

Redefining Medication Safety Through Pharmacy Innovation



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The Problem: Leading Causes of Death in the United States

2



659,041

Heart disease



599,601

Cancer



173,000

Adverse drug events

Adverse drug events have contributed to 100,000 deaths per year, not including 73,000 opioid-related deaths²

1. Centers for Disease Control and Prevention. National Center for Health Statistics. Leading Causes of Death. <https://www.cdc.gov/nchs/fastats/leading-causes-of-death.htm>. Accessed July 29, 2019.

2. National Institute on Drug Abuse. Overdose Death Rates. <https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates>. Accessed July 29, 2019.

3. US Food and Drug Administration. Preventable Adverse Drug Reactions: A Focus on Drug Interactions. <https://www.fda.gov/drugs/developmentapprovalprocess/developmentresources/druginteractionslabeling/ucm110632.htm>. Accessed July 29, 2019.

Typology: Adverse Drug Events Are NOT Medication Errors

Medication Error:

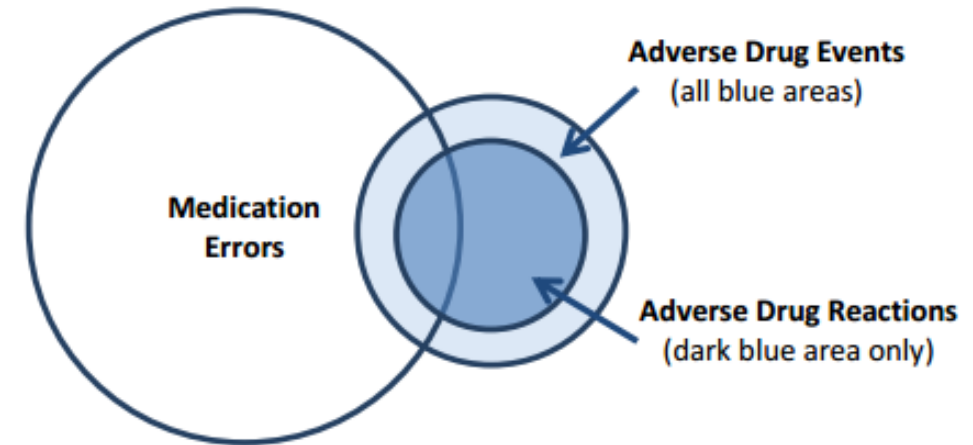
Inappropriate use of a drug that may or may not result in harm

- Such errors may occur during prescribing, transcribing, dispensing, administering, adherence, or monitoring of a drug

Adverse Drug Events:

