IPSO Change Package Time Zero Cheat Sheet

Time Zero

Time Zero is the time of recognition of sepsis or the time of physiological sepsis.

Prospective Time Zero vs Retrospective Time Zero

The IPSO collaborative distinguished prospective or functional time zero from retrospective time zero. **Prospective/functional time zero** is the time of sepsis recognition. Variables that could represent potential prospective time zero are:

- Screen time
- Huddle time
- Order set time
- First antibiotic time
- First bolus time
- Arrival time

Functional time zero is then the basis of comparison of other reported values. (See "Functional Time Zero" below.)

Retrospective time zero is the time of physiological sepsis as determined by chart review. Because a more real-time understanding of time zero is needed to improve processes, retrospective time zero is not practical for quality improvement. However, it can be compared to functional time zero to measure the gap between physiological onset of sepsis and recognition of sepsis.

Functional Time Zero

To accurately assess time-bound sepsis metrics (such as time to first fluid bolus or antibiotic), teams must use a standardized approach to approximating the beginning of a sepsis episode. For this, IPSO implemented a **Functional Time Zero** definition. This prospective approach leveraged EHR surrogates used in measure calculations.

IPSO Functional Time Zero

Due to lessons learned during IPSO—including that huddles and order sets sometimes occur before a sepsis screen and that it may be difficult to determine functional time zero for outside hospital transfers—we proposed the revised functional time zero logic below.

Functional time zero is:
1. The earliest time of screen, huddle, or order set (if any is reported).
2. Otherwise, the earlier of first antibiotic time or first bolus time (if either is reported).
3. Else emergency department or hospital arrival time (if community onset case).
4. Else cannot be determined or you may use some other proxy for time zero (such as transfer to ICU time).

Functional time zero is established at the episode level as it could vary from episode to episode. For example:

- Patient A may screen positive for sepsis in the ED with a subsequent positive huddle and initiation of an order set. For this episode, screen time is functional time zero.
- Patient B may screen negative for sepsis in the same ED with no huddle performed or order set initiated. However, two boluses and an antibiotic were administered and the patient was transferred to the ICU. For this episode, bolus one time or first antibiotic time is functional time zero, depending on which was administered first.

To determine which of the six potential time zero values to declare as the functional time zero for a given sepsis episode, use the decision tree provided on page 3. Examples are provided on page 4.
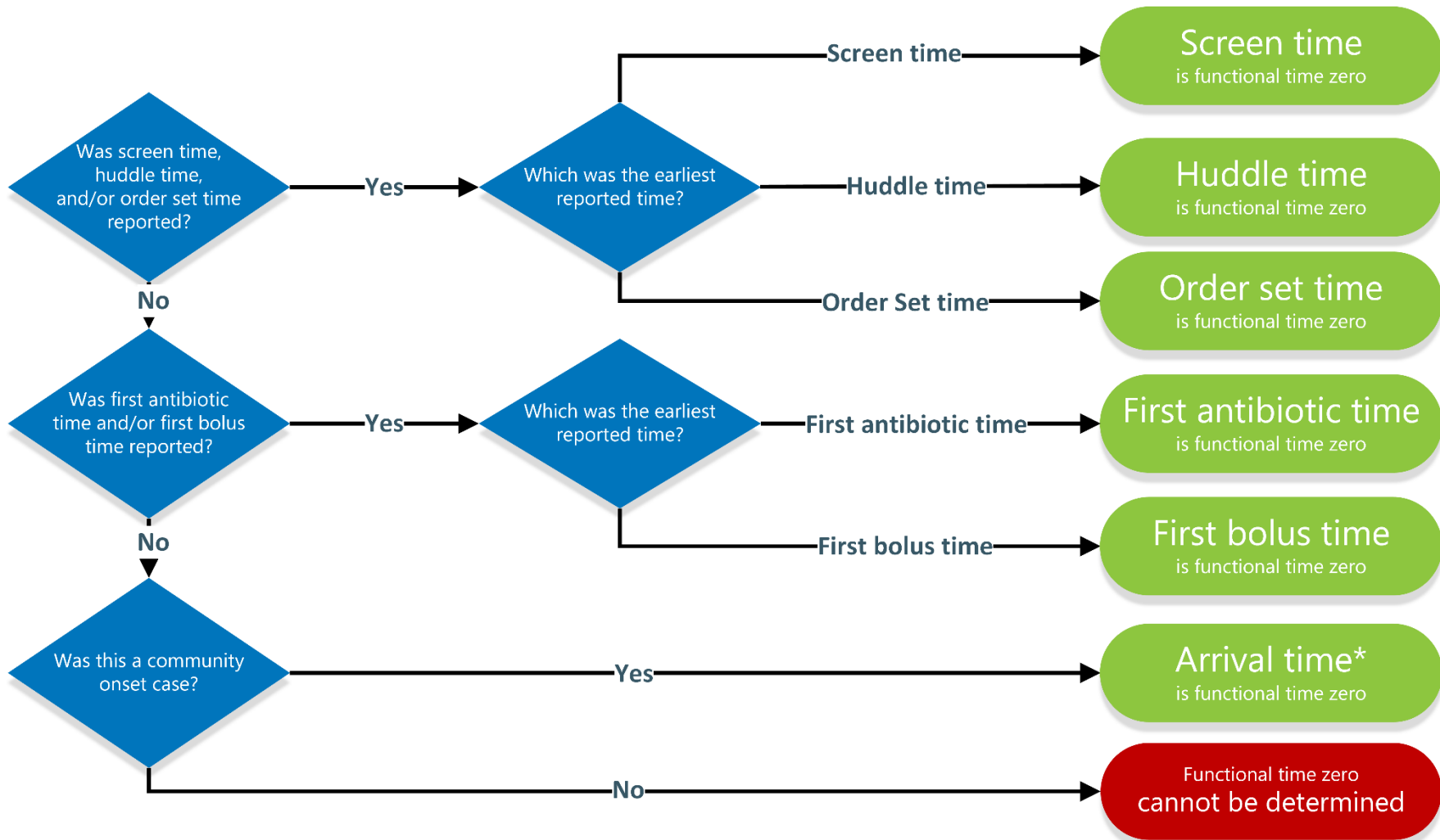
Functional Time Zero and IPSO Quality Indicators

