



RxReady Report

The RxReady test is a genetic test that gives your physician additional information about how your DNA impacts your body's interaction with drugs. This test is best used with your physician's or other care provider's input. For more information about this test, contact our patient care manager or counselor.

Patient Detail

NALAGENETICS ID	UNTE9823081
PATIENT NAME	UNIQUE TEST1
DATE OF BIRTH	09-01-1998
NATIONAL ID / PASSPORT NO.	Not Available
GENDER	Male

Provider Detail

PROVIDER NAME	NDL SG UAT PHYSICIAN
PROVIDER ID	NA
ORDER	#4653-191754

Sample Detail

CLINIC NAME & ADDRESS	NDL SG UAT 1093 Lower Delta Road, #04-06/08, Singapore 169204	TESTING LAB NAME & ADDRESS	Nalagenetics Diagnostics Laboratory SG UAT 1093 Lower Delta Road
TYPE OF SAMPLE	Buccal Swab	COLLECTED DATE	23/08/2023 (03:49 PM)
TEST METHOD	Quantitative PCR	RECEIVED DATE	22/09/2023 (07:45 PM)

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Name : UNIQUE TEST1
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II. Legend

A. Summary of Follow Up Actions

Our knowledge base ranks and summarizes clinical recommendations published by expert consortia, regulatory bodies, and other trusted sources for drugs based on genetic information, along with clinical information of the patient. These symbols are a summary of the recommendation text next to it.

Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

Increase Monitoring

Although patient has a varied genetic profile, the intended medication can still be prescribed as recommended, but with more frequent monitoring for quick action to be taken in the event of unwanted reactions.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Increase Starting Dose

Patient has altered metabolism rate or reduced activation rate for drug indicated. Increased starting dose has shown to help patient into target therapeutic range faster and/or reduce the risk of drug clinical inefficacy.

Follow standard dosing

There is a low chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism, no change is necessary.

B. Recommendation Caveats

These caveats are taken from pharmacogenomics guidelines, which will usually specify the required conditions and situations where the guideline is relevant. The various caveats are grouped below:

Indication

This drug-gene interaction recommendation is based on a specific diagnosis ONLY. Exercise prudent clinical judgement when using the drug for other indications.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

Turnaround Time

The benefit of waiting for a genetic test result may be less than starting the medication without a genetic test result.

Predictive Value

Low positive predictive value. Testing positive for this phenotype does not mean that the patient will develop the adverse effect.

C. Level of Scientific Evidence

Our knowledge base ranks and summarizes the strength of clinical recommendations published by expert consortia, regulatory bodies, and other trusted sources for drugs based on DNA information, along with other clinical information of the patient. These texts are a summary of the level of scientific evidence available for the respective clinical recommendation as presented below.

STRONG RECOMMENDATION

You can follow the recommendation confidently because its effect has been categorized to improve clinical outcome by at least one of the following medical societies or regulatory bodies. Each guideline has different kinds of strength of evidence. We reclassified the following categories from each guideline into Strong Recommendation:

CPIC/CPNDS - Strong Recommendation OR DPWG - Level 3 or 4 level of evidence OR PRO - strong, essential or advisable test OR FDA/Other regulatory bodies - Testing required

MODERATE RECOMMENDATION

You can consider the recommendation as it has been categorized to have some potential clinical benefit by at least one of the following medical societies or regulatory bodies. We reclassified the following categories from each guideline into Moderate Recommendation:

CPIC/CPNDS - Moderate or optional recommendation OR DPWG - Level 2 level of evidence OR PRO - conditional or possibly helpful test OR FDA/Other regulatory bodies - Testing recommended or actionable PGx

INFORMATION AVAILABLE

The information provided serves as an additional point of consideration for the patient's therapy. The recommendation with insufficient data is also included as this category. We reclassified the following categories from each guideline into Information Available:

DPWG - Level 0 or 1 level of evidence OR FDA/Other regulatory bodies - Informative PGx

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PGx Medical Societies

CPIC (Clinical Pharmacogenetics Implementation Consortium)

An international consortium of professionals interested in applying pharmacogenetics for patient care. Established in 2009, it consists of PGRN members, PharmGKB staff, and various experts. The guidelines are indexed in PubMed as clinical guidelines, endorsed by ASHP and ASCPT, and referenced in ClinGen and PharmGKB.

DPWG (Dutch Pharmacogenetics Working Group)

A multidisciplinary group of physicians, pharmacists, and other healthcare professionals. It was established in 2005 by the Royal Dutch Pharmacists Association (KNMP) with the objective of developing pharmacogenomic-based therapeutic (dose) recommendations. The guidelines are endorsed by the EACPT and the EAHP.

CPNDS (Canadian Pharmacogenomics Network for Drug Safety)

A pan-Canadian active surveillance network consisting of trained surveillance clinicians in 10 pediatric teaching hospitals across Canada, serving >75% of Canada's children. Established in 2005, the network's goal is to improve the safe use of medication by identifying genomic biomarkers of drug risk for serious ADRs.

PRO (Professional Societies)

A source that includes the French National Network of Pharmacogenetics (RNPGx), the Cystic Fibrosis Foundation and the American College of Rheumatology for appropriate drug presented.

Regulatory Bodies

FDA (Food and Drug Administration)

An agency within the US Department of Health and Human Services. It is responsible for protecting the public health by ensuring the safety, efficacy, and security of human and veterinary drugs, biological products, and medical devices.

EMA (European Medicines Agency)

A decentralised agency of the European Union (EU) responsible for the scientific evaluation, supervision and safety monitoring of medicines in the EU. EMA is a networking organisation whose activities involve thousands of experts from across Europe. These experts carry out the work of EMA's scientific committees.

PMDA (Pharmaceuticals and Medical Devices Agency)

A Japan agency that was established and came into service on April 1, 2004, under the Law for the Pharmaceuticals and Medical Devices Agency, as a part of the Japan Association for the Advancement of Medical Equipment ([JAAME](#)).

Swissmedic

The Swiss authority responsible for the authorisation and supervision of therapeutic products. The activities of Swissmedic are based on the Law on Therapeutic Products.