Harms directly caused by a medication at normal doses

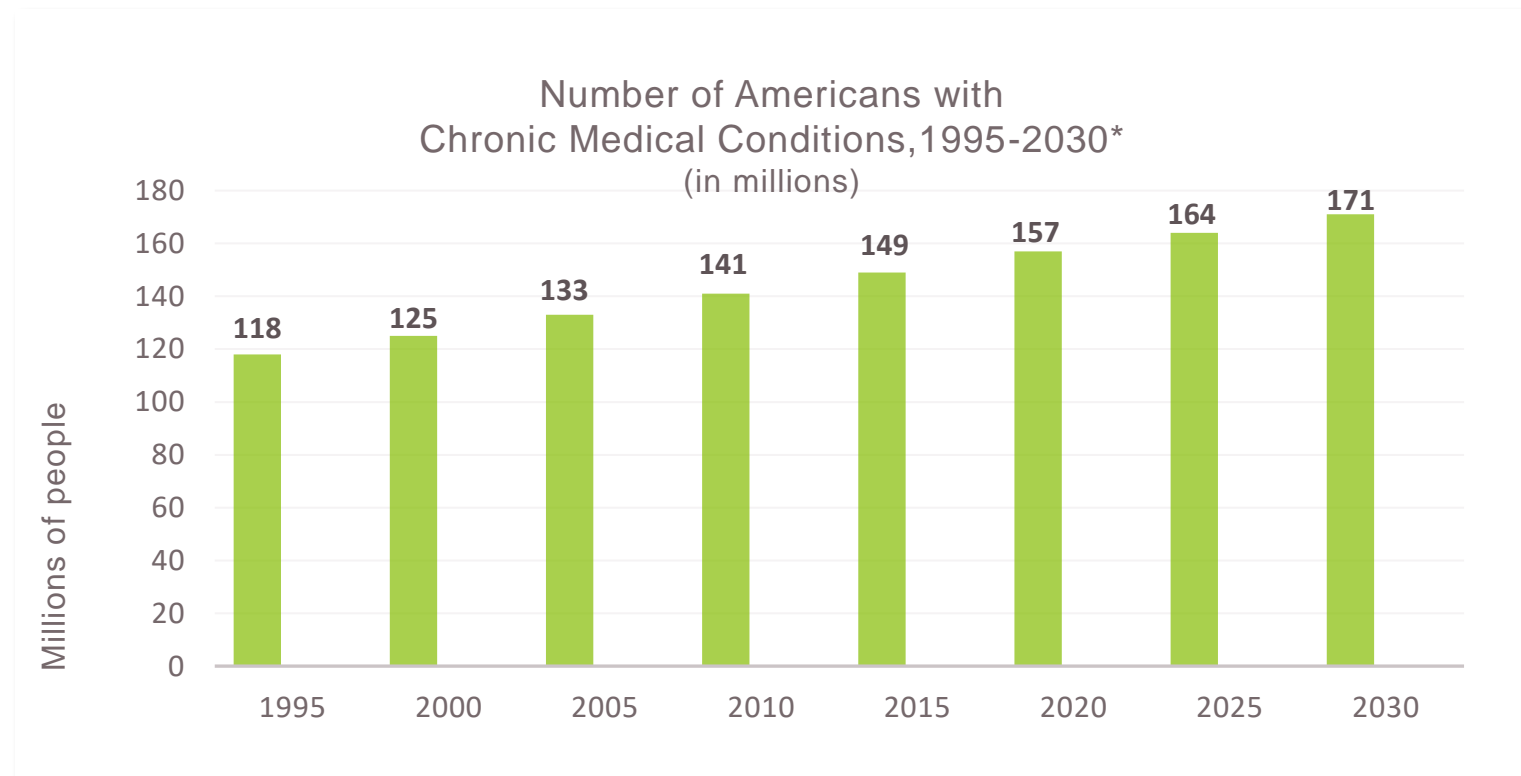
Figure 1. Terms Relevant to Drug-Related Harm [2]



Adverse Drug Event Risks Will Rise With Chronic Conditions

Chronic conditions are on the rise and medications treating them are responsible for a higher prevalence of adverse drug events (ADEs).

45% increase in the number of people with chronic medical conditions.



59% of ER visits from ADEs are associated with:



Anticoagulants



Diabetes Agents



Opioid Analgesics

*Values for 2005 to 2030 are projections.

Source: Adapted from Partnership for Solutions. (2002). *Chronic Conditions: Making the Case for Ongoing Care*. Baltimore, MD.

