DOIT SCIENTIFIC JSC

Pharmacogenomics testing in children

Name:	test2	Gender: male	Age: 3
Weight(kg):	-	Birthplace: -	Nation: -
Parent/guardian:	-	Phone: -	In/out-patient: -
Hospital:	-	Department: -	Refering physician: -
Treatment area:	-	Patient ID: -	Bed No.: -
Sample type:	peripheral blood	Date sampling: 0000-00-00	Barcode: 086720000087

Test requested : Pharmacogenomics testing in children(131 drugs)

Testing method : High throughput sequencing

History of adverse drug reactions(ADR) : -

ADR symptoms : -

Testing results

Gene	Testing position	Result	Gene	Testing position	Result
ABCB1	c.2677T>A/G	G/T	CRHR1	c.1107+111C>T	C/C
	c.3435T>C	C/T	CYP1A1	c.-30+606G>T	G/G
ACE	D/I polymorphism	I/I	CYP2B6	c.516G>T	G/G
ADD1	c.1378G>T/A	G/T	CYP2C19	c.636G>A	G/G
ADRB1	c.1165G>C	C/C		c.681G>A	G/G
ADRB2	c.46A>G	A/A		c.-806C>T	C/C
AGTR1	c.*86A>C	A/A	CYP2C9	c.430C>T	C/C
ALDH2	c.1510G>A	A/G		c.1075A>C	A/C
ALOX5	c.432-6550A>G	G/G	CYP2D6	g.100C>T	C/T
ANKK1	c.2137G>A	A/G		g.984A>G	A/A
APOE	c.388T>C	T/T		g.997C>T/G	C/C
	c.526C>T	C/C		g.1758G>A/T	G/G
C11orf65	c.175-5285G>T	G/T		g.1846G>A	G/G
CHIA	c.304G>A/C	G/G		g.2850C>T	C/C
COMT	c.472G>A	G/G		g.2988G>A	G/G

Gene	Testing position	Result	Gene	Testing position	Result
CYP2D6	g.3384A>C	A/C	LTA4H	c.-1400C>T	T/T
	g.3435C>A	C/C	LTC4S	c.-444A>C	A/A
	g.4172C>T/G	C/C	MT-RNR1	m.1494C>T	Wild-type
	g.4180G>C	C/G		m.1555A>G	Wild-type
	full-gene-deletion	fullGene/fullGene	NAT2	c.282C>T	C/C
CYP3A5	c.-253-1G>A	G/G		c.341T>C	T/T
CYP4F2	c.1297G>A	G/G		c.481C>T	C/C
DRD2	c.-585A>G	A/A		c.590G>A	G/G
EPHX1	c.337T>C	T/T		c.803G>A	A/A
	c.416A>G	A/A		c.857G>A	G/G
G6PD	c.95A>G	A/A	NOS1AP	c.178-13122C>T	C/T
	c.196T>A	T/T	NUDT15	c.52G>A	A/G
	c.202G>A	G/G		c.55_56insGAGTCG	-/-
	c.392G>T	G/G		c.415C>T	C/C
	c.487G>A	G/G		c.416G>A	G/G
	c.493A>G	A/A	OPRM1	c.118A>G	G/G
	c.517T>C	T/T	POLG	c.1399G>A	G/G
	c.519C>T	C/C	PPARG	c.34C>G	C/C
	c.563C>T	C/C	SCN1A	c.603-91G>A	A/G
	c.592C>T	C/C	SCN2A	c.56G>A	G/G
	c.871G>A	G/G		c.971-32A>G	A/A
	c.1004C>T	C/C	SLC22A1	c.1222A>C/G	A/G
	c.1024C>T	C/C	SLC22A2	c.808T>G	G/G
	c.1360C>T	C/C	SLC47A1	c.922-158G>A	G/G
	c.1376G>T	G/G	SLCO1B1	c.521T>C	C/T
	c.1388G>A	G/G	STXBP1	c.922A>T	A/A
GRIK4	c.83-10039T>C	C/T	TPMT	c.719A>G/C	A/A
HLA-A	*31:01	Positive	UGT1A	c.*211T>C	C/T
HLA-B	*15:02	Negative		c.*339G>C	C/G
	*58:01	Negative	UGT1A1	c.-53_-52TA[5][6][7][8]	TA[6]/TA[6]
HTR1A	c.-1019G>C	C/C		c.211G>A	A/G
IFNL4	g.1332A>C	A/A		c.-364C>T	C/C
	g.5710G>A	G/G	UGT1A4	c.142T>G/A	G/T
ITPA	c.94C>A/G	C/C	UGT2B15	c.253T>G	G/G
	c.124+21A>C	A/A	VKORC1	c.174-136C>T	T/T
LDLR	c.*666T>C	T/T		c.-1639G>A	A/A