HCSC (Health Canada Santé Canada)

A federal department responsible for helping Canadians maintain and improve their health, while respecting individual choices and circumstances.

Each guideline and label annotation has its own strength of evidence for every drug-gene pair interaction.

D. Localizations of Evidence

- The drugs presented in this report are all drugs that are available in your country.
- Our PGx recommendations are always supported by research findings from studies done in your ethnic population (e.g. if you are Chinese, we provide supporting scientific evidence from studies in the Chinese population).
- RxReady tests for genetic polymorphisms that are relevant in the Asian population.

E. Disclaimers

Recommendations given in this report are made using a lab-developed test which should not supersede clinical judgement or medical expertise.

The DNA test results are not intended to be used by you as a substitute for professional medical advice. You should always seek the advice of a healthcare provider or physician for any diagnostic purpose with any questions you may have regarding the diagnosis, cure, treatment, mitigation or prevention of any disease or other medical conditions or impairment or the status of your health. The laboratory may not be able to process your sample and the laboratory process may result in errors. The laboratory may not be able to process your DNA sample if it does not contain sufficient amount of DNA. Furthermore, if the DNA sample that you have provided is contaminated and/or corrupted, the accuracy of the DNA test result may be impacted. Even with stringent acceptance criteria for sample processing that meets our high standards, a small, unknown fraction of the data generated during the laboratory process may be un-interpretable or incorrect and may therefore not be able to generate corresponding report. The test detects five genes and twenty-one variants using real-time qPCR genotyping. The recommendations in this report are obtained from various medical societies and regulatory bodies. The following genetic variants will be detected in the assay: CYP2D6 rs1065852, rs5030655, rs3892097, rs35742686, rs16947, rs28371725, rs1135840, rs769258, rs5030865, rs5030656, rs59421388, rs267608319, exon 9 conversion (*36), deletion (*5) and duplication; CYP2C9 rs1799853, rs1057910; CYP2C19 rs4244285, rs4986893, rs12248560 ; SLCO1B1 rs4149056; HLA-B*58:01. The copy number assays in this test do not differentiate between partial and whole gene deletions and/or duplications. Copy number variants that are more than three cannot be detected with this test, and may have to be detected with a different platform. Tandem-hybrid arrangements in CYP2D6 are not distinguished. Any complex rearrangements or mosaicism are also not detected in this test. A normal (wild type) genotype signifies the absence of the targeted alleles and does not indicate the absence of other mutations not covered by the assay. The possibility cannot be ruled out that the indicated genotypes may be present and are below the limits of detection for this assay. The DNA test may not capture scientific findings which are not yet validated or not provided. Like all diagnostic tests, pharmacogenomic tests are one of multiple pieces of information that clinicians should consider when making their therapeutic choice for each patient.

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III. Executive Report

PATIENT NAME	NATIONAL ID / PASSPORT NO.	ORDERING PROVIDER
UNIQUE TEST1	Not Available	NDL SG UAT PHYSICIAN
GENDER	DATE OF BIRTH	ORDER ID
Male	09-01-1998	4653-191754

A. Genomic Information

Gene	Genotype	Phenotype
CYP2C19	*1/*2	CYP2C19 Intermediate metabolizer
CYP2C9	*1/*2	CYP2C9 Intermediate metabolizer
CYP2D6	*41/*41	CYP2D6 Intermediate metabolizer
HLA-B	HLA-B*58:01 positive	Higher risk of Allopurinol-induced SCAR
SLCO1B1	rs4149056(TC)	SLCO1B1 Decreased function

B. Current Medications

Information not available.

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C. Pharmacogenomics Summary

Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
CARDIOVASCULAR SYSTEM	ANGIOTENSIN II RECEPTOR BLOCKERS					<ul style="list-style-type: none"> Losartan CYP2C9
	ANTIANGINA					<ul style="list-style-type: none"> Ranolazine
	ANTIARRHYTHMIC S CLASS I	<ul style="list-style-type: none"> Propafenone 		<ul style="list-style-type: none"> Flecainide 		<ul style="list-style-type: none"> Disopyramide Quinidine
	ANTIARRHYTHMIC S CLASS I/III					<ul style="list-style-type: none"> Vernakalant
	ANTIARRHYTHMIC S CLASS III					<ul style="list-style-type: none"> Amiodarone Dronedarone CYP2D6
	ANTICOAGULANTS					<ul style="list-style-type: none"> Acenocoumarol CYP2C9 Phenprocoumon CYP2C9 Warfarin
	ANTIHEMORRHAGICS					<ul style="list-style-type: none"> Avatrombopag
	ANTIPLATELETS	<ul style="list-style-type: none"> Clopidogrel 				<ul style="list-style-type: none"> Aspirin CYP2C9 Prasugrel CYP2C19 Prasugrel CYP2C9 Ticagrelor
	BETA BLOCKING AGENTS			<ul style="list-style-type: none"> Metoprolol 		<ul style="list-style-type: none"> Atenolol Bisoprolol Carvedilol Nebivolol Propranolol Sotalol Timolol
	CENTRAL AGONISTS					<ul style="list-style-type: none"> Clonidine
	FIBRATES					<ul style="list-style-type: none"> Fenofibrate
	NON-SELECTIVE NSAIDS					<ul style="list-style-type: none"> Aspirin CYP2C9

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Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
CARDIOVASCULAR SYSTEM	STATINS	<ul style="list-style-type: none">• Fluvastatin• Fluvastatin CYP2C9• Lovastatin• Simvastatin		<ul style="list-style-type: none">• Atorvastatin• Pitavastatin		<ul style="list-style-type: none">• Fluvastatin SLCO1B1• Pravastatin• Rosuvastatin SLCO1B1

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Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
MUSCULOSKELETAL SYSTEM	ANTIGOUT PREPARATIONS	<ul style="list-style-type: none">Allopurinol				<ul style="list-style-type: none">Lesinurad
	MUSCLE RELAXANTS					<ul style="list-style-type: none">Tolperisone

