Optional” within the same Logic Set

OR

2. Widen the timebox to allow all “Necessary” or “Optional” elements to be included

1. Adjust published Syphilis Rules

Details | Criteria / Logic Sets | Specifications | Internal References | External References

Reporting Specifications ☐ Show Inactive Criteria ☑ Enable Timebox - 14 days

	Lab Reporting (Lab Reporting)	Provider/Facility Reporting (DX)	Provider/Facility Reporting (LAB)	Provider/Facility Reporting (MED)
Reporting Time Frame	0	0	0	0
Clinical				
Syphilis (as a diagnosis or active problem) [Timeboxed to 7 days]		Sufficient		
Laboratory				
Detection of Treponema pallidum nucleic acid in a clinical specimen by any method	Sufficient		Sufficient	
Microscopic observation of Treponema pallidum in a clinical specimen (e.g., darkfield microscopy, immunohistochemistry, and special stains)	Sufficient		Sufficient	
Negative results for tests for detection of treponemal or non-treponemal antibody in a clinical specimen by any method (i.e., RPR, VDRL, FTA-ABS, TP-PA, EIA, CIA, or equivalent serologic methods)				
Medication				
Aqueous crystalline penicillin G administered parenterally				Sufficient

2. Widen the timebox

Timebox Calculation:

4/28/23 >= (5/15/23 – 25 days)

4/28/23 >= 4/20/23 Rule Met

The Syphilis diagnosis is now within the timebox window.

To meet the CLIN+MED logic set, both rules

- “Syphilis (as a diagnosis or active problem)” criterion AND
- " Aqueous crystalline penicillin G administered parenterally” criterion

MUST be met in the SAME eICR

Reportability Determination: Rule Met for CLIN+MED logic set for Syphilis

Initial Rollout of Timeboxing

RCKMS Timeboxing – Initial Rollout

Initial conditions that will support timeboxing*:

- COVID-19
- Gonorrhea
- Hepatitis C Virus Infection
- Mpox
- Syphilis

**Timeboxing rules are ONLY available on the latest versions of each condition*

Jurisdiction Administrators may enable/disable timeboxing in the tool for each condition that supports timeboxing

RCKMS Timeboxing – Initial Rollout

Deployment Plans

1. Timeboxing software modifications were released as part of the May 17, 2023 deployment.
2. Reporting Specifications for the initial timebox-supported conditions will be made available in the RCKMS Authoring Interface via an off-schedule Content Release on June 19, 2023.
3. RCKMS Administrators will import the initial set of updated Reporting Specifications on behalf of PHAs and ongoing authoring support will be available.
4. PHAs will decide whether/when to publish new timebox-enabled Reporting Specifications for their jurisdictions.

RCKMS Timeboxing – Re-authoring

RCKMS Administrators will complete the following re-authoring on behalf of the PHAs:

- Import the new timeboxed version of the RS
- Re-author any updates to the details tab to match the prior version
- Re-create any user added logic sets to match the prior version
- Update the reporting timeframes to match the prior version
- Update the S, N, O designations to match the prior version
- Re-author internal and external references to match the prior version

The RCKMS Admins will NOT publish the new versions.

RCKMS Timeboxing – Re-authoring

RCKMS Administrators will import & re-author on behalf of the jurisdictions *if the jurisdiction has the following version of the condition or later published to production*

- COVID-19 – version 12.0
- Gonorrhea – version 4.0
- Hepatitis C Virus Infection – version 4.0
- Mpox (Monkey pox) – version 4.0
- Syphilis – version 2.1

**Timeboxing rules are ONLY available on the latest versions of each condition*

If you need assistance adopting the latest version of any of these conditions, please reach out to your ASA or submit a ticket via www.rckms.org.

RCKMS Timeboxing- Initial Rollout Timeline

- **June 8th at 3pm Eastern:** Timeboxing Office Hours, including a demonstration of how to implement timeboxing in the RCKMS authoring interface

- **June 15th – 16th:** RCKMS Administrators will complete the import & re-authoring on behalf of the PHAs with the minimum required versions from 8am ET on 6/15 to 5pm ET on 6/16. *Jurisdiction users are asked to refrain from making any changes to their rules in the authoring interface during this time.*

- **June 19th** : New versions of Reporting Specifications for the initial timebox-supported conditions become available in the RCKMS Authoring Interface
  - eICR test cases will be included to test timeboxed criteria (criteria test cases for testing the timebox function is not supported with the initial release)
  - Supporting materials available at www.rckms.org

- **Summer 2023:** Ongoing analysis of utility and functionality of initial rollout

- **Fall/ Winter 2023:**
  - Planning the extension of timeboxing for new and existing conditions going forward
  - Analysis of application of timeboxing to other types of RCKMS criteria (e.g., hospitalization, labs, etc.)


Questions?

Next Steps…

- **Join us on June 8th at 3pm Eastern** for Timeboxing Office Hours!

- If you need assistance adopting the latest version of any of the conditions that will be part of the Timebox release, please reach out to your ASA or submit a ticket via www.rckms.org.