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From: Ron Kirschner, MD, Medical Director
To: ALL HEALTH CARE PROFESSIONALS
Subject: Acetaminophen update
Date: 9/22/21

- The acetaminophen nomogram currently used in the U.S. predicts the risk of developing hepatotoxicity, defined as ALT or AST >1000 U/L, after acute overdose based on a 4-hour level if ingestion time is known.
- Patients with uncertain ingestion time, staggered overdose, or repeated supratherapeutic ingestion for pain should be treated empirically with acetylcysteine rather than using the nomogram. NAC should be continued until APAP is <10 mcg/mL and liver injury, if present, is improving.
- 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.
- If serum APAP is ≥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.
- The Multiplication Product (serum APAP in mcg/mL x ALT or AST (whichever is higher) in U/L) is a useful prognostic indicator regardless of ingestion time, and whether the ingestion is acute, chronic, or staggered. MP <1500 suggests low risk of hepatotoxicity; MP >10,000 suggests high risk (Wong).
- We encourage you to call and discuss your patients so that we can provide more case-specific individualized recommendations.

References
Hendrickson RG. What is the most appropriate dose of N-acetylcysteine after massive acetaminophen overdose? *Clinical Toxicology* 2019; 57:686-91.
Wong A. External validation of the paracetamol-aminotransferase multiplication product to predict hepatotoxicity from paracetamol overdose. *Clinical Toxicology* 2018; 53: 807-14.

To view an educational presentation on **Acetaminophen** please visit
https://www.nebraskapoison.com

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