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ONCOLOGY	ANTIMETABOLITES					<ul style="list-style-type: none">Methotrexate
	ESTROGEN RECEPTOR ANTAGONISTS	<ul style="list-style-type: none">Tamoxifen				
	IMMUNOSUPPRESSANTS					<ul style="list-style-type: none">Upadacitinib
	OTHER ANTINEOPLASTIC AGENTS					<ul style="list-style-type: none">Rucaparib
	PROTEIN KINASE INHIBITORS					<ul style="list-style-type: none">AxitinibErdafitinibGefitinibIbrutinib

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Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
PSYCHIATRY	1ST GEN ANTIPSYCHOTICS			<ul style="list-style-type: none"> Pimozide Zuclopentixol 		<ul style="list-style-type: none"> Flupenthixol Haloperidol Perphenazine Thioridazine
	2ND GEN ANTIPSYCHOTICS					<ul style="list-style-type: none"> Aripiprazole Aripiprazole Lauroxil Brexpiprazole Cariprazine Clozapine CYP2D6 Iloperidone Olanzapine CYP2D6 Paliperidone Quetiapine CYP2D6 Risperidone Sertindole
	ANTIDEPRESSANT S MONOAMINE OXIDASE A INHIBITORS					<ul style="list-style-type: none"> Moclobemide
	ANTIEPILEPTICS					<ul style="list-style-type: none"> Diazepam
	ANXIOLYTICS					<ul style="list-style-type: none"> Diazepam
	ATYPICAL ANTIDEPRESSANTS					<ul style="list-style-type: none"> Bupropion Mirtazapine CYP2C19 Mirtazapine CYP2D6
	DRUGS USED IN ADDICTIVE DISORDERS					<ul style="list-style-type: none"> Lofexidine
	DRUGS USED IN OPIOID DEPENDENCE					<ul style="list-style-type: none"> Methadone CYP2D6

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Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
PSYCHIATRY	OTHER ANTIDEPRESSANTS					<ul style="list-style-type: none"> Vortioxetine
	PSYCHOSTIMULANTS					<ul style="list-style-type: none"> Amphetamine Atomoxetine Methylphenidate Modafinil Pitolisant
	SELECTIVE SEROTONIN AND NOREPINEPHRINE REUPTAKE INHIBITORS	<ul style="list-style-type: none"> Venlafaxine 				
	SELECTIVE SEROTONIN REUPTAKE INHIBITORS			<ul style="list-style-type: none"> Escitalopram CYP2C19 		<ul style="list-style-type: none"> Citalopram CYP2C19 Citalopram CYP2D6 Escitalopram CYP2D6 Fluoxetine Fluvoxamine CYP2C19 Fluvoxamine CYP2D6 Paroxetine Sertraline CYP2C19 Sertraline CYP2D6
	SEROTONIN REUPTAKE INHIBITORS					<ul style="list-style-type: none"> Nefazodone
	SEROTONIN/NOREPINEPHRINE REUPTAKE INHIBITORS					<ul style="list-style-type: none"> Desvenlafaxine Duloxetine

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Category	Drug Class	Change Prescription	Increase Starting Dose	Decrease Starting Dose	Monitor	Follow Standard Dosing
PSYCHIATRY	TRICYCLIC ANTIDEPRESSANT S			<ul style="list-style-type: none">• Amitriptyline CYP2D6• Amitriptyline CYP2C19• Amitriptyline• Clomipramine• Clomipramine CYP2D6• Clomipramine CYP2C19• Desipramine• Doxepin• Doxepin CYP2C19• Doxepin CYP2D6• Imipramine• Imipramine CYP2C19• Imipramine CYP2D6• Nortriptyline• Trimipramine• Trimipramine CYP2C19• Trimipramine CYP2D6		<ul style="list-style-type: none">• Amoxapine• Protriptyline

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IV. Individual Drug Report

Allopurinol



STRONG RECOMMENDATION

GENE
HLA-B

GENOTYPE
HLA-B*58:01 positive

PHENOTYPE
Higher risk of Allopurinol-induced SCAR

Recommendation

- **Allopurinol is contraindicated.**

Significantly increase risk of allopurinol SCAR.

Recommendations based on specific guidelines

➤ CPIC	Allopurinol is contraindicated.
--------	--

DPWG Choose an alternative, such as febuxostat. Another option is to induce allopurinol tolerance first: To induce allopurinol tolerance, the allopurinol dose is increased every 3 days until a dose of 100 mg/day has been achieved on Day 28. The consecutive daily doses in the induction protocol are 50 µg, 100 µg, 200 µg, 500 µg, 1 mg, 5 mg, 10 mg, 25 mg, 50 mg and 100 mg.

PRO High-risk individuals were recommended to be prescribed an alternative to allopurinol.

FDA The use of allopurinol is not recommended unless the benefits clearly outweigh the risks.

More information about this drug-phenotype can also be found at **PMDA**, **HCSC**, and **SWISSMEDIC**.

Caveat

The positive predictive value for HLA-B*58:01 is ~1.5% and the negative predictive value is 100% (based on the data from the Han-Chinese and Thai populations). Therefore, a significant number of patients carrying the allele will not develop SCAR when they receive allopurinol treatment. New genetic factors may be identified in the future to differentiate the HLA-B*58:01 carriers who are or are not likely to develop SCAR. The most severe SCAR (toxic epidermal necrolysis) carries a 30% mortality rate. However, further study is warranted on the development of SCAR in European populations. HLA-B*58:01 predicts only allopurinol-induced SCAR, not other adverse events (such as mild skin rash) that a patient might experience during allopurinol treatment. The marker also does not predict the efficacy of treatment with allopurinol. Regardless of the genotyping results, physicians should monitor patients closely.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

26632391 25327504

➤ Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

➤ Predictive Value

Low positive predictive value. Testing positive for this phenotype does not mean that the patient will develop the adverse effect.

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Atorvastatin

Atorvastatin, Atavor, Beatorva, Atorsan, Torvatec, Atswift, Atorvachol, Atorvon, Tulip, Atoris, Torvalip, Eturion, Lipitor, Actalipid, Removchol, Fastor, Stavinor, Genlipid, Atofit, Litorcom, Simtor, Tavora, Stator, Apo-Atorvastatin



MODERATE
RECOMMENDATION

GENE
SLCO1B1

GENOTYPE
rs4149056(TC)

PHENOTYPE
SLCO1B1 Decreased function

Recommendation

- Starting dose: <=40mg. Adjust based on guidelines. If >40mg needed, consider combination therapy.