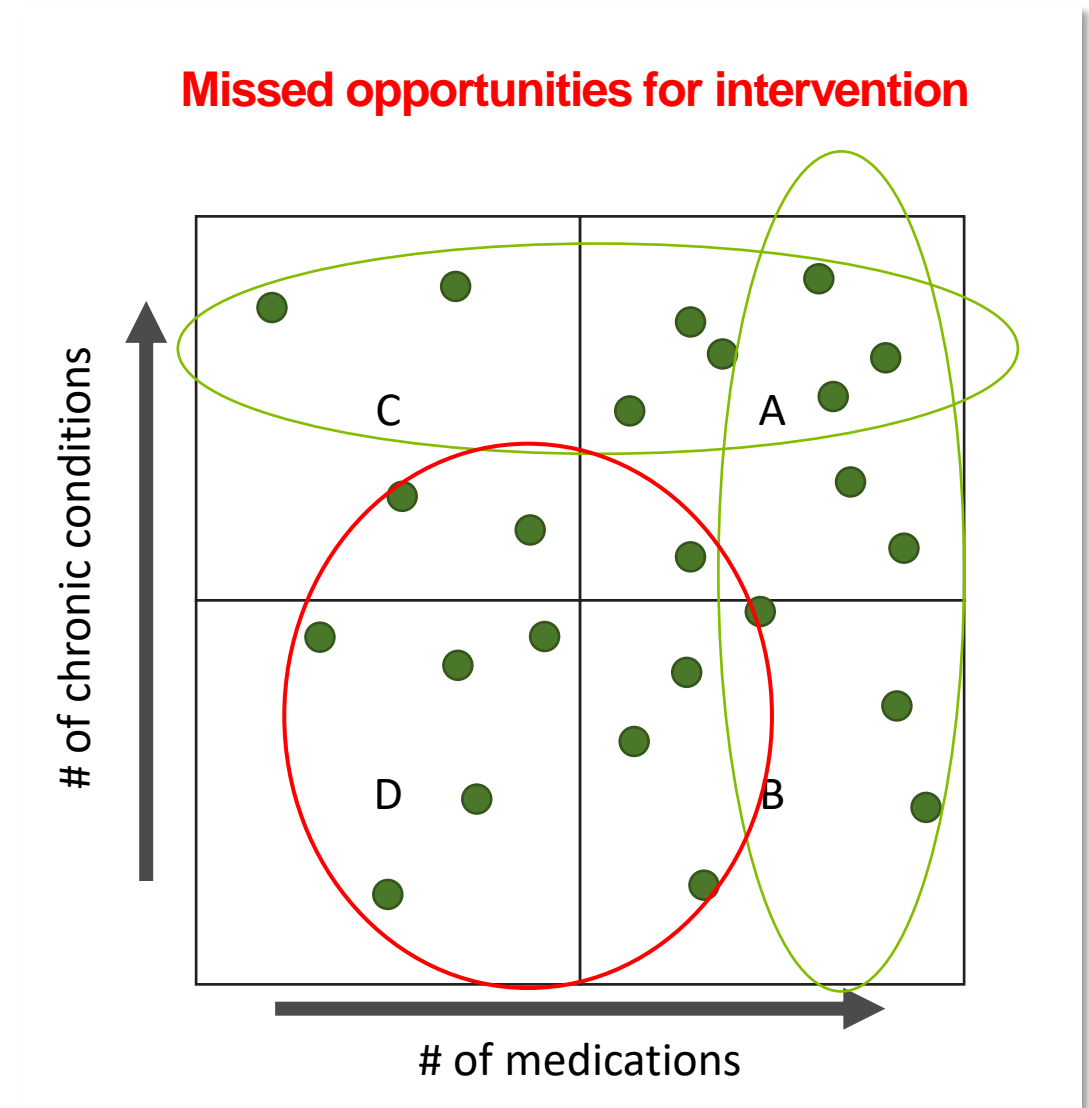
Shebab et al. U.S. emergency department visits for outpatient adverse drug events., 2013-2014. *NIH.gov*. <https://dx.doi.org/10.1001%2Fjama.2016.16201>

Hidden Dangers And Financial Risk

The inadequacy of the current chronic disease management

The Challenges:

- Medication therapy management has placed the emphasis on number of medications and number of chronic illnesses
- Number of medications is not necessarily associated with risk
- An emphasis on adherence can **increase** risk if not looked at holistically
- Disease management programs can be too narrowly focused, resulting in missed opportunities to intervene and address risks