Medication recommendations

Class		Drug	Recommendation
(1)Antipyretic-Analgesic and Anti-Inflammatory Drugs		1.Ibuprofen	*Decrease dose
		2.Acetaminophen	Normal response expected
		3.Pediatric Paracetamol,Atificial Cow-Bezoar and Chlorphenamine Maleate	Normal response expected
		4.Pediatric Paracetamol and Amantadine Hydrochloride	Normal response expected
		5.Paracetamol	Normal response expected
		6.Aspirin	*Consider alternatives or use with caution
		7.Chlorphenamine	Normal response expected
		8.Paracetamol, Pseudoephedrine Hydrochloride and Dextromethorphan Hydrobromide / Paracetamol, Pseudoephedrine Hydrochloride, Dextromethorphan Hydrobromide and Chlorpheniramine Maleate	Normal response expected
		9.Indomethacin	*Decrease dose
		10.Diclofenac	*Decrease dose
		11.Ketoprofen	*Decrease dose
		12.Piroxicam	*Decrease dose
		13.Celecoxib	*Decrease dose
(2)Anti-Infective Drugs	Antiviral Drugs	14.Oseltamivir	Normal response expected
		15.Ribavirin	*Consult doctor before use
		16.Peginterferon Alfa-2A	*Consult doctor before use
		17.Peginterferon Alfa-2B	*Consult doctor before use
	Sulfonamide antimicrobial Drugs	18.Sulfamethoxazole and Trimethoprim	Normal response expected
		19.Sinomin	Normal response expected
		20.Sulfadiazine	Normal response expected
		21.Sulfasalazine	Normal response expected
	Quinolone antimicrobial Drugs	22.Norfloxacin	Normal response expected
	Nitrofurans antimicrobial Drugs	23.Nitrofurantoin	Normal response expected
		24.Furazolidone	Normal response expected
	Anti-tuberculostatic Drugs	25.Streptomycin	Normal response expected
		26.Isoniazide	Normal response expected

Class		Drug	Recommendation
(2)Anti-Infective Drugs	Anti-tuberculostatic Drugs	27.Pyrazinamide	Normal response expected
		28.Rifampin	Normal response expected
	Antifungal Drugs	29.Voriconazole	Normal response expected
	Aminoglycoside antibiotics	30.Amikacin	Normal response expected
		31.Netilmicin	Normal response expected
		32.Sisomicin	Normal response expected
		33.Etimicin	Normal response expected
		34.Kanamycin	Normal response expected
		35.Gentamicin	Normal response expected
		36.Tobramycin	Normal response expected
		37.Micronomicin	Normal response expected
		38.Neomycin	Normal response expected
(3)Respiratory system Drugs	Anti-asthmatic Drugs	39.Budesonide	Normal response expected
		40.Salbutamol	*Consider alternatives or use with caution
		41.Formoterol	*Consider alternatives or use with caution
		42.Salmeterol	*Consider alternatives or use with caution
		43.Montelukast	Normal response expected
	Antitussive Drugs	44.Pseudoephedrine Hydrochloride,Chlophenamine Maleate and Dextromethorphan Hydrobromide	Normal response expected
		45.Dextromethorphan	Normal response expected
(4)Antiparasitic Drugs		46.Quinine	Normal response expected
		47.Chloroquine	Normal response expected
		48.Primaquine	Normal response expected
		49.Pyrimethamine	Normal response expected
(5)Digestive system Drugs		50.Esomeprazole	Normal response expected
		51.Omeprazole	Normal response expected
		52.Lansoprazole	Normal response expected