Increased atorvastatin exposure as compared to normal and decreased function which may translate to increase myopathy risk.

Recommendations based on specific guidelines

➤ CPIC	Starting dose: <=40mg. Adjust based on guidelines. If >40mg needed, consider combination therapy. Prescriber should be aware of possible increase risk for myopathy especially for 40mg dose.
DPWG	Choose alternative (rosuvastatin/pravastatin/fluvastatin). If not possible or no risk factors for myopathy: monitor muscle symptoms.

Caveat

Genetic variation is just one factor when prescribing statins. Rare variants may not be included in the genotype test. Patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype. Many patients' statin therapy is never restarted after Statin-related musculoskeletal symptoms. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. The evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Clopidogrel

Clopidogrel, Clopivid, Clotromboz, G Plus - Clopidogrel, Clopigrel, Thinoclo, Clopidogrel Stada, Platless, Clopido, Plavesco, Gridokline, Ceruvin, Placta, Deplatt, Clopidogrel Sandoz, Apo-Clopidogrel, Plavix, Therodel, Medigrel, Pidovix, Pladogrel, Artepide, Caplor, Cpg, Trombikaf



STRONG RECOMMENDATION

GENE
CYP2C19

GENOTYPE
*1/*2

PHENOTYPE
CYP2C19 Intermediate metabolizer

Recommendation

➤ **Avoid standard dose clopidogrel (75 mg) if possible.**

Reduced clopidogrel active metabolite formation; increase on-treatment platelet reactivity; increase risk for adverse cardiac and cerebrovascular events.

Recommendations based on specific guidelines

CPIC	Avoid standard dose clopidogrel (75 mg) if possible. Use prasugrel or ticagrelor at standard dose if no contraindication.
DPWG	PCI, STROKE or TIA: choose an alternative or double the dose to 150 mg/day (600 mg loading dose). Prasugrel, ticagrelor and acetylsalicylic acid/dipyridamole are not metabolized by CYP2C19 (or to a lesser extent). OTHER INDICATIONS: no action required.
PRO	Alternative antiaggregant that isn't a CYP2C19 substrate (prasugrel, ticagrelor, acetylsalicylic acid, etc) is preferable. In patients carrying at least one deleterious CYP2C19*2 or CYP2C19*3 allele who have a high risk of thromboembolic recurrence. Based on current knowledge, it is not recommended to increase the clopidogrel dose in patients carrying the CYP2C19*2 or *3 allele.
FDA	Consider use of another platelet P2Y12 inhibitor.

More information about this drug-phenotype can also be found at **EMA** and **PMDA**.

Caveat

It is advantageous to have the CYP2C19 results before initiating antiplatelet therapy because the largest number of potentially preventable recurrent events occur early in treatment. For example, CYP2C19*2 has recently been associated with definite early stent thrombosis in a case-control study. These recommendations apply predominantly to ACS patients undergoing PCI. Current data do not support the use of CYP2C19 genotype data to guide treatment in other scenarios. In addition, there are no data available on the possible role of CYP2C19 in clopidogrel response in pediatric patient populations; however, there is no reason to suspect that CYP2C19 variant alleles would affect clopidogrel metabolism differently in children as compared with adults.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

25800075 22955794 26727381 28597175 27756942 23431496

➤ **Change Prescription**

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

⌚ **Turnaround Time**

The benefit of waiting for a genetic test result may be less than starting the medication without a genetic test result.

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Flecainide

Flecainide, Tambocor

**STRONG RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation**

- Indications other than diagnosis of Brugada syndrome: reduce the dose to 75% of the standard dose and record an ECG and monitor the plasma concentration.

The genetic variation reduces conversion of flecainide to inactive metabolites. This may increase the risk of side effects.

Recommendations based on specific guidelines**DPWG**

Indications other than diagnosis of Brugada syndrome: reduce the dose to 75% of the standard dose and record an ECG and monitor the plasma concentration. Provocation test for diagnosis of Brugada syndrome: No action required. At a dose of 2.0 mg/kg body weight to a maximum of 150 mg, the response is better for patients with alleles that result in reduced activity. All 5 patients with these alleles and 20% of the patients with two fully active alleles exhibited a response within 30 minutes.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

16944116 18754843 20435235

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Fluvastatin

Fluvastatin, Lescol

**MODERATE RECOMMENDATION****GENE**
SLCO1B1
CYP2C9**GENOTYPE**
rs4149056(TC)
*1/*2**PHENOTYPE**
SLCO1B1 Decreased function
CYP2C9 Intermediate metabolizer**Recommendation**

- If dose >20mg needed for desired efficacy, consider an alternative statin or combination therapy.

CYP2C9 Intermediate metabolizer: Increased fluvastatin exposure. SLCO1B1 Decreased function: Increased fluvastatin exposure.

Recommendations based on specific guidelines

CPIC

If dose >20mg needed for desired efficacy, consider an alternative statin or combination therapy.
Alternatively, prescribe <=20mg per day as a starting dose and adjust doses of fluvastatin based on disease-specific guidelines.

Caveat

Genetic variation is just one factor when prescribing statins. Rare variants may not be included in the genotype test. Patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype. Many patients' statin therapy is never restarted after Statin-related musculoskeletal symptoms. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. The evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

✖ Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

START Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Fluvastatin || CYP2C9

Fluvastatin, Lescol



MODERATE
RECOMMENDATION

GENE
CYP2C9

GENOTYPE
*1/*2

PHENOTYPE
CYP2C9 Intermediate metabolizer

Recommendation

- If dose >40mg needed for desired efficacy, consider an alternative statin or combination therapy.

Increased fluvastatin exposure as compared to normal metabolizer which may translate to increase myopathy risk.