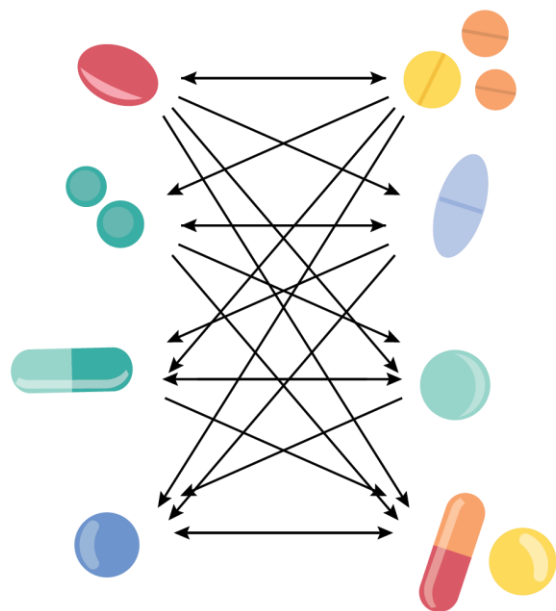


Introducing Tabula Rasa HealthCare's



MedWise®

Traditional One-to-one drug analysis



This antiquated and obsolete one-to-one drug interaction software is current industry standard and lacks the ability to assess aggregate adverse drug event risk of a patient’s unique medication regimen.



Updated Simultaneous multi-drug analysis



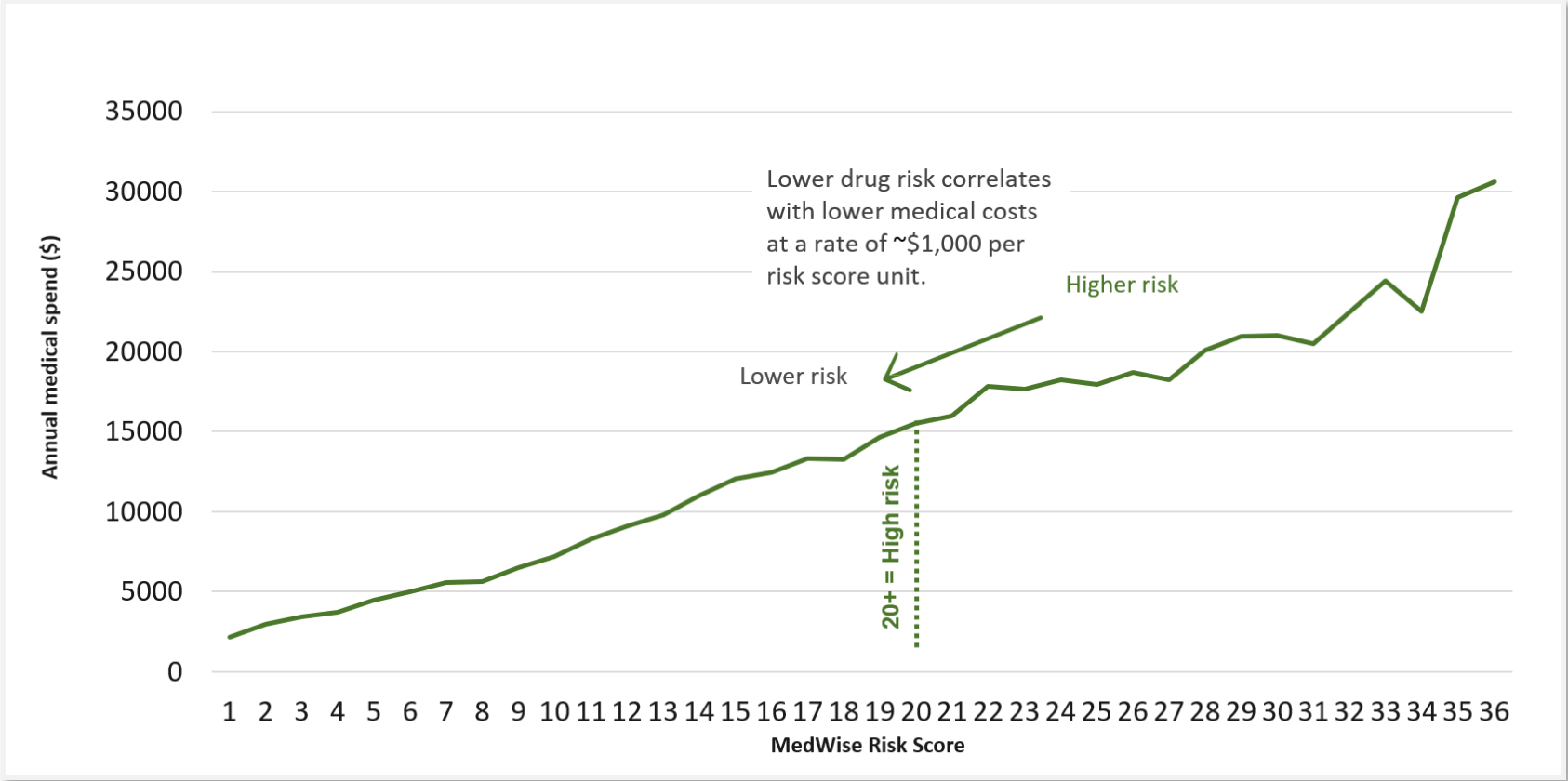
MedWise® assesses the combined risk of a patient’s medications in aggregate and guides pharmacists, prescribers and clinicians toward individualized medication management.

