

Targeting Prescription Opioid Overdose: Predict and Prevent

Venebio Opioid Advisor™ (VOA)



The only validated risk index and clinical decision support tool that calculates a patient's likelihood of experiencing a life-threatening overdose from a prescription opioid.

EXCELLENT PREDICTIVE PERFORMANCE

Venebio Opioid Advisor uses a proprietary algorithm to develop a personalized risk profile based on multiple demographic and clinical variables.

The profile is then compared with data from tens of millions of opioid-treated individuals, and the patient's risk score and predicted probability of experiencing a serious opioid overdose during the next six months are calculated.

DEMONSTRATED EFFECTIVENESS

Venebio Opioid Advisor had 90% accuracy in predicting overdose events in a study of 18.3 million patients who were prescribed opioids.¹ In a population of 100,000 opioid recipients, VOA was projected to help reduce the incidence of prescription opioid overdose by 15%, leading to:

- 500 fewer prescription opioid overdoses,
- 400 fewer emergency department visits,
- 120 fewer hospitalizations, and
- saving >\$2 million each year in prescription opioid overdose treatment costs.⁸

SEAMLESS INTEGRATION—FAST AND SIMPLE TO USE

Venebio Opioid Advisor integrates directly with electronic medical records or other systems such as an analytics warehouse, population health platform or health information exchange (HIE). The tool can be used reliably and accurately by trained non-physician health care professionals (e.g., PA, RN, LPN), saving valuable time for other clinicians.

For additional information, please contact:
info@vенеbio.com | 804-397-0785

www.vенеbio.com

THE OPIOID EPIDEMIC

- 46 people die every day in the United States from a prescription opioid overdose.²
- Deaths from prescription opioid overdose have increased from 4,030 in 1999 to more than 15,000 in 2015.^{3,4}
- Prescription opioid sales quadrupled in the U.S. between 1999 and 2010.⁵
- 15% of the U.S. population filled at least one opioid prescription within any single year between 2011 and 2016.⁶
- The economic burden of the opioid overdose epidemic stemming from prescription opioids exceeds \$75 billion annually.⁷



Targeting Prescription Opioid Overdose: Predict and Prevent

Venebio Opioid Advisor™ (VOA)



PERSONALIZED RISK REDUCTION GUIDANCE

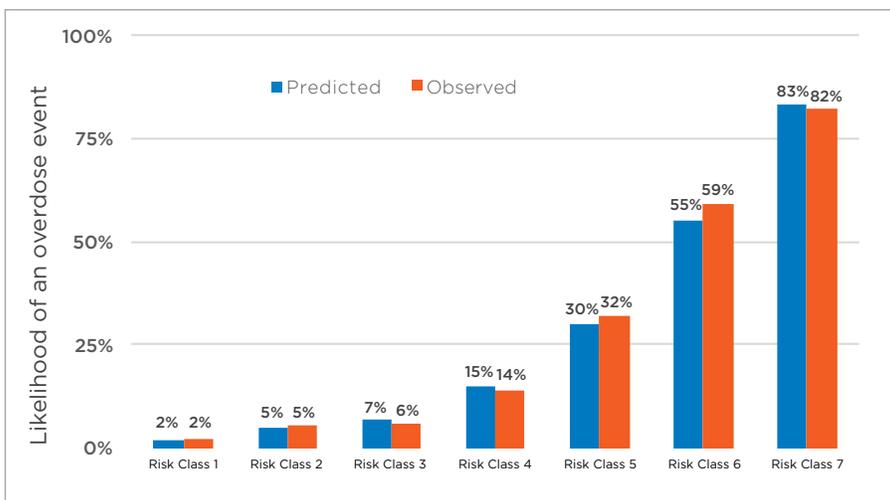
Venebio Opioid Advisor provides each patient's risk factor profile and personalized, evidence-based information to reduce the patient's risk of experiencing an overdose.

The health care professional receives useful guidance regarding specific risk-mitigating interventions to consider when making clinical decisions about the patient's treatment plan.

A patient-friendly version describes an opioid overdose, how the patient can reduce their risk, and what to do if an overdose occurs.

VOA can track longitudinal changes in individual risk factor profiles, clinical status, prescribed medication regimen, and overdose risk, thereby helping to assess and optimize the effectiveness of interventions.

Venebio received a \$1.5 million Direct-to-Phase II SBIR (Small Business Innovation Research) grant from the National Institute on Drug Abuse (NIDA) of the National Institutes of Health (NIH) to further refine the algorithm and personalized guidance provided by VOA, and to validate the tool in population health and clinical settings.



Predicted Probability (risk classes by percentiles) versus Observed Incidence of Overdose

From a study of 18 million patients who were dispensed a prescription opioid during 2009-2013 in one of the largest U.S. commercial health plan claims databases.¹

Sources:

- 1 Zedler BK, Saunders WB, Joyce AR, Vick CC, Murrelle EL. Validation of a screening risk index for serious prescription opioid-induced respiratory depression or overdose in a US commercial health plan claims database. *pnx009* [published online ahead of print March 6, 2017] *Pain Med*.
- 2 Opioid painkiller prescribing. where you live makes a difference. Centers for Disease Control and Prevention website. <https://www.cdc.gov/vitalsigns/opioid-prescribing>. July 1, 2014. Accessed May 12, 2016.
- 3 Centers for Disease Control and Prevention. CDC Wide-ranging Online Data for Epidemiologic Research (WONDER). Underlying cause of death. <https://wonder.cdc.gov/mortSQL.html>. Reviewed December 22, 2016. Accessed May 12, 2017.
- 4 Drug overdose deaths in the United States continue to increase in 2015. Centers for Disease Control and Prevention website. <https://www.cdc.gov/drugoverdose/epidemic/index.html>. Updated December 16, 2016. Accessed May 12, 2017.
- 5 Centers for Disease Control and Prevention. Vital signs: overdoses of prescription opioid pain relievers—United States, 1999-2008. *MMWR Morb Mortal Wkly Rep*. 2011 Nov 4;60(43):1487-92.
- 6 A Nation in Pain: Focusing on U.S. Opioid Trends for Treatment of Short-term and Longer-term Pain. An Express Scripts Report. Available at <http://lab.express-scripts.com/lab/publications/a-nation-in-pain>. December 9, 2014. Accessed May 12, 2017.
- 7 Birnbaum HG, White AG, Schiller M, Waldman T, Clevelan JM, Roland CL. Societal costs of prescription opioid abuse, dependence, and misuse in the United States. *Pain Med*. 2011 Apr;12(4):657-67.
- 8 Thompson S, Sasinowski M, Zedler B, Joyce A, Tripodi M, Murrelle E. Predictive Analytics Can Help Reduce Prescription Opioid Overdoses and Health Care Costs. Richmond, VA: Venebio Group, LLC; 2017.

For additional information, please contact:
info@vенеbio.com | 804-397-0785

www.vенеbio.com