Recommendations based on specific guidelines

➤ CPIC

If dose >40mg needed for desired efficacy, consider an alternative statin or combination therapy. Alternatively, prescribe <=40mg per day as a starting dose and adjust doses of fluvastatin based on disease-specific guidelines.

Caveat

Genetic variation is just one factor when prescribing statins. Rare variants may not be included in the genotype test. Patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype. Many patients' statin therapy is never restarted after Statin-related musculoskeletal symptoms. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. The evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

➤ Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

➤ Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Lovastatin

Lovastatin, Lovatin, Apo-Lovastatin, Ellanco, Elstatin, Lochol, Loctin, Lofacol, Medostatin, Rovacor, Cholvastin, Justin, Lotyn, Minipid



MODERATE RECOMMENDATION

GENE
SLCO1B1

GENOTYPE
rs4149056(TC)

PHENOTYPE
SLCO1B1 Decreased function

Recommendation

- **Prescribe an alternative statin depending on the desired potency.**

Increased lovastatin acid exposure as compared to normal function which may translate to increase myopathy risk.

Recommendations based on specific guidelines

➤ **CPIC**

Prescribe an alternative statin depending on the desired potency. If lovastatin therapy is warranted, limit dose to <=20mg/day.

Caveat

As with any diagnostic test, genetic variation is just one factor that clinicians should consider when prescribing statins. Furthermore, rare variants may not be included in the genotype test used, and patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype based on a default to wild-type (*1) test result. In summary, statins are a powerful class of medications for lowering LDL cholesterol and cardiovascular risk with an established track record of safety and efficacy. However, statin-related musculoskeletal symptoms are the most frequently cited reason for discontinuing statin therapy. Although clinicians are well-tuned to trial stopping and later reinitiating statin therapy in those who develop SAMS, in many patients statin therapy is never restarted. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. We applied a rigorous approach evaluating the collective evidence around SLCO1B1, ABCG2, and CYP2C9 on systemic drug exposure and risk of SAMS. Our evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS. Based on this foundation, future research can evaluate the extent to which implementation of these guidelines impacts prescribing, SAMS risk, statin adherence, LDL cholesterol levels, and risk for cardiovascular events in patients prescribed statin therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

➤ **Change Prescription**

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

➤ **Initiation**

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

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Report Date : 22 Sep 2023

Metoprolol

Apo-Metoprolol, Denex, Fapresor, Lopresor, Loprolol, Metoprolol, Betaloc Zok



STRONG RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

- **GRADUAL REDUCTION in HEART RATE or SYMPTOMATIC BRADYCARDIA: prescribe no more than 50% of the standard dose.**

The gene variation reduces the conversion of metoprolol to inactive metabolites. However, the clinical consequences are limited mainly to the occurrence of asymptomatic bradycardia.

Recommendations based on specific guidelines

➤ DPWG

GRADUAL REDUCTION in HEART RATE or SYMPTOMATIC BRADYCARDIA: prescribe no more than 50% of the standard dose. The use of smaller steps in dose titration can also be done together or as another option. For OTHER CASES: no action required.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

16476126 18979093 25823457 19094446

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Pitavastatin

Vitor, Livalo, Pitavastatin

**MODERATE RECOMMENDATION****GENE**
SLCO1B1**GENOTYPE**
rs4149056(TC)**PHENOTYPE**
SLCO1B1 Decreased function**Recommendation**

- Starting dose <= 2mg. Adjust based on guidelines. If >2mg needed, consider alternative statin or combination therapy.

Increased pitavastatin exposure as compared to normal function which may translate to increase myopathy risk.

Recommendations based on specific guidelines

- CPIC** Starting dose <= 2mg. Adjust based on guidelines. If >2mg needed, consider alternative statin or combination therapy. Increased risk for myopathy especially for doses >1mg.

- SWISSMEDIC** No actionable recommendation is available for this drug-gene pair.

Caveat

Genetic variation is just one factor when prescribing statins. Rare variants may not be included in the genotype test. Patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype. Many patients' statin therapy is never restarted after Statin-related musculoskeletal symptoms. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. The evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Propafenone

Rytmonorm, Propafenone

**STRONG RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation**

- Either guide the dose by therapeutic drug monitoring, perform an ECG and be alert to side effects or choose an alternative.

Genetic variation increases the sum of the plasma concentrations of propafenone and the active metabolite 5-hydroxypropafenone. This may increase the risk of side effects.

Recommendations based on specific guidelines**DPWG**

Either guide the dose by therapeutic drug monitoring, perform an ECG and be alert to side effects or choose an alternative. Antiarrhythmic drugs that are hardly if at all metabolized by CYP2D6 include, for example, sotalol, disopyramide, quinidine and amiodarone. It is not possible to offer adequately substantiated recommendations for dose adjustment based on the literature.

SWISSMEDIC No actionable recommendation is available for this drug-gene pair.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

14653957 12421483

Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

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DOB : 09-01-1998**Order ID :** #4653-191754
Report Date : 22 Sep 2023

**STRONG RECOMMENDATION**

Simvastatin

Apo-Simvastatin, Cortavas, Covastin, Dha-Simvastatin, Esvat, Ifistatin, Kardak, Kolefion, Mersivas, Priacin, Rechol, Rendapid, Selvat, Selvim, Simcard, Simlo, Simtin, Simvacor, Simvas, Simvasgen, Simvastatin, Simvor, Simzal, Sinova, Statcol, Statkoles, Svt, Tianvas, Valansim, Valemia, Vascor, Vasilip, Zencor, Zochol, Zocor, Cholestat, Colesbat, Lesvatin, Lextatin, Lipivast, Mastatin, Mevastin, Norpid, Preschol, Rocoz, Selvas, Simbado, Simchol, Simvaschol, Simvastal, Simvasto

GENE
SLCO1B1

GENOTYPE
rs4149056(TC)

PHENOTYPE
SLCO1B1 Decreased function

Recommendation

- **Prescribe an alternative statin. If simvastatin therapy is warranted, limit dose to <20mg/day.**

Increased simvastatin acid exposure as compared to normal function; increase risk of myopathy.