TRHC's Proprietary Risk Stratification

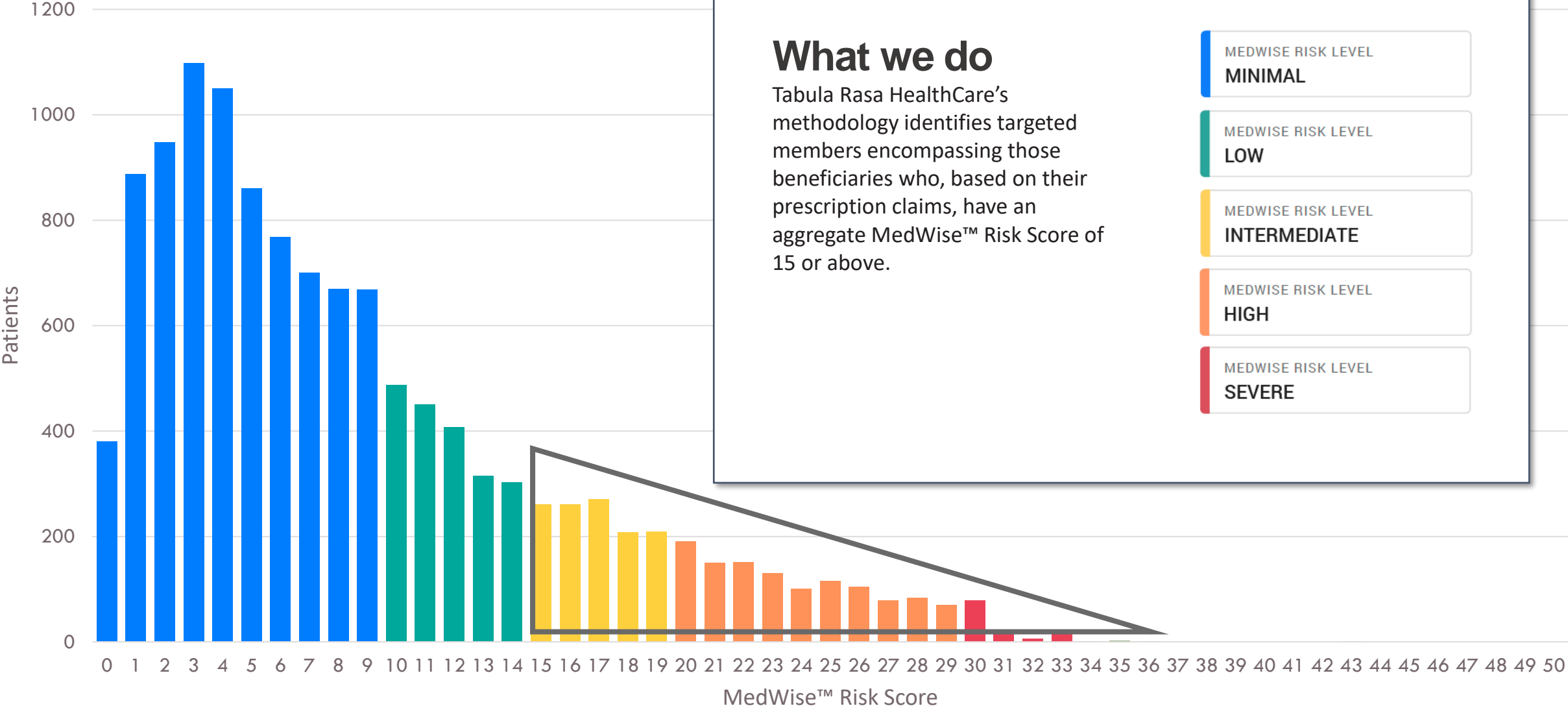
Individuals with a risk level above “high” have been found to spend twice the medical spend as the average patient.