A number of quality indicators (measures) suggested in the IPSO Change Package are based on functional time zero:

- 3-Day and 30-Day sepsis-attributable mortality
- Hospital-onset IPSO critical sepsis
- Time to first fluid bolus
- Time to first antibiotic
- Time to first pressor

Determining Functional Time Zero

To accurately assess time-bound sepsis metrics (such as time to first fluid bolus or antibiotic), teams must use a standardized approach to approximating the beginning of a sepsis episode. For this, IPSO implemented a **Functional Time Zero** definition. This prospective approach leveraged EHR surrogates used in measure calculations. Due to lessons learned during IPSO, we suggest the updated functional time zero logic below.

Was screen time, huddle time, and/or order set time reported?

Yes → Which was the earliest reported time?
- Screen time → **Screen time** is functional time zero
- Huddle time → **Huddle time** is functional time zero
- Order Set time → **Order set time** is functional time zero

No →

Was first antibiotic time and/or first bolus time reported?

Yes → Which was the earliest reported time?
- First antibiotic time → **First antibiotic time** is functional time zero
- First bolus time → **First bolus time** is functional time zero

No →

Was this a community onset case?
- Yes → **Arrival time*** is functional time zero
- No → Functional time zero **cannot be determined**

*Emergency department or hospital arrival time

Functional Time Zero Examples

	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Example 7
Arrival Time	2/27/2025 9:35	2/27/2025 9:35	2/27/2025 9:35	2/27/2025 9:35	2/27/2025 9:35	2/27/2025 9:35	1/27/2025 11:25
Screen Time	2/27/2025 9:55	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)
Huddle Time	2/27/2025 9:58	2/27/2025 9:58	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)
Order Set Time	2/27/2025 10:00	2/27/2025 10:00	2/27/2025 10:00	(not known or n/a)	(not known or n/a)	(not known or n/a)	(not known or n/a)
First Antibiotic Time	2/27/2025 10:05	2/27/2025 10:05	2/27/2025 10:05	2/27/2023 9:45	2/27/2025 10:05	(not known or n/a)	(not known or n/a)
First Bolus Time	2/27/2025 9:50	2/27/2025 9:50	2/27/2025 9:50	2/27/2025 9:50	2/27/2025 9:50	(not known or n/a)	(not known or n/a)

	Example 1	Example 2	Example 3	Example 4	Example 5	Example 6	Example 7
Was screen time, huddle time, and/or order set time reported?	Yes	Yes	Yes	No	No	No	No
Of screen time, huddle time, and order set time which occurred first?	Screen time	Huddle time	Order set time	N/A	N/A	N/A	N/A
Action	Screen time is functional time zero STOP	Huddle time is functional time zero STOP	Order set time is functional time zero STOP	continue	continue	continue	continue
Was first antibiotic time and/or first bolus time reported?				Yes	Yes	No	No
Of first antibiotic time and first bolus time, which occurred first?				First antibiotic time	First bolus time	N/A	N/A
Action				First antibiotic time is functional time zero STOP	First bolus time is functional time zero STOP	continue	continue
Is this a community onset case?						Yes	No
Action						Arrival time is functional time zero STOP	Functional time zero cannot be determined STOP