Recommendations based on specific guidelines

CPIC	Prescribe an alternative statin. If simvastatin therapy is warranted, limit dose to <20mg/day.
DPWG	Alternative: rosuvastatin/pravastatin/fluvastatin. If not possible, simvastatin <40mg/day. Consider additional risk factors for statin-induced myopathy. Advise patient to contact their doctor if muscle symptoms occur.
PRO	Lower to 20mg/day + CPK assay or use alternative: fluvastatin, lovastatin, rosuvastatin, atorvastatin, pravastatin.
SWISSMEDIC	Benefit-risk assessment before prescribing simvastatin 80 mg. In drugs combination of Ezetimibe and Simvastatin as well.

Caveat

Genetic variation is just one factor when prescribing statins. Rare variants may not be included in the genotype test. Patients with rare variants that reduce SLCO1B1 function may be incorrectly assigned a normal phenotype. Many patients' statin therapy is never restarted after Statin-related musculoskeletal symptoms. As a result, LDL cholesterol values are higher as is their risk for cardiovascular disease. The evidenced-based recommendations for genotype-guided statin therapy are focused on reducing the risk of SAMS.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

15548849 28350522 23263738 22668755

Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Report Date : 22 Sep 2023

Tamoxifen

Novaldex, Tamofen, Tamoxifen

**MODERATE RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation**

- Postmenopausal women: hormonal therapy (aromatase inhibitor/AI); premenopausal: AI with ovarian function suppressor. If contraindicated, use tamoxifen 40mg/day.

Lower endoxifen concentrations; higher risk of breast cancer recurrence, event-free, and recurrence-free survival.

Recommendations based on specific guidelines

CPIC	Postmenopausal women: hormonal therapy (aromatase inhibitor/AI); premenopausal: AI with ovarian function suppressor. If contraindicated, use tamoxifen 40mg/day. Avoid CYP2D6 strong to weak inhibitors.
DPWG	Select an alternative or measure the endoxifen concentration and increase the dose if necessary by a factor of 1.5-2. Aromatase inhibitors are a possible alternative for post-menopausal women. If TAMOXIFEN is selected: avoid co-medication with CYP2D6 inhibitors such as paroxetine and fluoxetine.
PRO	No actionable recommendation is available for this drug-gene pair.
FDA	The impact of CYP2D6 intermediate or poor metabolism on efficacy is not well established.

More information about this drug-phenotype can also be found at [CPNDS](#) and [HCSC](#).

Caveat

For the treatment of ER1 breast cancer, there are well-accepted tumor somatic factors that drive endocrine response, including the tumor expression of ER, PR, and HER2 expression, and other multigene assays that are associated with endocrine sensitivity. Although there are very few data, the implication of reduced CYP2D6 metabolism in patients with low-risk breast cancer (e.g., early-stage breast cancer where the risk of distant recurrence is low) may be substantially different than in patients with later stage disease with a much higher risk of distant recurrence.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

21437611 18407954 28293118 22183189 27924964

Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

Indication

This drug-gene interaction recommendation is based on a specific diagnosis ONLY. Exercise prudent clinical judgement when using the drug for other indications.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Amitriptyline || CYP2D6

Amitriptyline, Apo-Amitriptyline, Trilin, Tripta



MODERATE
RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines



CPIC

Consider 25% reduction of recommended starting dose. E.g. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

DPWG

Use 75% of the standard dose and monitor the efficacy and side effects or the plasma concentrations.

FDA

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Amitriptyline || CYP2C19

Amitriptyline, Apo-Amitriptyline, Trilin, Tripta

**STRONG RECOMMENDATION****GENE**
CYP2C19**GENOTYPE**
*1/*2**PHENOTYPE**
CYP2C19 Intermediate metabolizer**Recommendation**

- Patients may receive an initial low dose of a tricyclic, which is then increase over several days to the recommended steady-state dose.

Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines

CPIC

Patients may receive an initial low dose of a tricyclic, which is then increase over several days to the recommended steady-state dose. Initiate therapy with recommended starting dose.

DPWG

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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DOB : 09-01-1998**Order ID :** #4653-191754
Report Date : 22 Sep 2023

Amitriptyline

Amitriptyline, Apo-Amitriptyline, Trilin, Tripta



MODERATE
RECOMMENDATION

GENE
CYP2C19
CYP2D6

GENOTYPE
*1/*2
*41/*41

PHENOTYPE
CYP2C19 Intermediate metabolizer
CYP2D6 Intermediate metabolizer

Recommendation

- Consider a 25% reduction of recommended starting dose.

CYP2D6 IM: Reduced metabolism of TCAs to less active compounds. Higher plasma concentrations of active drug may increase probability of side effects. CYP2C19 IM: Reduced metabolism of tertiary amines.

Recommendations based on specific guidelines

- CPIC Consider a 25% reduction of recommended starting dose.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

12172336 27288795 28296334 12012142

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Clomipramine

Clomipramine, Depranil, Anafranil, Apo-Clomipramine



MODERATE
RECOMMENDATION

GENE
CYP2C19
CYP2D6

GENOTYPE
*1/*2
*41/*41

PHENOTYPE
CYP2C19 Intermediate metabolizer
CYP2D6 Intermediate metabolizer

Recommendation

- Consider a 25% reduction of recommended starting dose.

CYP2D6 IM: Reduced metabolism of TCAs to less active compounds. Higher plasma concentrations of active drug may increase probability of side effects. CYP2C19 IM: Reduced metabolism of tertiary amines.

Recommendations based on specific guidelines

CPIC

Consider a 25% reduction of recommended starting dose. Patients may receive an initial low dose of tricyclic antidepressants (TCAs), which is then increased over several days to the recommended steady-state dose.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

11763000

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Report Date : 22 Sep 2023

Clomipramine || CYP2D6

Clomipramine, Depranil, Anafranil, Apo-Clomipramine



MODERATE
RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a tricyclic, which is then increased over several days to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

DPWG

Use 70% of the standard dose and monitor the effect and side effects of the plasma concentrations of clomipramine and desmethylclomipramine.

FDA

It is desirable to monitor TCA plasma levels. Whenever an agent of the tricyclic antidepressant class including Anafranil is going to be co-administered with another drug known to be an inhibitor of P450 2D6.