Class	Drug	Recommendation
(5)Digestive system Drugs	53.Rabeprazole	Normal response expected
	54.Pantoprazole	Normal response expected
(6)Antiepileptic	55.Carbamazepine	*Consider alternatives or use with caution
	56.Divalproex Sodium	Normal response expected
	57.Lamotrigine	*Increase dose
	58.Phenytoin	*Decrease dose
	59.Oxcarbazepine	*Consider alternatives or use with caution
	60.Phenobarbital	*Consider alternatives or use with caution
	61.Diazepam	Normal response expected
	62.Topiramate	*Consider alternatives or use with caution
	63.Levetiracetam	Normal response expected
(7)Antidiabetic Drugs	64.Metformin	*Adjust dose base on clinical response
	65.Glibenclamide	Normal response expected
	66.Glipizide	Normal response expected
	67.Gliquidone	Normal response expected
	68.Glimepiride	Normal response expected
	69.Gliclazide	Normal response expected
	70.Rosiglitazone	*Decrease dose
	71.Repaglinide	*Decrease dose
(8)Immunosuppressants	72.Tacrolimus	Normal response expected
	73.Sirolimus	Normal response expected
	74.Ciclosporin	Normal response expected
	75.Mercaptopurine	*Decrease dose
	76.Thioguanine	*Decrease dose
	77.Azathioprine	*Decrease dose
(9)Psychiatric Drugs	78.Citalopram	Normal response expected

Class		Drug	Recommendation
(9)Psychiatric Drugs		79.Escitalopram	Normal response expected
		80.Paroxetine	Normal response expected
		81.Sertraline	Normal response expected
		82.Venlafaxine	Normal response expected
		83.Amitriptyline	Normal response expected
		84.Doxepin	Normal response expected
		85.Mirtazapine	Normal response expected
		86.Desipramine	Normal response expected
		87.Bupropion	*Consider alternatives or use with caution
		88.Oxazepam	*Increase dose
		89.Lorazepam	*Increase dose
		90.Risperidone	Normal response expected
		91.Haloperidol	Normal response expected
		92.Clozapine	Normal response expected
		93.Olanzapine	Normal response expected
(10)Cardiovascular and Cerebrovascular Diseases Drugs	Antiplatelet Drugs	6.Aspirin	*Consider alternatives or use with caution
		94.Clopidogrel	Normal response expected
	Anti-thrombotic Drugs	95.Warfarin	*Consult doctor before use
	Anti-hypertensive Drugs	96.Benazepril	*Increase dose
		97.Fosinopril	*Increase dose
		98.Captopril	Normal response expected
		99.Lisinopril	*Increase dose
		100.Perindopril	*Increase dose
		101.Enalapril	*Increase dose
		102.Carvedilol	*Decrease dose
		103.Candesartan	Normal response expected
		104.Losartan	*Increase dose

Class		Drug	Recommendation
(10)Cardiovascular and Cerebrovascular Diseases Drugs	Anti-hypertensive Drugs	105.Metoprolol	Normal response expected
		106.Propranolol	*Increase dose
	Anti-heart failure Drugs	107.Bucindolol	Normal response expected
		108.Digoxin	*Decrease dose
	Diuretic Drugs	109.Bumetanide	Normal response expected
		110.Furosemide	Normal response expected
		111.Spirolactone	*Increase dose
		112.Hydrochlorothiazide	Normal response expected
		113.Torasemide	Normal response expected
		114.Indapamide	Normal response expected
	Statins	115.Atorvastatin	*Decrease dose
		116.Fluvastatin	*Decrease dose
		117.Pitavastatin	*Decrease dose
		118.Pravastatin	*Increase dose
		119.Rosuvastatin	*Decrease dose
		120.Simvastatin	*Decrease dose
	Anti-anginal Drugs	121.Nitroglycerin	*Consider alternatives or use with caution
	Anti-arrhythmic Drugs	122.Propafenone	Normal response expected
		123.Amiodarone	*Consider alternatives or use with caution
(11)Anti-gout Drugs		124.Allopurinol	Normal response expected
(12)Analgesic Drugs		125.Codeine	Normal response expected
		126.Morphine	*Increase dose
		127.Methadone	Normal response expected
		128.Oxycodone	Normal response expected
		129.Tramadol	Normal response expected
(13)Narcotic Drugs		130.Prilocaine	Normal response expected
		131.Lidocaine	Normal response expected

Adjusted dose should not exceed the permissible ranges of pediatrics.

