

Pharmacogenomics Gene/Drug-Pair Decision Flow Charts 2017

Atomoxetine Prescription

CYP2D6 Genotype

Poor
Metabolizer
(AS = 0)

Intermediate
Metabolizer
(AS = 0.5–1.0)

Normal
Metabolizer
(As = 2.0)

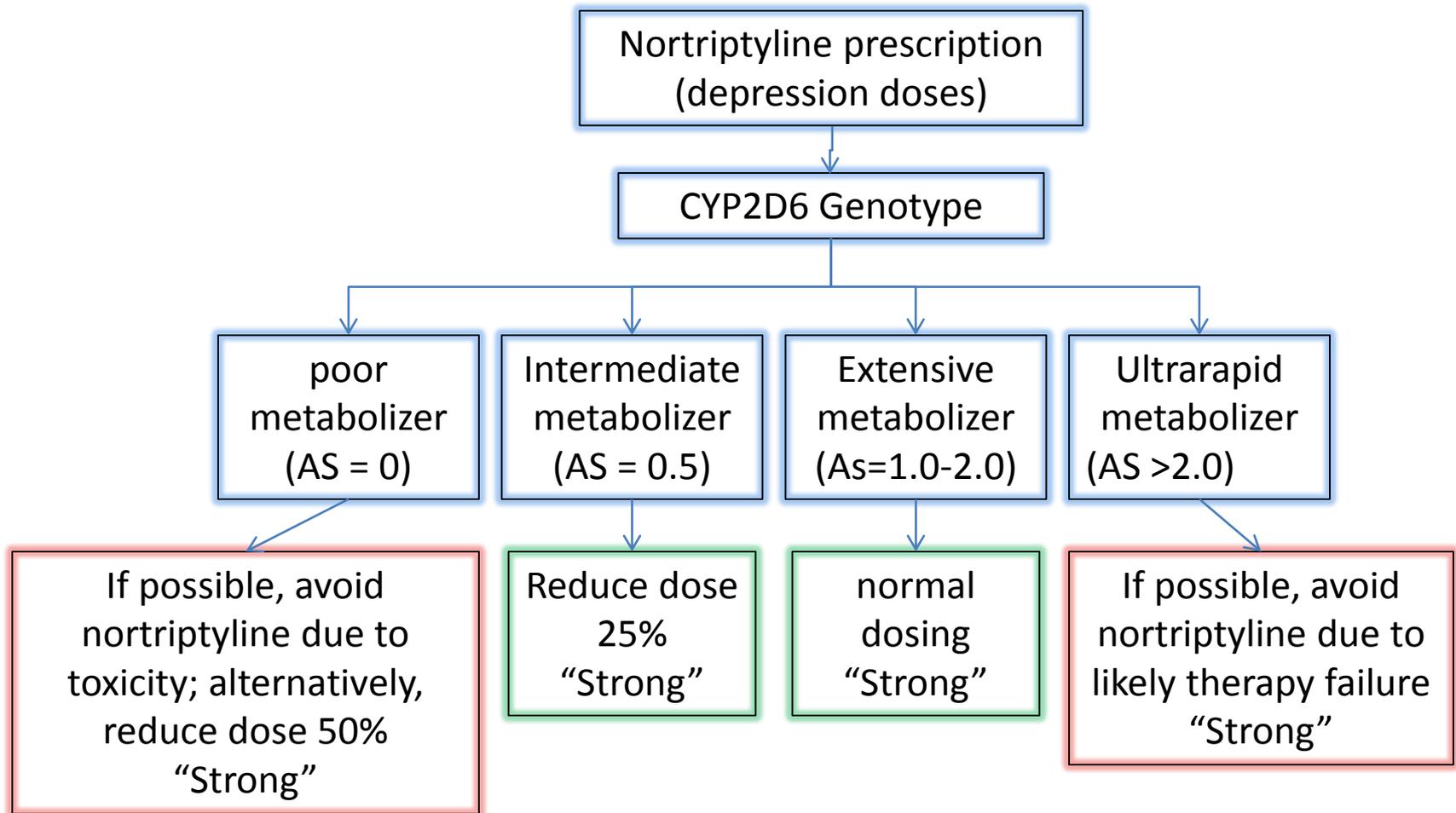
Ultrarapid
Metabolizer
(AS >2.0)

Standard dose. Dose increase probably not necessary; be alert to Hypertension, Tachycardia and other adverse events.
"Moderate"

Normal
Dosing
"Strong"

Normal
Dosing
"Strong"

Insufficient data to allow calculation of dose adjustment. Be alert to reduced efficacy or select alternative drug (e.g., methylphenidate, clonidine)
"No Data"



AS = Activity Score:

0 = two nonfunctional alleles

0.5 = one nonfunctional and one partial function alleles

1.0 = two partial function or one full function and one nonfunctional alleles

1.5 = one functional and one partial functional alleles

2.0 = two full functional alleles

>2.0 more than two alleles

Classification of recommendation:

based on the strength of the literature base:

Strong, moderate, or weak.