More information about this drug-phenotype can also be found at [SWISSMEDIC](#).

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Report Date : 22 Sep 2023

Clomipramine || CYP2C19

Clomipramine, Depranil, Anafranil, Apo-Clomipramine



MODERATE
RECOMMENDATION

GENE
CYP2C19

GENOTYPE
*1/*2

PHENOTYPE
CYP2C19 Intermediate metabolizer

Recommendation

- Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose.

Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines

► CPIC

Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose. Initiate therapy with recommended starting dose. The starting dose in this guideline refers to the recommended steady-state dose.

DPWG

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Desipramine

Desipramine

**MODERATE RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a tricyclic, which is then increased over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

FDA

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Doxepin

Doxepin, Apo-Doxepin, Sagalon

**MODERATE RECOMMENDATION****GENE**
CYP2C19
CYP2D6**GENOTYPE**
*1/*2
*41/*41**PHENOTYPE**
CYP2C19 Intermediate metabolizer
CYP2D6 Intermediate metabolizer**Recommendation**

- Consider a 25% reduction of recommended starting dose.

CYP2D6 IM: Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects. CYP2C19 IM: Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines

- CPIC Consider a 25% reduction of recommended starting dose.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Doxepin || CYP2C19

Doxepin, Apo-Doxepin, Sagalon

**MODERATE RECOMMENDATION****GENE**
CYP2C19**GENOTYPE**
*1/*2**PHENOTYPE**
CYP2C19 Intermediate metabolizer**Recommendation**

- Patients may receive an initial low dose, which then increase over several days to the recommended steady-state dose.

Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines**CPIC**

Patients may receive an initial low dose, which then increase over several days to the recommended steady-state dose. Initiate therapy with recommended starting dose. The starting dose in this guideline refers to the recommended steady-state dose.

DPWG

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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your mobile phone.**Name :** UNIQUE TEST1
DOB : 09-01-1998**Order ID :** #4653-191754
Report Date : 22 Sep 2023

Doxepin || CYP2D6

Doxepin, Apo-Doxepin, Sagalon



MODERATE
RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a tricyclic, which is then increased over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

DPWG

Use 80% of the standard dose and monitor the effect and side effects. Or the plasma concentrations of doxepin and nordoxepin in order to set the maintenance dose. The therapeutic range is 100-250 ng/mL for the sum of doxepin and nordoxepin plasma concentrations. Values higher than 400 ng/mL are considered toxic.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Escitalopram || CYP2C19

Escitalopram, Lepax, Lexapro, Cipralex, Depram, Elxion, Escipra, Escitalopram

Oxalate



STRONG RECOMMENDATION

GENE
CYP2C19

GENOTYPE
*1/*2

PHENOTYPE
CYP2C19 Intermediate metabolizer

Recommendation

- Do not exceed the following doses (75% of the standard maximum dose): adults < 65 years 15 mg/day, ≥65 years 7.5 mg/day.

The risk of QT prolongation and torsades de pointes is theoretically increase because the gene variation leads to an increase escitalopram plasma concentration. If you follow the dose recommendation below, the increase plasma concentration and the theoretically increase risk of QT prolongation will be offset.

Recommendations based on specific guidelines

DPWG

Do not exceed the following doses (75% of the standard maximum dose): adults < 65 years 15 mg/day, ≥65 years 7.5 mg/day.

Caveat

Patients on a stable and effective dose of an SSRI most likely will not benefit from additional dose modifications based on CYP2D6 or CYP2C19 genotype results. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Imipramine

Imipramine, Apo-Imipramine

**MODERATE RECOMMENDATION****GENE**
CYP2C19
CYP2D6**GENOTYPE**
*1/*2
*41/*41**PHENOTYPE**
CYP2C19 Intermediate metabolizer
CYP2D6 Intermediate metabolizer**Recommendation**

- Consider a 25% reduction of recommended starting dose.

CYP2D6 IM: Reduced metabolism of TCAs to less active compounds. Higher plasma concentrations of active drug may increase probability of side effects. CYP2C19 IM: Reduced metabolism of tertiary amines.

Recommendations based on specific guidelines

➤ CPIC

Consider a 25% reduction of recommended starting dose. Patients may receive an initial low dose of tricyclic antidepressants (TCAs), which is then increased over several days to the recommended steady-state dose.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Imipramine || CYP2C19

Imipramine, Apo-Imipramine



MODERATE
RECOMMENDATION

GENE
CYP2C19

GENOTYPE
*1/*2

PHENOTYPE
CYP2C19 Intermediate metabolizer

Recommendation

- Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose.

Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines

► CPIC

Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose. Initiate therapy with recommended starting dose. The starting dose in this guideline refers to the recommended steady-state dose.

DPWG

No action is required for this gene-drug interaction.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Imipramine || CYP2D6

Imipramine, Apo-Imipramine



MODERATE
RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a TCA, which is then increased over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

DPWG

Use 70% of the standard dose and monitor the side effect or the plasma concentrations of imipramine and desipramine. Monitoring is done in order to set the maintenance dose. The therapeutic range is 150-300 ng/mL for the sum of the imipramine and desipramine plasma concentrations. Values exceeding 500 ng/mL are considered toxic.

FDA

No actionable recommendation available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Name : UNIQUE TEST1
DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Nortriptyline

Apo-Nortriptyline, Nortriptyline



STRONG RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a tricyclic, which is then increased over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

DPWG

Use 60% of the standard dose and monitor the effect and side effects. Or the plasma concentration of nortriptyline in order to set the maintenance dose.
The therapeutic range of nortriptyline is 50-150 ng/mL. Values exceeding 250 ng/mL are considered toxic.

FDA

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

10770451 28296334

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Pimozide

Pimozide

**STRONG RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation**

- Use no more than the following doses (80% of the standard maximum dose): 16 mg/day (12 years and older).

The risk of QT-prolongation – and thereby also the risk of torsade de points – is theoretically increase, because the genetic variation results in an increase in the plasma concentration of pimozide. The risk of an excessively high plasma concentration can be negated by following the dose recommendations provided.

