

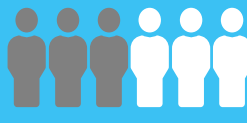
Precision Prescribing Software Global Review H1 2018

The Need for Precision Prescribing Software in 2018

1400 people died today due to an **Adverse Drug Event (ADE)**



50% of people **do not respond** to their drugs



130 billion annual cost of ADEs for the US healthcare system



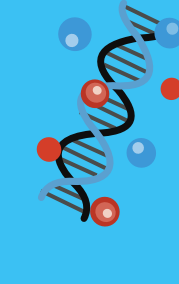
14% of prescriptions are **high-risk** in vulnerable patients
40% may be **inappropriate**



Up to **half of ADEs** are **preventable**



18% of prescriptions affected by **pharmacogenetics**



12% of ER visits are due to adverse drug events (ADEs)



25% of care is not needed or potentially harmful



100,000 annual deaths caused by ADEs



7% of NHS claims are for inappropriate treatments



20% of most serious ADEs: anaphylactic reactions



6.3% of patients developed a significant ADR while in hospital



7% ADE prevalence, higher in females & 20-39 year olds



17% of hospital ADEs result in permanent disability



3 Prescribing Challenges in 2018



Information overload

20 hours/day reading time a Family Doctor needs to stay up-to-date

>50% of **Doctors** in US have symptoms of **burnout** which is associated with major **medical errors**

>10 sets of **variables** needed for **precision prescribing**



Number of drugs

Increasing number of drugs **increases potential interactions**

A general practitioner prescribes **233** different **drugs/year**

7% of older people in US **use 5+ medicines** (Polypharmacy)



Number of conditions

25% adults have **2+ chronic conditions in US**

Number of **people** with **2+ chronic conditions** is **increasing**

Largest increases: **high blood pressure, osteoarthritis, mood disorder**

Moving Beyond Alert Enhancers



Medication lists are alert enhancers but:

- Are often **paper** or **PDF-based**
- Are **not integrated** into electronic medical systems (**EMR**)
- **May conflict** with other guidelines



Traditional Medication Decision Support Systems (MDSS)

- Massive number of **alerts ignored in 49-96%** of cases
- **Alerts are unlikely to be effective** within the time constraints of usual family practice
- **Overrides of alerts** are associated with **ADEs**

Precision Prescribing Software Needs in 2018

Improving patient **safety** and medication **effectiveness** requires **millions of pieces** of medical **information, computational analysis,** and **fast usable results**

97% of people have **genetic variations** that affect drug response

A person taking **5 drugs**, needs to check for **55 interactions**

Liver is the principal site of drug metabolism
3.9 million people with **liver disease** in US

Most drugs are excreted by the kidneys
14% prevalence of **kidney disease** in US

Biophysical data (weight, QTc, potassium, etc) is **required** for **optimal drug adjustment**

89% increase in deaths from **allergic drug** reactions

7,287 articles published monthly **relevant to primary care**