PPI prescription (omeprazole, lansoprazole, pantoprazole, esomeprazole)

For Barretts, H. pylori, & GERD

CYP2C19 Genotype

Poor Metabolizer
(*2/*2, *2/*3,
*3/*3)

Intermediate
Metabolizer
(*1/*2, *1/*3)

Extensive
Metabolizer
(*1/*1, *1/*17)

Ultrarapid
Metabolizer
(*17/*17)

Normal
Dosing
"Strong"

Normal
Dosing
"Strong"

Consider Increasing
PPI Dose (or using
rabeperazole)
"Strong"

[Ref: Pharmacogenomics. 2007 Sep;8\(9\):1199-210.](#)
[Nagoya J Med Sci. 2011 Feb;73\(1-2\):25-31.](#)

Classification of Recommendation:

- Based on the strength of the literature base:
- Strong, moderate, or weak.

Efavirenz

CYP2B6 Genotype

Poor
Metabolizer

*6/*6, *6/*18, *18/*18

Consider alternate agent
or decrease dose to
400mg with increased
monitoring of viral load
and CD4 level with or
without TDM.

Intermediate
Metabolizer

*1/*6, *1/*18

Normal dose
600mg with
increased monitoring
for side effects.
Consider TDM* if
side effects.

Normal
Metabolizer

*1/*1

Normal dose
600mg

Ref: ENCORE1 Study Group; Lancet 2014

*TDM: Measuring the concentration of a prescribed medication in the blood

Phenytoin

CYP2C9 Genotype

Poor
Metabolizer
var/var

Intermediate
Metabolizer
wt/var

Normal
Metabolizer
wt/wt

Consider reducing dose
by 50%.
Consider increasing TDM
by an extra 2 weeks

Consider reducing
dose by 25%.
Consider increasing
TDM by an extra 1
week

Normal dose
TDM of Total
Phenytoin
Level

Ref: 2014 CPIC guideline for phenytoin and CYP2C9 and HLA-B

*Var/var to * alleles. Also consider genotyping for HLA*1502*

DPYD and fluoropyrimidines (5FU, capecitabine, tegafur)

DPYD Genotyping

PM
(*2/*2)

IM
(*1/*2, *2/*9)

EM
(*1/*1, *1/*9, *9/*9)

Select alternate drug
(strong)

Start with at least 50%
reduction in starting dose,
followed by titration of
dose based on toxicity or
PK test (if available)
(moderate)

Use label-
recommended
dosage and
administration
(moderate)

Ref: CPIC Dosing Guideline for DPYD and fluoropyrimidines
<http://www.pharmgkb.org/guideline/PA166122686>

Classification of Recommendation:

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- Strong, moderate, or weak.

Aripiprazole Prescription

CYP2D6 Genotype

Poor
Metabolizer
(AS = 0)

Intermediate
Metabolizer
(AS = 0.5-1.0)

Extensive
Metabolizer
(AS = 2.0)

Ultrarapid
Metabolizer
(AS >2.0)

Consider another medication or, consider that aripiprazole dose should initially be reduced to 5mg. Reduce the maximum dose to 10mg/day (67% of the maximum recommended daily dose)
Use extra caution in the elderly
"Strong"

Normal
Dosing
"Moderate"

Normal
Dosing
"Strong"

Normal
Dosing
"No Data"

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1.0 = two partial function or one full function and one nonfunctional alleles

1.5 = one functional and one partial functional alleles

2.0 = two full functional alleles

>2.0 more than two alleles

Classification of recommendation:

Based on the strength of the literature base:

Strong, moderate, or weak.