Recommendations based on specific guidelines

- DPWG Use no more than the following doses (80% of the standard maximum dose): 16 mg/day (12 years and older).

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

➤ **Decrease Starting Dose**

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Trimipramine

Trimipramine

**MODERATE RECOMMENDATION****GENE**
CYP2C19
CYP2D6**GENOTYPE**
*1/*2
*41/*41**PHENOTYPE**
CYP2C19 Intermediate metabolizer
CYP2D6 Intermediate metabolizer

Recommendation

Consider 25% reduction of recommended starting dose.

CYP2C19 IM : Reduced metabolism of tertiary amines compared to normal metabolizers. CY2D6 IM : Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines

CPIC

Consider 25% reduction of recommended starting dose. Utilizing therapeutic drug monitoring if a tricyclic is prescribed to a patient with CYP2D6 ultrarapid, intermediate or poor metabolism in combination with CYP2C19 ultrarapid, intermediate or poor metabolism is strongly recommended. Patients may receive an initial low dose of TCAs, which is then increase over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Dosing recommendations only apply to higher initial doses of TCAs for treatment of conditions such as depression.

FDA

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Trimipramine || CYP2C19

Trimipramine

**MODERATE RECOMMENDATION****GENE**
CYP2C19**GENOTYPE**
*1/*2**PHENOTYPE**
CYP2C19 Intermediate metabolizer**Recommendation**

- Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose.

Reduced metabolism of tertiary amines compared to normal metabolizers.

Recommendations based on specific guidelines

CPIC

Patients may receive an initial low dose, which then increased over several days to the recommended steady-state dose. Initiate therapy with recommended starting dose. The starting dose in this guideline refers to the recommended steady-state dose.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

► **Decrease Starting Dose**

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

► **Initiation**

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Order ID : #4653-191754
Report Date : 22 Sep 2023

Trimipramine || CYP2D6

Trimipramine

**MODERATE RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation****Consider 25% reduction of recommended starting dose.**

Reduced metabolism of TCAs to less active compounds when compared to normal metabolizers. Higher plasma concentrations of active drug will increase the probability of side effects.

Recommendations based on specific guidelines**CPIC**

Consider 25% reduction of recommended starting dose. Patients may receive an initial low dose of a tricyclic, which is then increased over several days to the recommended steady-state dose. The starting dose in this guideline refers to the recommended steady-state dose. Utilize therapeutic drug monitoring to guide dose adjustments. Titrate dose to observed clinical response with symptom improvement and minimal (if any) side effects.

FDA

No actionable recommendation is available for this drug-gene pair.

Caveat

The application of genotype-based dosing is most appropriate when initiating therapy with a tricyclic. Obtaining a pharmacogenetic test after months of drug therapy may be less helpful in some instances, as the drug dose may have already been adjusted based on plasma concentrations, response, or side effects. Similar to all diagnostic tests, genetic tests are one of several pieces of clinical information that should be considered before initiating drug therapy.

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

Decrease Starting Dose

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

Initiation

This drug-gene interaction recommendation is useful for initiation of this drug in naive patients. For patients who are already on stable dose or have used this drug before, effective drug monitoring and clinical judgement is more important.

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Report Date : 22 Sep 2023

Venlafaxine

Deprevix, Avenfax, Viepax, Efexor, Venlafaxine, Venladex Xr, Venlex Xr



STRONG RECOMMENDATION

GENE
CYP2D6

GENOTYPE
*41/*41

PHENOTYPE
CYP2D6 Intermediate metabolizer

Recommendation

➤ Avoid venlafaxine. Antidepressants that are not metabolized by CYP2D6.

There are indications of an increased risk of side effects and a reduced chance of efficacy. The gene variation reduces the conversion of venlafaxine to the active metabolite O-desmethylvenlafaxine, whilst an association between high O-desmethylvenlafaxine/venlafaxine ratios and response without side effects was found.

Recommendations based on specific guidelines

➤ DPWG

Avoid venlafaxine. Antidepressants that are not metabolized by CYP2D6. - or to a lesser extent - include, for example, duloxetine, mirtazapine, citalopram and sertraline.

If it is not possible to avoid venlafaxine and side effects occur:

1. reduce the dose
2. monitor the effect and side effects or check the plasma concentrations of venlafaxine and O-desmethylvenlafaxine.

It is not known whether it is possible to reduce the dose to such an extent that the side effects disappear, while the effectiveness is maintained. In general, it is assumed that the effectiveness is determined by the sum of the plasma concentrations of venlafaxine and O-desmethylvenlafaxine. However, the side effects do not appear to be related to this sum.

It is not possible to offer adequately substantiated advice for dose reduction based on the literature.

Source

The curated publications relevant to the drug-gene pair and reported ethnicity are listed below:

10877013 25510856

➤ Change Prescription

There is a high chance of sub-optimal response or adverse reaction due to patient's genetic polymorphism.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Zuclopenthixol
Clopixol, Zuclopenthixol**STRONG RECOMMENDATION****GENE**
CYP2D6**GENOTYPE**
*41/*41**PHENOTYPE**
CYP2D6 Intermediate metabolizer**Recommendation**

- **Use 75% of the standard dose.**

The risk of side effects may be elevated. The genetic variation leads to decreased conversion of zuclopenthixol, which causes the plasma concentration to be approximately 1.35-fold higher.

Recommendations based on specific guidelines

- DPWG **Use 75% of the standard dose.**

Source

Publications related to local relevance for this drug-gene pair have not been published yet.

➤ **Decrease Starting Dose**

Patient has altered metabolism rate or enhanced activation rate for drug indicated. Decreasing starting dose has shown to help prevent patient from experiencing adverse drug reaction.

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DOB : 09-01-1998

Order ID : #4653-191754
Report Date : 22 Sep 2023

Report Verification Receipt

This page shows the verification history for report with following information

Order ID
#4653-191754

Test Order
RxReady

History

Step	Version	Date And Time	Executed By
Report Generation	v.1	22 September 2023 (20:37)	PGxSG Lab Director
Report Verification	v.1	22 September 2023 (20:37)	PGxSG Lab Director

SAMPLE

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