*Medication recommendations are based on the gene variants on the report, other variants may also be influences of drug dose. If any adverse drug reactions had occured before, please consult doctor before use.

Statement

1. This report is only responsible for the specimen submitted. Any report without signature of the lab technician and the reviewer is invalid. Any alteration and deletion of the report is invalid.
2. Referring to the current clinical research results, this report only interprets the variants within the test range, without considering the influence of other factors, such as unknown gene mutation, weight, age, gender, drug interaction, food, environment, etc.
3. The report is only for clinical reference, not as the only basis for formulation, modification and adjustment of medication plan. The final medication plan of the subject shall be formulated by the clinician or clinical pharmacist.
4. The test results and recommendations for each drug are provided in the appendix, where the clinical annotation levels of evidence comes from the PharmGKB (https://www.pharmgkb.org/page/clinAnnLevels). According to the strength of evidence, it can be divided into six levels: level 1a, 1b, 2a, 2b, 3 and 4.

   Level 1A: annotation for a variant-drug combination in a CPIC or medical society-endorsed PGx guideline, or implemented at a PGRN site or in another major health system.

   Level 1B: annotation for a variant-drug combination where the preponderance of evidence shows an association. The association must be replicated in more than one cohort with significant p-values, and preferably will have a strong effect size.

   Level 2A: annotation for a variant-drug combination that qualifies for level 2B where the variant is within a VIP (Very Important Pharmacogene) as defined by PharmGKB. The variants in level 2A are in known pharmacogenes, so functional significance is more likely.

   Level 2B: annotation for a variant-drug combination with moderate evidence of an association. The association must be replicated but there may be some studies that do not show statistical significance, and/or the effect size may be small.

   Level 3: annotation for a variant-drug combination based on a single significant (not yet replicated) study or annotation for a variant-drug combination evaluated in multiple studies but lacking clear evidence of an association.

   Level 4: annotation based on a case report, non-significant study or in vitro, molecular or functional assay evidence only.

   Other sources: including FDA (U.S. Food and Drug Administration) drug instructions and other published research results.
5. If more than one gene locus is detected for a drug, the drug use recommendations in this report are drawn from the following rules: it is suggested that the drug use risk locus is prior to the normal drug use locus; the locus with high level of evidence is prior to the locus with low level of evidence.

6. The loci used for haplotype detection of HLA-A *31:01,HLA-B *58:01 and HLA-B *15:02 were rs17179220, rs78489254 and rs144012689, respectively. The detection range of some genes is shown in the table below.

Gene	Position	Haplotype
CYP2C19	c.681G>A,c.636G>A,c.-806C>T	*2,*3,*17
CYP2C9	c.430C>T,c.1075A>C	*2,*3
CYP2D6	full-gene-deletion,g.4180G>C,g.4172C>T/G,g.3435C>A,g.3384A>C,g.2988G>A,g.2850C>T,g.1846G>A,g.1758G>A/T,g.997C>T/G,g.984A>G,g.100C>T	*2,*4,*5,*10,*14,*41,*65,*69
CYP3A5	c.-253-1G>A	*3
NAT2	c.282C>T,c.341T>C,c.481C>T,c.590G>A,c.803G>A,c.857G>A	*4,*5,*6,*7,*12,*13
NUDT15	c.55_56insGAGTCG,c.52G>A,c.415C>T,c.416G>A	*2,*3,*4,*5,*6

Note: if the gene in the table does not detect the haplotype within the detection range, it is determined as * 1.

7. The laboratory reserves the right of final interpretation for the contents of this report. If you have any questions, please contact us within 7 working days after receiving the results.