- Minimal risk
- Low risk
- Intermediate risk
- High risk
- Severe risk

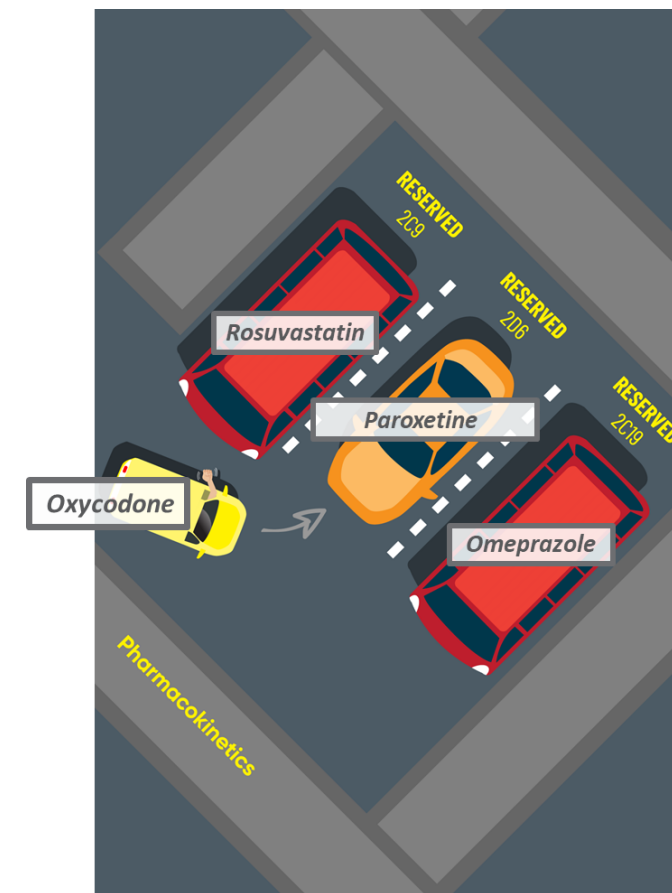
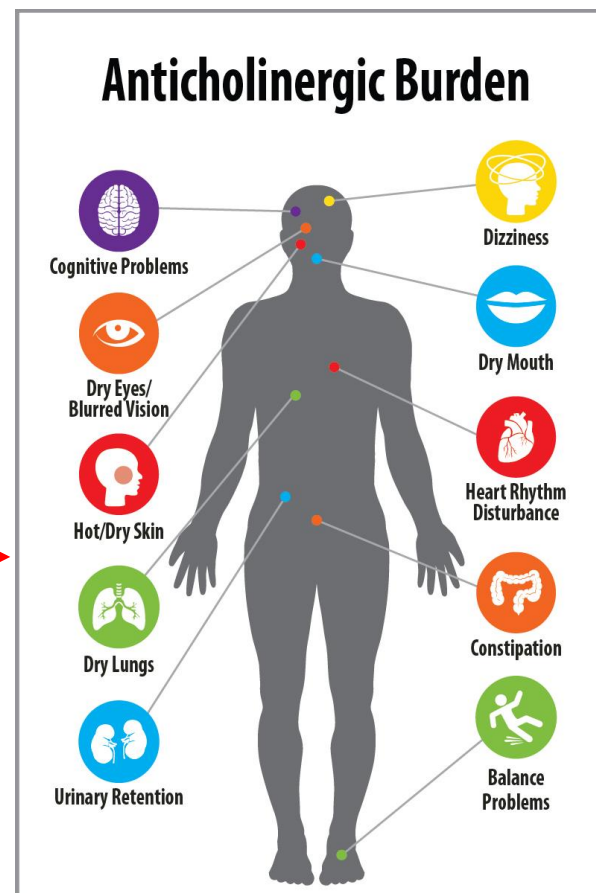


