Clinical Implementation of Pharmacogenomics

Mark Dunnenberger, PharmD, BCPS
Director of Pharmacogenomics
NorthShore University HealthSystem

NorthShore University HealthSystem
Center for Personalized Medicine

Center for Personalized Medicine

Coordinates predictive/diagnostic and therapeutic services along with education & research

Molecular Pathology

- *Tumor sequencing*
- *Hot spot NGS panel*
- *Microarray*

Clinics

- *Medical Genetics*
- *Oncology*
- *Pharmaco-genomics*
- *Cardiology*
- *Neurology*
- *Diabetes*

Systemic integration

- *Pharmaco-genomics*
- *Genomic results display*

Education

- *Physicians*
- *Nurses*
- *Pharmacists*
- *Employees*
- *Patients*

Research

Clinical *Biorepository* *Translational*

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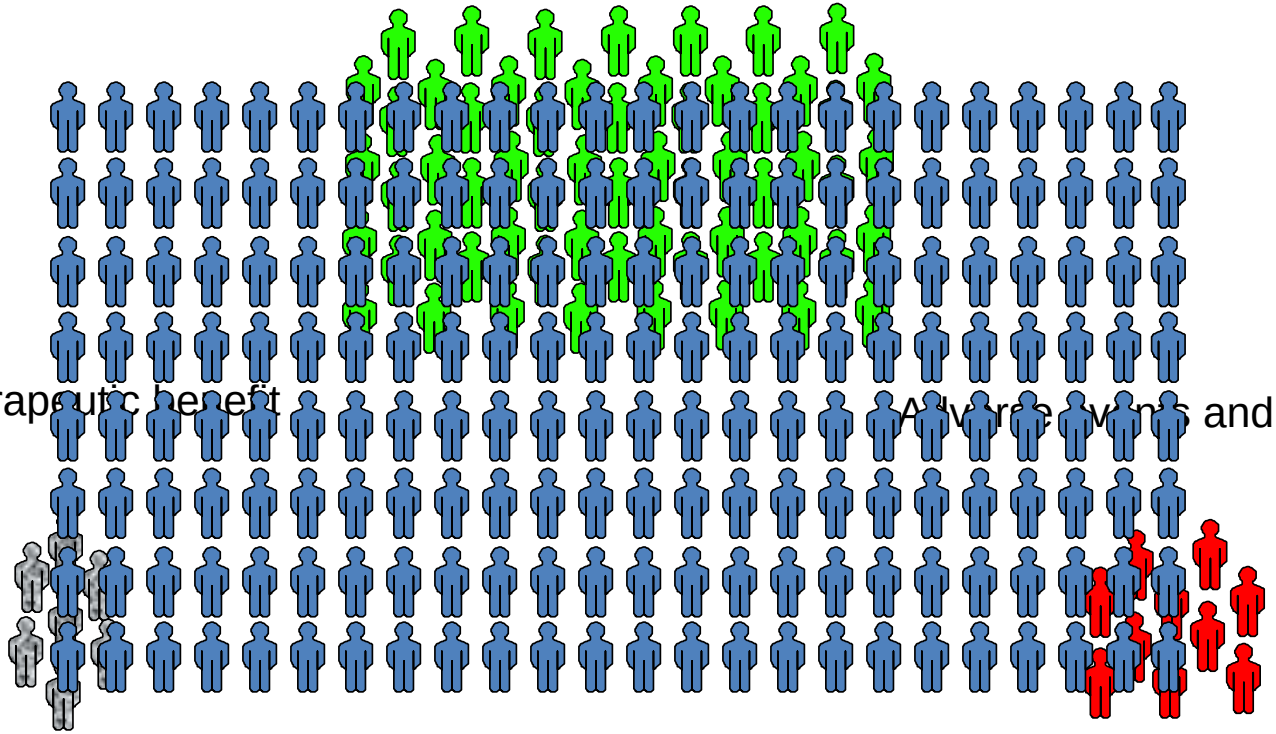
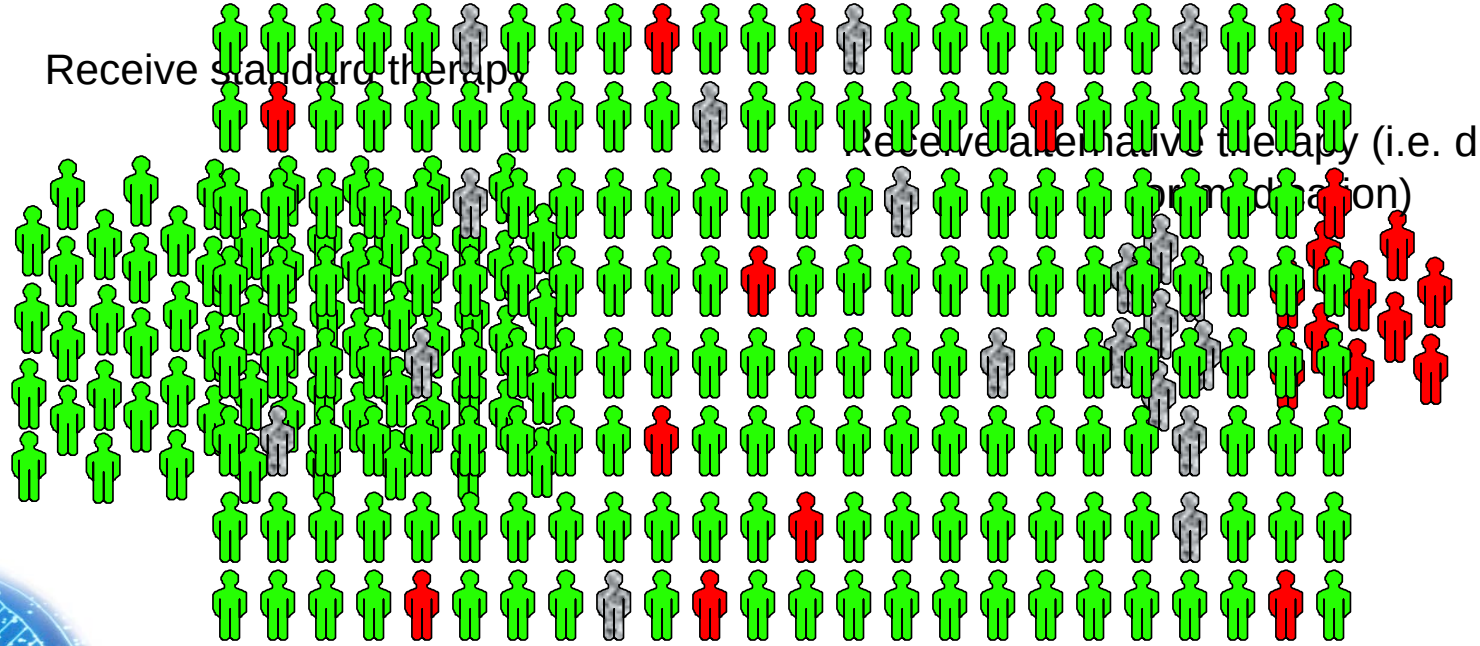
Benefit with little to no toxicity



