Pre-emptive PGx testing in clinical care has diverse paths

- **Provider-led**
  - Similar to current laboratory or other diagnostic testing
  - Practitioners order, interpret, are responsible for test results
  - Approach used in PHASER
  - Paternalistic approach/provider is bottleneck

- **Patient-led**
  - Similar to how a patient can request a flu shot, hepatitis/HIV screening
  - Patient-centric
  - Risk of not having a provider participate in process (i.e. patient acting without guidance)

- **Ancillary staff-led**
  - Nursing or dispensing pharmacists

- **Transfer/management of existing data**
  - E.g. Helix/23andMe

- **Opt-out approach**
  - Use discarded blood unless patient opts-out

- **Employer/insurer-led approach**
  - Cost-effectiveness
  - Population health
### Preemptive testing

- **Target:** Patients who are likely to require > 1 pharmacogenetic medication in next 1-3 years
- **Goal of testing:** To prevent adverse drug effects and minimize trial/error
- **Testing performed prior to prescribing**
- **Results stored in EHR with clinical decision support**
- **Typically panel testing**

- **Benefits:** multiple gene/drug’s covered, results available at the time of prescription, no delay in treatment, cost-efficient
- **Limitations:** EHR integration and clinical decision support require specialized programming/maintenance
Provider-led approach generally follows 2 of 3 paths

Point-of-care (real-time or reactive) testing

- Target: Patients being prescribed PGx medication
- Goal of testing: prevent ADR, minimize trial/error
- Test at time of prescription
- May be single-gene/drug or panel

- Benefits: Targeted, less ‘unnecessary’ testing
- Limitations: treatment delays, higher cost if testing for multiple different genes over time vs. a single panel
Provider-led approach generally follows 3 of 3 paths

**Diagnostic (retrospective) Testing**

- **Target patients:** Those with prior adverse drug effects, polypharmacy
- **Goal of testing:** To diagnose a potential drug-gene interaction and provide therapeutic alternatives
- **May be single gene/drug or panel**

- **Benefits:** May help overcome suspected allergies/intolerances
- **Limitations:** A missed opportunity if ADR is fatal/severe
Discussion questions

• How best to engage with providers to optimize provider-led approach?
• What is the value proposition for an individual provider for pre-emptive pharmacogenomic testing?
  – What will make it worth their while to order a panel test?
  – Hybrid: reactive-preemptive approach? What are the appropriate triggers to which providers will “react”?
• How to responsibly conduct a patient-led approach?
• Is opt-out a viable approach?