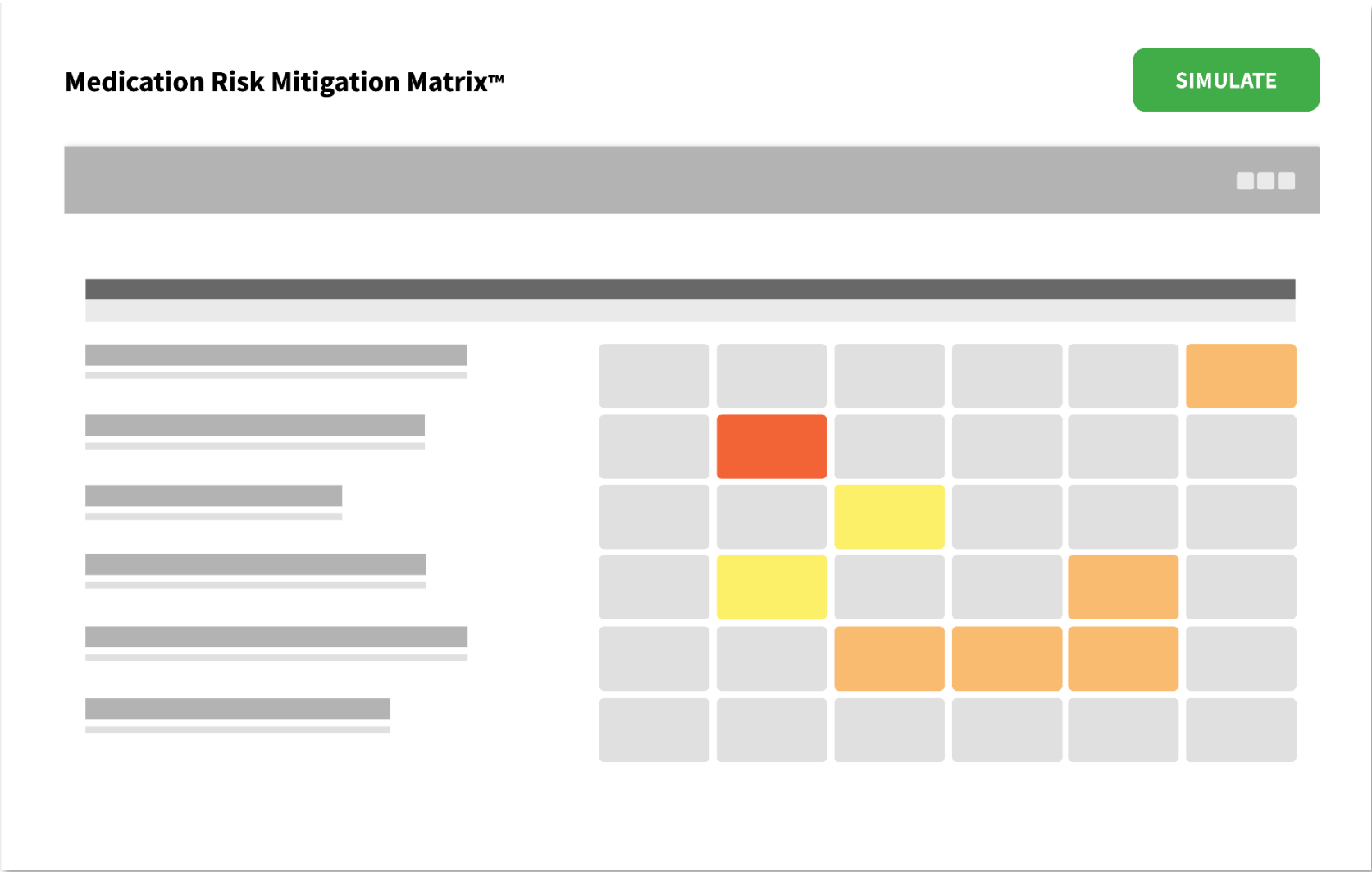
Stratify: Risk Stratify Population



The MedWise Risk Score™ is supported by the identification of risk factors and side effects

