High risk prescribing and opioid overdose: Prospects for a predictive model

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PRESENTATION FORMAT: Oral Presentation

TOPIC/TARGET AUDIENCE: Clinicians and public health professionals engaged in issues around chronic pain management, opioid prescription, overdose prevention, and addiction medicine.

ABSTRACT:
Purpose: To develop a simple, valid model to identify patients at high risk for opioid overdose-related hospitalization and mortality.

Methods: Oregon PDMP, Vital Records, and Hospital Discharge data were linked to estimate two logistic models. The first included the full range of risk factors from the literature. The second model was simpler and used binary indicators in place of overlap variables. Models were validated using a second year of data. ROC curves, sensitivity and specificity of the models were analyzed.

Results: Variables retained in the final model were age categories 55-64 (= .55, $p < .001$), 65-74 (= .84, $p < .001$), >75 (= 1.13, $p < .001$) , number of prescribers (= .13, $p < .001$), number of pharmacies (= .11, $p < .001$), any long acting opioid (= 1.53, $p < .001$), any benzodiazepine (= .93, $p < .001$) and any carisoprodol (= .42, $p = .03$). Results generalized well to validation data. Model sensitivity is achieved at the expense of specificity.

Implications: Computationally simple models can identify high-risk patients based on prescription history alone. Predictive models must be employed with care to avoid alert fatigue.

OBJECTIVE(S):
- Identify risk factors that strongly predict opioid related adverse events.
- Weigh consequences of sensitivity and specificity of models.
- Discuss barriers to deployment of predictive models for identifying high risk patients and push notifications.

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