Genetic testing can identify these patients before they take the medications



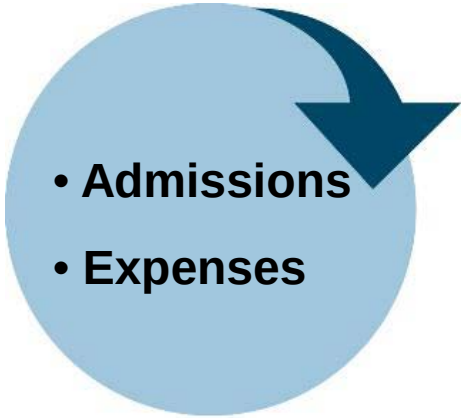
Pharmacogenetics helps clinicians choose between therapeutic equals

Safer and more effective drug treatment

Increased adherence to drug therapy

Decreased hospitalizations

Decreased health care costs



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Independent Copy Number 2
Called Interpretation Code      UNIQ+UNK
Called Diplotypes Possible      *1/*41
Called Novel Diplotypes Possible        *2/UNK
Copy Number Corrected Alleles   NA
Number Non-reference Probe Sets 5
Probe Set ID    Affy Verified   Genome Position dbSNP RS ID     Genotype        Call    Contributes To Alleles  Descri
AM_12261        Y       Ch22:40853887   rs16947 C/T     Ref/Var *2,*8,*11,*12,*14A,*14B,*17,*19,*20,*21,*29,*40,*41,*4