Atomoxetine Prescription

CYP2D6 Genotype

Poor
Metabolizer
(AS = 0)

Intermediate
Metabolizer
(AS = 0.5–1.0)

Normal
Metabolizer
(As = 2.0)

Ultrarapid
Metabolizer
(AS >2.0)

Standard dose. Dose increase probably not necessary; be alert to Hypertension, Tachycardia and other adverse events.
“Moderate”

Normal
Dosing
“Strong”

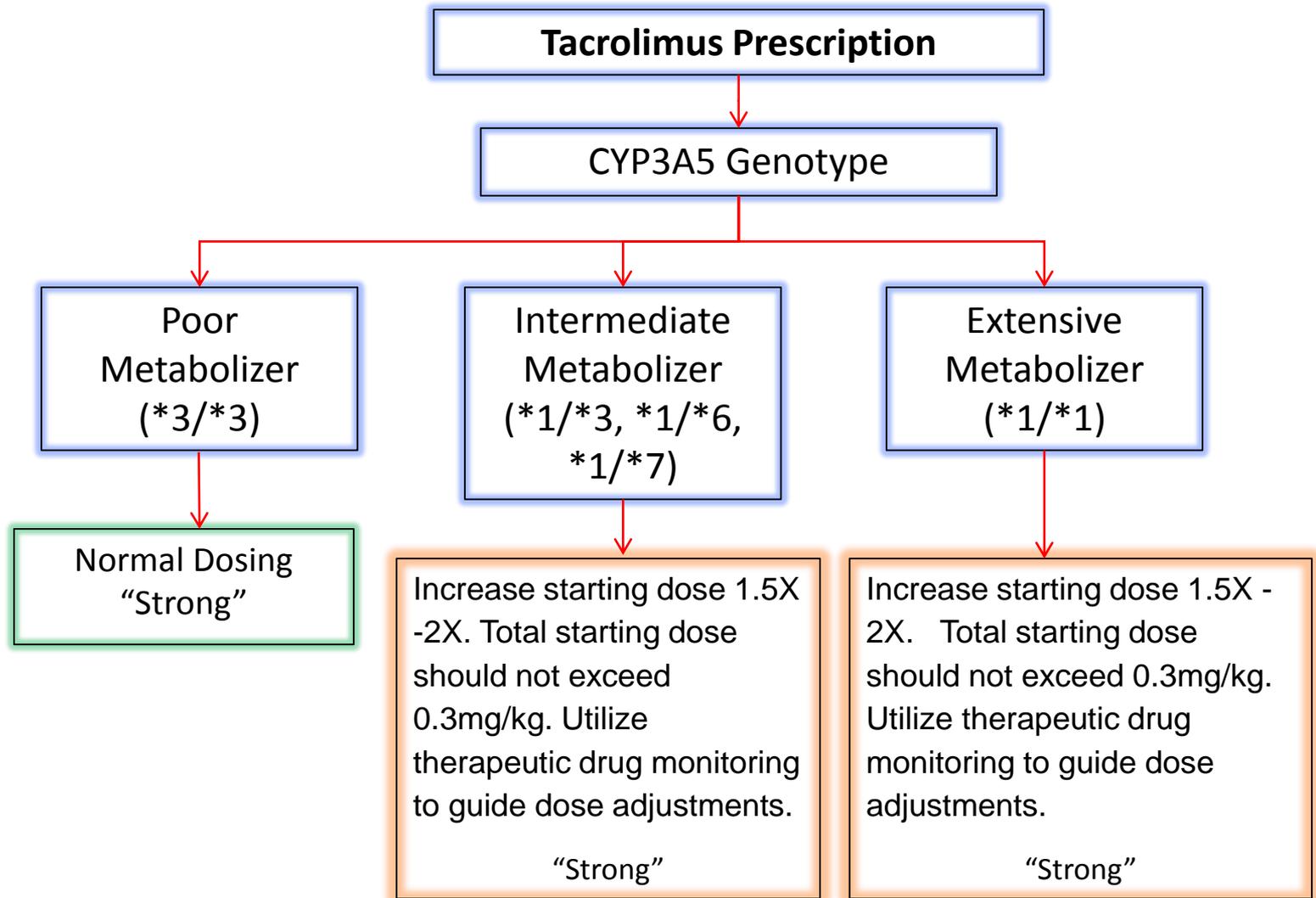
Normal
Dosing
“Strong”

Insufficient data to allow calculation of dose adjustment. Be alert to reduced efficacy or select alternative drug (e.g., methylphenidate, clonidine)
“No Data”

Ref: The Royal Dutch Pharmacists Association - Pharmacogenetics Working Group has evaluated therapeutic dose recommendations for atomoxetine based on CYP2D6 genotypes [Article:[21412232](#)]

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