Study of Comprehensive Medication Measurement Offers Promise to Improve Adherence, Accuracy of Medical Record, and Safety of Patients on Multiple Medications

Breakthrough Precision Medicine Clinical Tool™ Provides Empirical Measurement of Real-World Patients

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Franklin, TN, November 6, 2018 – Precera Bioscience, Inc. ("Precera") announces the publication of *Assessment of Patient Medication Adherence, Medical Record Accuracy, and Medication Blood Concentrations for Prescription and Over-the-Counter Medications* in JAMA Network Open on November 2, 2018, representing the first comprehensive study of medication therapy assessing hundreds of prescription and over-the-counter medications simultaneously, illustrating the scope of medication therapy issues in real-world patients.

Results from this cross-sectional study of 1,346 patients, primarily from Vanderbilt University Medical Center and the Cleveland Clinic, utilizing Precera's *Precision Medicine Clinical Tool™*, revealed that 63% of patients tested had a discrepancy between their medical record and the medications detected in their systemic circulation. This finding was particularly alarming, considering medications used to treat cardiovascular and other chronic diseases were found in patients who had no record of these co-morbidities within their disease management plan. Moreover, a disproportionate number of these unknown medications were identified as potentially harmful in combination with other therapeutics prescribed and detected in their circulation.

Study findings also revealed the following: (1) medications are frequently detected despite lack of prescription evidence in the medical record, (2) patient adherence varies by healthcare setting and drug class, (3) being adherent to one medication is a positive predictor of adherence to other medications, (4) alerts for potential drug interactions were common, with 1,245 unique alerts across 1,346 samples and (5) nearly 53% of major and severe alerts were associated with unknown medications.

Poor medication adherence, numerous electronic medical records across disparate healthcare settings, and multiple prescribers engaged in a patient's care may result in healthcare providers making clinical and prescribing decisions without complete knowledge of a patient's medication management plan. This may lead to medical errors, inpatient hospitalizations, and other avoidable uses of healthcare resources.

Utilizing *Precision Medicine Clinical Tools* capable of identifying and quantifying medications in the patient's circulation provides crucial information in terms of a truly delineated medication record to clinicians and care teams for optimization of medication treatment. These comprehensive medication tools offer promise to improve adherence, reconcile medical records, and address safety and effectiveness concerns associated with the choice of medication for patients who are prescribed multiple medications.

For the full article, visit https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2712181

About Precera Bioscience
Precera is a biosciences company dedicated to individualizing prescribing through cutting-edge science. Precera's transformative technology, PrecisionCMQ™, measures medications in the patient's circulation, then reconciles with the patient's medical record, prescribing data, and drug interaction alerts to empower prescribers with an Actionable Clinical Report. Precera offers the only clinical tools that address all aspects of medication therapy management: adherence, drug-drug interactions, medical reconciliation, and dose tailoring. In addition to products available to hospitals and clinics, Precera's platform can also optimize clinical drug development. The company has a history of partnering with healthcare companies and academic institutions that share its mission to optimize patient medication therapy.
For more information, visit www.precera.com

About Medication Mismanagement & Cost to the Healthcare System
Improper use of medications costs the healthcare system over $200 billion annually[1] and 125,000 preventable deaths per year. Comorbid patients with polypharmacy treatment regimens largely drive avoidable medication costs, with 42% of the 65 plus population prescribed 5 or more medications.[2] The odds of an adverse drug event increase 29% for each additional prescriber for a given patient.[3]

1. IMS Report, Responsible Use of Medicines, 2013 (Based on 2012.
2. Mukete BN, Ferdinand KC Polypharmacy in Older Adults With Hypertension: A Comprehensive Review. *J Clin Hypertens.* https://onlinelibrary.wiley.com/doi/epdf/10.1111/jch.12624 ;
3. Green JL, Hawley JN, Rask KJ. Is the number of prescribing physicians an independent risk factor for adverse drug events in an elderly outpatient population? *Am J Geriatr Pharmacother*. 2007 Mar;5(1):31-9.