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AM_15502        [illegible]
AM_12277        Y       Ch22:4085[illegible]076   rs1058164       G/C     Ref/Var -       CYP2D6_1661G>C(V136V)
AM_12247        Y       Ch22:40852557   rs1135840       G/C     Ref/Var S486T   CYP2D6_4180G>C(S486T)
Number Reference [illegible]
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AM_12284        [illegible]     Ref/Ref [illegible]2_124G>A(G42R)
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AM_12267        Y       Ch22:40854188   rs35742686      A/A     Ref/Ref *3      CYP2D6*3_2549delA
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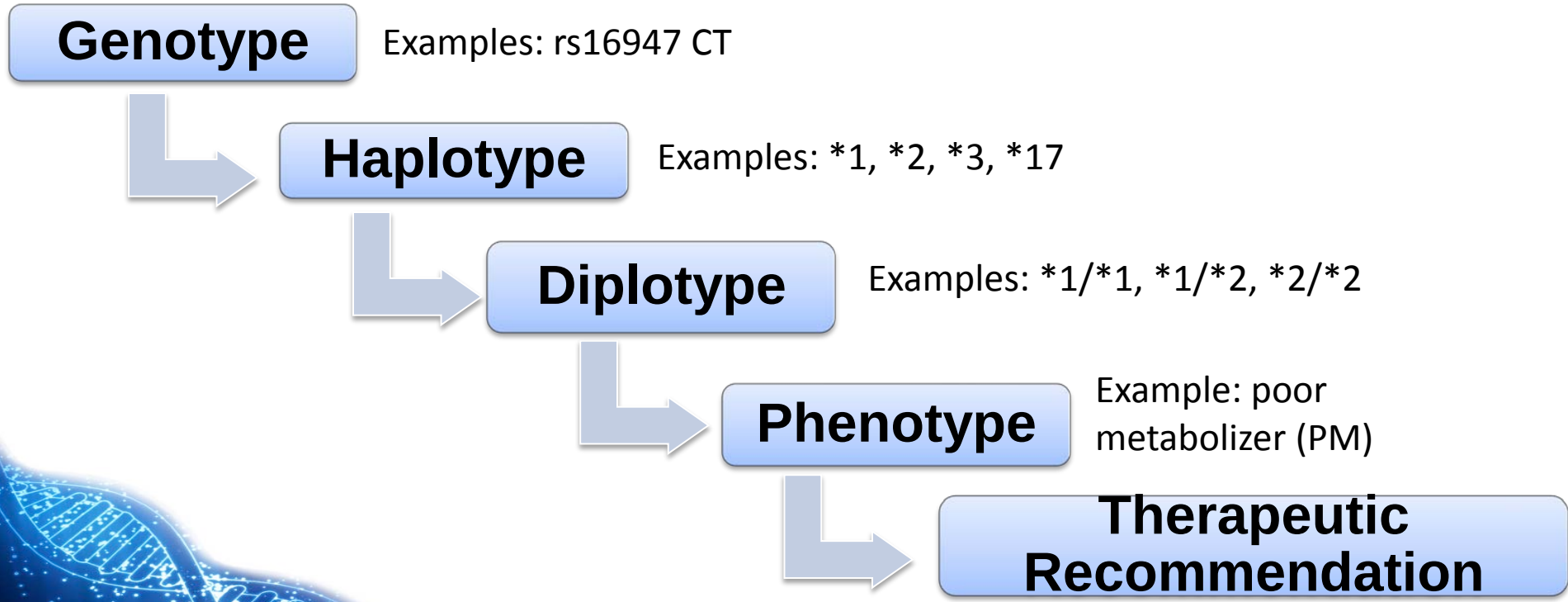
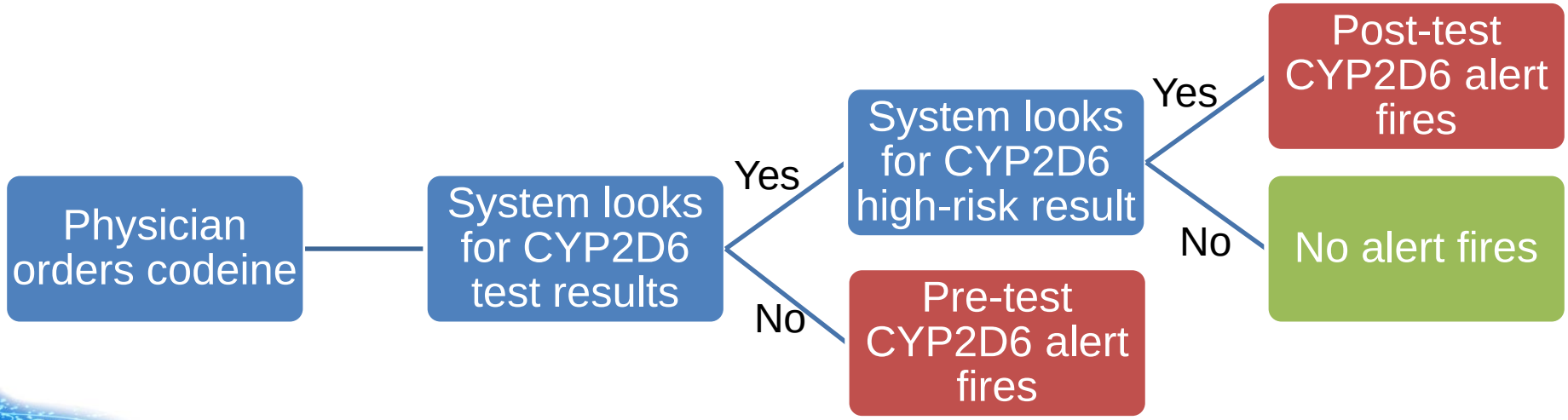
Her CYP2C19 genotype is consistent with an increased risk of therapeutic failure with paroxetine. Please consider alternative therapies when initiating drug therapy to treat depression.

