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From: Ron Kirschner, MD, Medical Director  
To: ALL HEALTH CARE PROFESSIONALS  
Subject: Timing of lab tests in acetaminophen overdose  
Date: 4/20/21

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- Acetaminophen (APAP) is the most common pharmaceutical overdose poison centers are called about.
- The acetaminophen nomogram currently used in the U.S. predicts the risk of developing hepatotoxicity, defined as ALT or AST >1000 U/L.
- The nomogram was designed for acute ingestions, where all of the drug was ingested within one hour. It should only be used for serum APAP levels obtained at least 4 and <16 hours post-ingestion.
- Although early (1-2 hours post-ingestion) levels are often obtained, this information is not predictive enough to formulate treatment decisions;  $\geq 4$  hour levels are still needed if ingestion time is known.
- If chronic misuse is suspected, it is appropriate to check an APAP level but not to use the nomogram.
- When the time of ingestion is unknown and APAP is detectable the patient is typically treated empirically with N-acetylcysteine (NAC). In some cases it may be possible to estimate ingestion time based on when the patient was last seen in his or her normal state by family.
- Similarly, in cases of staggered overdose ingested over several hours the nomogram cannot be applied, and the patient is generally treated with NAC if APAP is detectable.
- When a combination product with APAP and an opioid or antihistamine (or a sustained release APAP product) was ingested, we suggest that a 4 hour APAP below but close to the nomogram threshold be followed by a 7- 8 hour level. NAC is indicated if the 2<sup>nd</sup> level is above the treatment line (i.e., 89 mcg/mL at 7 h or 75 at 8 h).
- If serum APAP is  $\geq 300$  mcg/mL the patient is likely to need a higher NAC infusion rate and a repeat level to make sure it's declining (Hendrickson). In such cases, toxicologist consultation is recommended.
- We encourage you to call and discuss your patients so that we can provide more case-specific individualized recommendations.

#### Reference

Hendrickson RG. What is the most appropriate dose of N-acetylcysteine after massive acetaminophen overdose? *Clinical Toxicology* 2019; 57:686-91.

**Our certified specialists in poison information and physician toxicologists  
are available 24 hours a day to answer your questions.**