- + **Adverse Event** data derived from the FDA Adverse Event Reporting System (FAERS)
- + Side effects of medications with anticholinergic and sedative properties are more pronounced with higher accumulative **anticholinergic and sedative burden**, respectfully
- + **Long QT syndrome** may lead to ventricular arrhythmias, such as Torsade de Pointes, that can lead to sudden death
- + Substrates with greater affinities may cause **competitive inhibition**

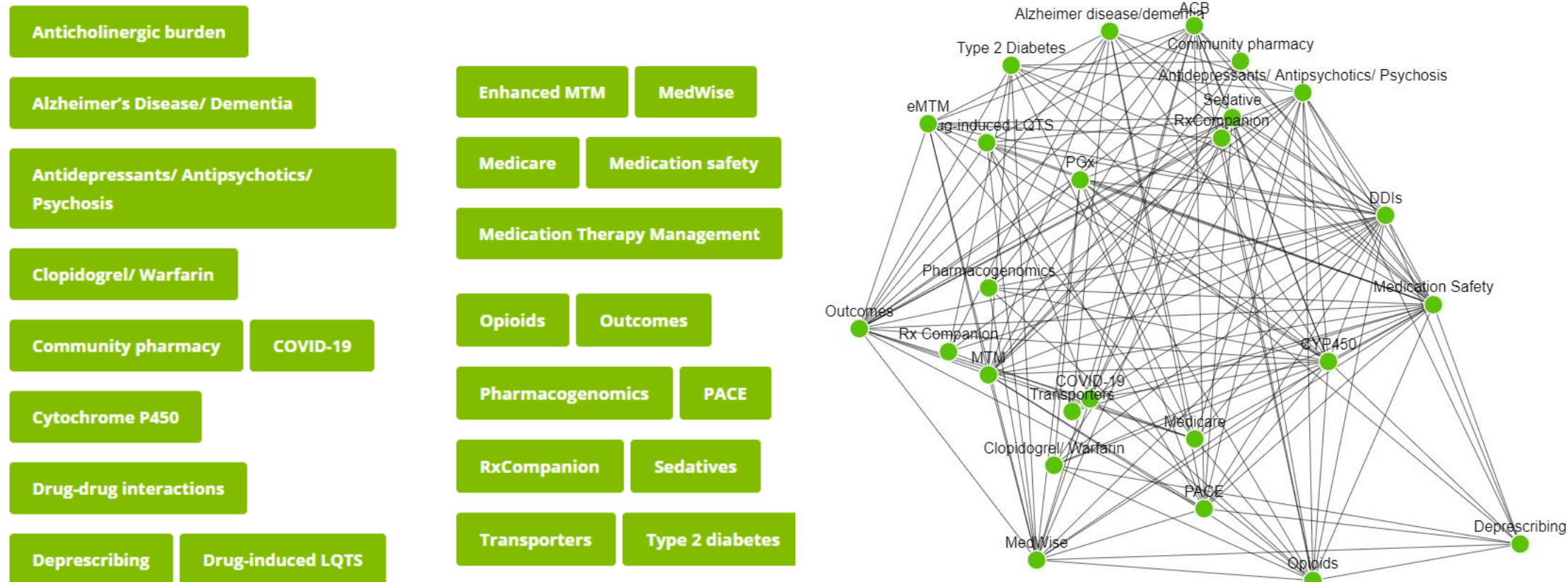




Intervention recommendations provided include:

- Change time of administration
- Decrease medication dose
- Change medication
- Discontinue prescription medication
- Monitor medication side effects
- Dietary recommendations

- + Successfully authored at least one publication in a peer-reviewed journal **every week** of the year (2020) through current





TABULARASA

HEALTHCARE®

Questions?

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