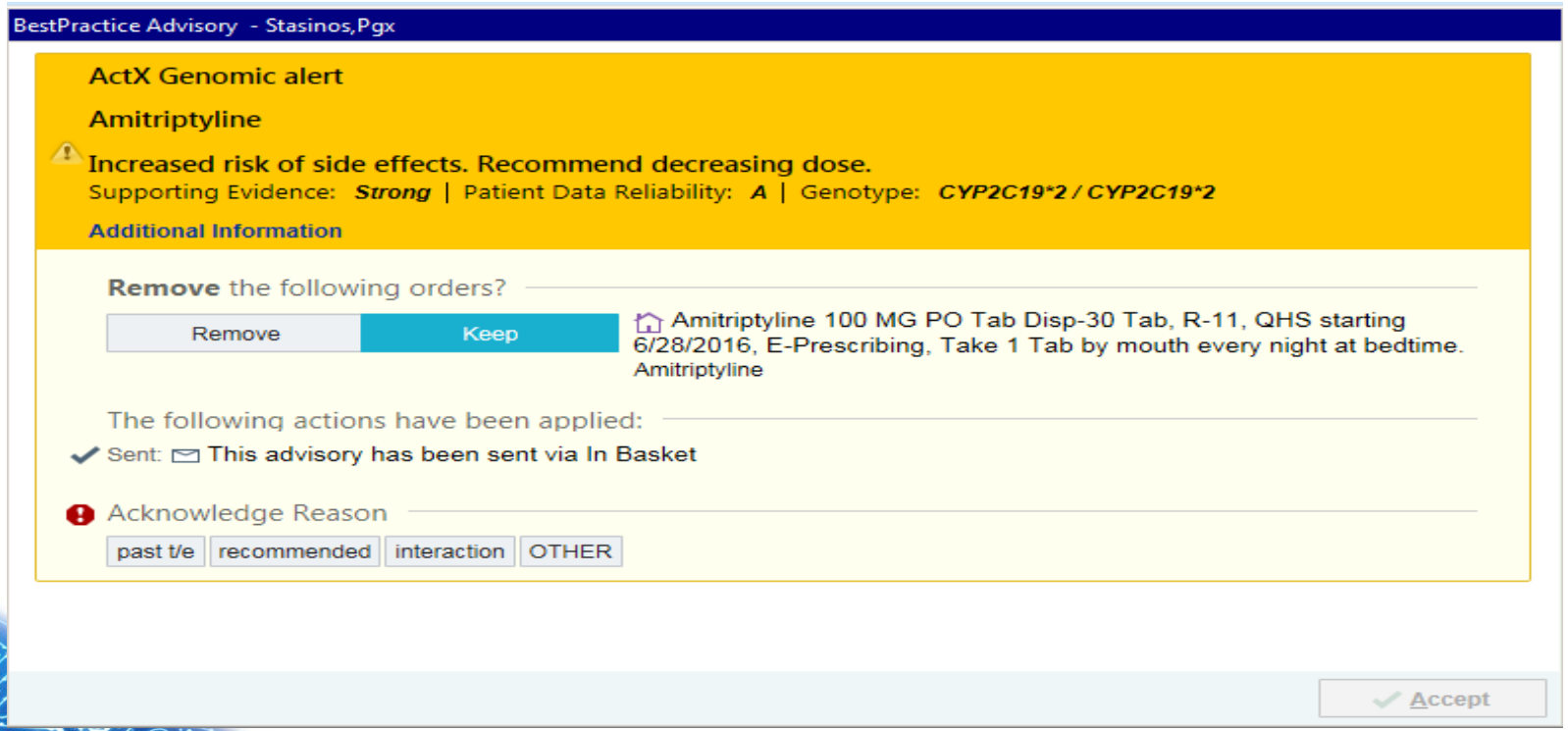
Pharmacogenetic translation process



One Drug/One Gene CDS Decision Tree



