



## Meet a Scientist - Nicholas King, Scientific Program Manager for the Biomarkers Program at Critical Path Institute

### Reflection sheet

Watch [Nicholas' talk](#) prior to completing this activity.

**NGSS:**

**MS-LS1:**

**MS-LS3:**

**HS-LS1:**

**HS-LS3:**

#### **Scientific Terminology:**

**Consensus-based science:** the collective judgment, position, and opinion of the community of scientists in a particular field of study. Consensus implies general agreement, though not necessarily unanimity.

**Adverse outcomes:** any suboptimal outcome experienced by the patient, including a new or worsening symptom

**Baseline:** a minimum or starting point used for comparisons

**Reproducibility:** a result obtained by an experiment or observational study should be achieved again with a high degree of agreement when the study is replicated with the same methodology by different researchers

**Analytical assay:** an investigative (analytic) procedure for qualitatively assessing or quantitatively measuring the presence, amount, or functional activity of a target entity

**Enzyme:** a substance produced by a living organism which acts as a catalyst to bring about a specific biochemical reaction

**Muscular dystrophy:** a group of inherited diseases that damage and weaken your muscles over time

**Hypoxia:** deficiency in the amount of oxygen reaching the tissues in an organism

**Clinical outcome assessment:** a measurement of how a patient feels, functions, or survives.

**Predictive:** being able to successfully guess the outcome or result of an action

**Biomarker:** an indicator of normal biological processes, pathogenic processes, or responses to an exposure or intervention, including drug interventions.

1. What is the Critical Path Institute's function and how does it affect human safety? What types of organizations does it collaborate with to ensure this?

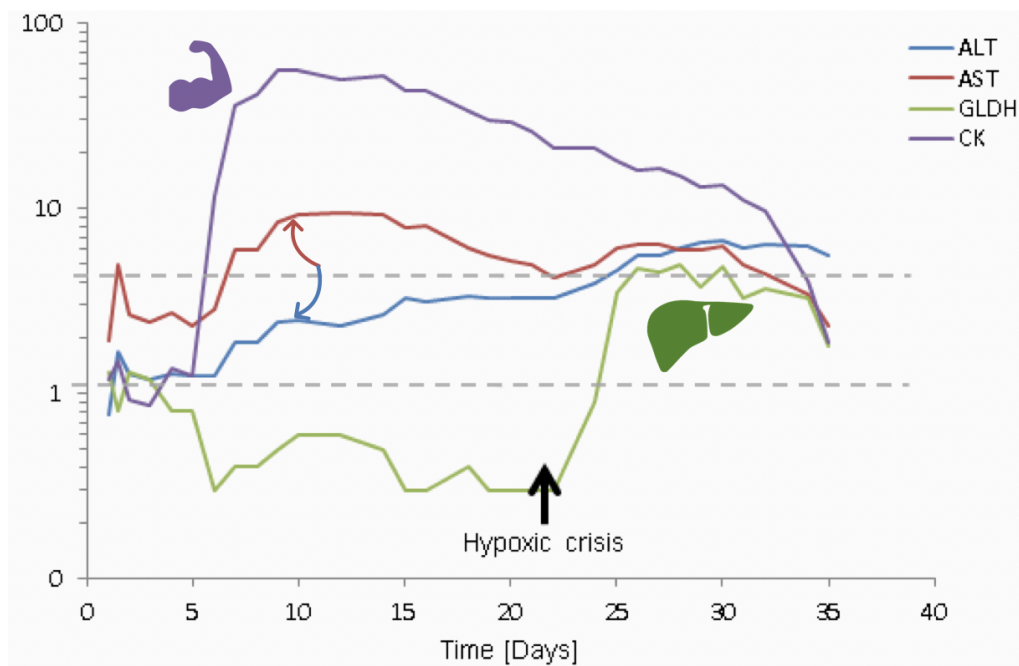
2. In order to determine a **clinical outcome assessment**, scientists ask patients questions like “how are you sleeping?” Come up with 3 more questions you might ask a patient to determine a clinical outcome assessment:

3. What is “**predictive** safety testing”? Give an example of a medical issue you might be able to avoid through predictive safety testing.

Define:

Example of something you could avoid through testing:

4. Explain the process of using **biomarkers** to help scientists understand the effects of treatment on sick people.



In the graph above, the top three lines show heightened chemicals which indicate a patient is suffering injury, including severe muscle loss if they rise high enough. The bottom (green) line shows the chemical GLDH, which can indicate liver failure if it rises high enough.

5a. In the patient's first ten days at the hospital, what could doctors likely tell about their condition using the top three lines?

5b. Looking at the bottom line, what day did the patient's health significantly change? What were doctors likely able to diagnose at that point?

**Will you please help us collect some survey data for required reporting to our funders?**

[Student Survey](#)