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BAXTER PRESENTS DATA AT ASHP MEETING INDICATING MACHINE LEARNING MAY ENHANCE INFUSION PUMP PROGRAMMING SAFETY

- *Data suggest machine learning and artificial intelligence could help hospitals align drug libraries more closely to clinical practices, which may advance infusion safety*
- *Study conducted in partnership with MedAware, an expert in leveraging artificial intelligence (AI) technology to enhance medication safety monitoring*

DEERFIELD, Ill., DECEMBER 8, 2021 – Baxter International Inc. (NYSE:BAX), a leader in innovative technology for medication delivery, announced new data from a retrospective study finding that machine learning, a type of artificial intelligence (AI) that uses algorithms to find patterns in large amounts of data, may help support clinical decision-making during the programming of smart infusion pumps. The study, titled "Machine Learning Complements Smart Infusion Pump Safety Features," was presented at the American Society of Health-System Pharmacists (ASHP) 2021 Midyear Clinical Meeting taking place Dec. 5 – Dec. 9, 2021. The study is part of a collaboration with MedAware that is intended to support Baxter's development of next-generation dose error reduction software for integration directly into Baxter's infusion pumps and hospital enterprise connectivity solutions.

"This study shows promise around the potential to enhance patient safety by using machine learning platforms to build and maintain smart infusion drug libraries that dynamically review infusions and signal possible infusion errors," said Douglas M. Hansell, M.D., MPH, vice president of medical affairs for Baxter's Medication Delivery business. "Baxter is eager to further explore the use of machine learning and other digital health platforms to generate real-time insights that support individualized clinical decisions."

Smart infusion pumps use Dose Error Reduction Systems (DERS) to help prevent medication errors by checking programmed doses against preset limits specific to a drug. If a programmed dose is outside the limits, the pump alerts clinicians and can either require confirmation before beginning delivery (a soft limit) or not allow delivery at all (a hard limit).[1] Dose limits must be meaningful and consistent with clinical practice to prevent alert fatigue, which can impact patient safety by leading to alerts being ignored or safety systems bypassed. However, developing meaningful DERS limits across all drugs and care areas within a hospital's drug library, and then deploying those changes through thousands of pumps throughout the hospital, is challenging and requires detailed analysis and significant resources to maintain. This study examined whether machine learning and AI algorithms could inform adjustments to DERS limits.

The study used MedAware's machine learning technology to analyze 3,823,367 infusions performed on 20,542 Baxter infusion pumps over a 10-month period. Algorithms were applied to the data set to replicate a potential machine-learning approach to optimizing infusion pump programming safety. These algorithms identified "outliers," which included infusions deviating from commonly programmed doses/rates for specific drugs, uncommon drug concentrations, and patient weight entries outside of common weight ranges.

The analysis found 44,819 pump programming entries that were outliers to common programming patterns, of which 23% triggered DERS soft limits and 52% triggered DERS hard limits. Approximately 25% of these outliers were identified through MedAware's machine learning technology but did not trigger DERS because the programming parameters were within DERS soft limits, so clinicians did not receive an alert during pump programming. These results reinforce the challenges associated with maintaining meaningful DERS limits. Study investigators concluded that machine learning could help inform future collaboration with hospitals around the development of more clinically relevant DERS limits that may help support increased infusion safety and reduce unnecessary alerts.

"We are thrilled to evaluate our medication safety monitoring technology within Baxter's smart infusion pumps," said Dr. Gidi Stein, co-founder and CEO of MedAware. "This study shows the significant potential of an AI-enabled, data-driven approach to mitigate alert fatigue and identify pump programming errors that would be difficult to find using conventional approaches and rule-based systems alone."

About Baxter

Every day, millions of patients and caregivers rely on Baxter's leading portfolio of critical care, nutrition, renal, hospital and surgical products. For 90 years, we've been operating at the critical intersection where innovations that save and sustain lives meet the healthcare providers that make it happen. With products, technologies and therapies available in more than 100 countries, Baxter's employees worldwide are now building upon the company's rich heritage of medical breakthroughs to advance the next generation of transformative healthcare innovations. To learn more, visit www.baxter.com and follow us on Twitter, LinkedIn and Facebook.

This release includes forward-looking statements concerning potential benefits associated with machine learning, artificial intelligence and infusion pump programming safety. The statements are based on assumptions about many important factors, including the following, which could cause actual results to differ materially from those in the forward-looking statements: demand for and market acceptance for new and existing products; product development risks; inability to create additional production capacity in a timely manner or the occurrence of other manufacturing or supply difficulties (including as a result of natural disasters, public health crises and epidemics/pandemics, regulatory actions or otherwise); satisfaction of regulatory and other requirements; actions of regulatory bodies and other governmental authorities; product quality, manufacturing or supply, or patient safety issues; changes in law and regulations; and other risks identified in Baxter's most recent filing on Form 10-K and Form 10-Q and other SEC filings, all of which are available on Baxter's website. Baxter does not undertake to update its forward-looking statements.

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[1] ECRI Institute: ECRI: In Depth – Dose Error Reduction Systems. https://1technation.com/ecri-depth-dose-error-reduction-systems/