NorthShore Post-test Alert - 2



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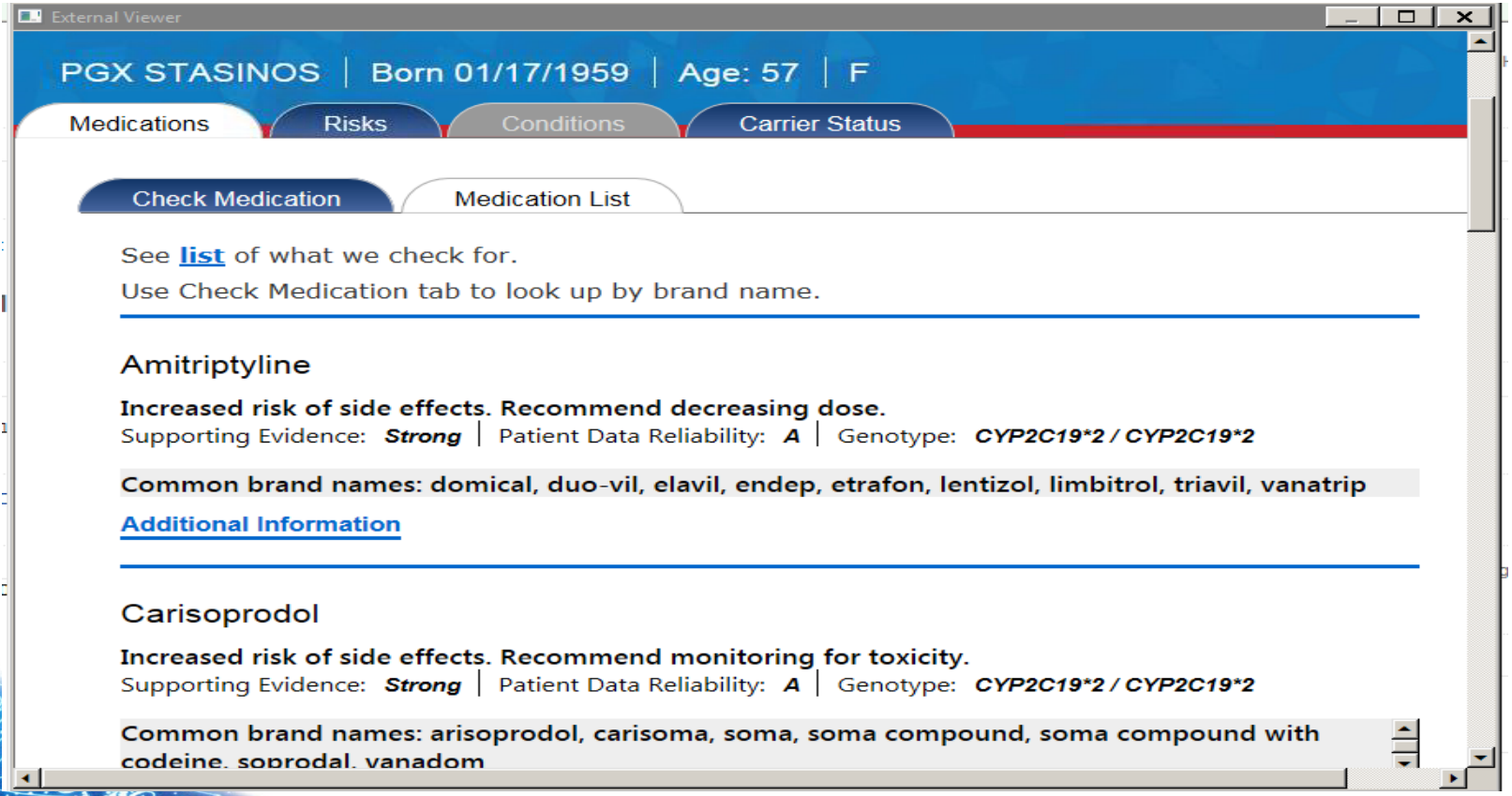

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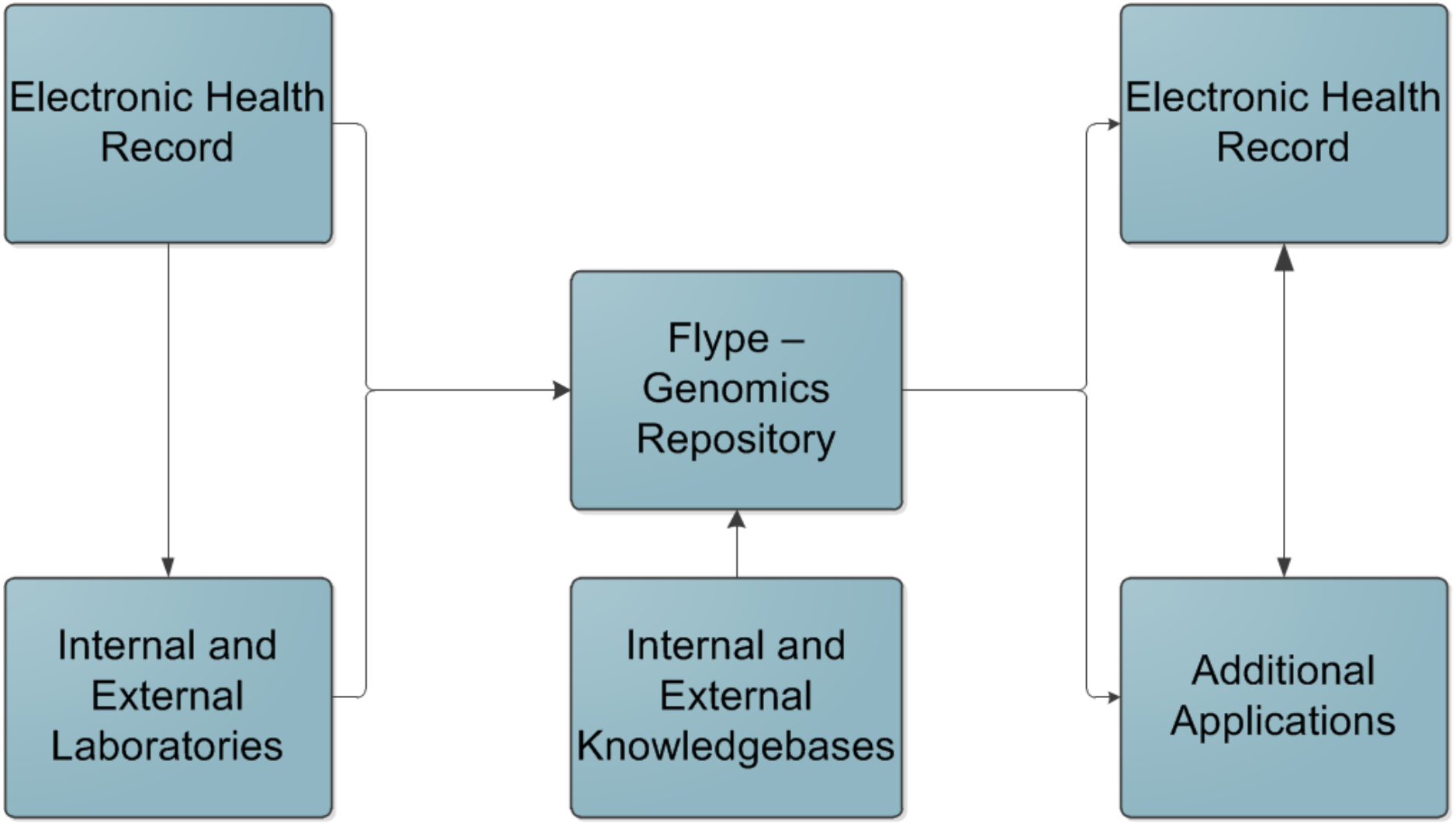
Need discrete, standardized data as a foundation for CDS!


Electronic Health Record
Internal and External Laboratories
Flype – Genomics Repository
Internal and External Knowledgebases
Electronic Health Record
Additional Applications