Tested by : **Checked by :** **Report date :** 2020-03-09

Appendix Description of results

Antipyretic-Analgesic and Anti-Inflammatory Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
1	Ibuprofen	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have decreased metabolism of ibuprofen.	other source	*Decrease dose
2	Acetaminophen	UGT1A c.*339G>C	C/G	The subject can take acetaminophen according to the prescription or label instructions.	3	Normal response expected
		UGT1A c.*211T>C	C/T	The subject can take acetaminophen according to the prescription or label instructions.	3	
3	Pediatric Paracetamol,Atificial Cow-Bezoar and Chlorphenamine Maleate	UGT1A c.*339G>C	C/G	The subject can take acetaminophen according to the prescription or label instructions.	3	Normal response expected
		UGT1A c.*211T>C	C/T	The subject can take acetaminophen according to the prescription or label instructions.	3	
4	Pediatric Paracetamol and Amantadine Hydrochloride	UGT1A c.*211T>C	C/T	The subject can take acetaminophen according to the prescription or label instructions.	3	Normal response expected
		UGT1A c.*339G>C	C/G	The subject can take acetaminophen according to the prescription or label instructions.	3	
5	Paracetamol	UGT1A c.*339G>C	C/G	The subject can take acetaminophen according to the prescription or label instructions.	3	Normal response expected
		UGT1A c.*211T>C	C/T	The subject can take acetaminophen according to the prescription or label instructions.	3	

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
6	Aspirin	LTC4S c.-444A>C	A/A	The subject treated with aspirin may have a decreased, but not absent, risk of urticaria.	2B	*Consider alternatives or use with caution
		CHIA c.304G>A/C	G/G	The patient with asthma may have a decreased risk of aspirin-induced asthma.	3	
		ABCB1 c.3435T>C	C/T	The subject may have an increased risk of aspirin resistance.	other source	
7	Chlorphenamine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal metabolism of chlorphenamine.	other source	Normal response expected
8	Paracetamol, Pseudoephedrine Hydrochloride and Dextromethorphan Hydrobromide / Paracetamol, Pseudoephedrine Hydrochloride, Dextromethorphan Hydrobromide and Chlorpheniramine Maleate	UGT1A c.*339G>C	C/G	The subject can take acetaminophen according to the prescription or label instructions.	3	Normal response expected
		UGT1A c.*211T>C	C/T	The subject can take acetaminophen according to the prescription or label instructions.	3	
9	Indomethacin	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have an increased risk of gastrointestinal bleeding when treated with indomethacin.	other source	*Decrease dose
10	Diclofenac	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have an increased risk of gastrointestinal bleeding when treated with diclofenac.	2A	*Decrease dose
11	Ketoprofen	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have an increased risk of gastrointestinal bleeding when treated with ketoprofen.	other source	*Decrease dose
12	Piroxicam	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer, the plasma concentrations of piroxicam is higher.	FDA	*Decrease dose
13	Celecoxib	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have decreased metabolism of celecoxib.	2A	*Decrease dose

Anti-Infective Drugs

1. Antiviral Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
14	Oseltamivir	ABCB1 c.2677T>A/G	G/T	The subject treated with oseltamivir may have a decreased risk of neuropsychiatric adverse reactions.	other source	Normal response expected
		ABCB1 c.3435T>C	C/T	The subject treated with oseltamivir may have a decreased risk of neuropsychiatric adverse reactions.	other source	
15	Ribavirin	IFNL4 g.5710G>A	G/G	The patient with Hepatitis C genotype 1 may have higher response rates (SVR) to triple therapy (telaprevir, peginterferon alfa-2a/b and ribavirin).	1A	*Consult doctor before use
		IFNL4 g.1332A>C	A/A	The patient with HCV genotype 1 may have increased response (lower SVR) and shorter treatment cycle to peginterferon alfa and ribavirin therapy.	1B	
		ITPA c.124+21A>C	A/A	The patient with chronic hepatitis C may have an increased risk of anemia but a decreased risk of thrombocytopenia when taking peg interferon alfa-2b and ribavirin.	2B	
		ITPA c.94C>A/G	C/C	The patient with chronic hepatitis C may have an increased risk of anemia but a decreased risk of thrombocytopenia when taking peg interferon alfa-2b and ribavirin.	2B	
16	Peginterferon Alfa-2A	IFNL4 g.5710G>A	G/G	The patient with Hepatitis C genotype 1 may have higher response rates (SVR) to triple therapy (telaprevir, peginterferon alfa-2a/b and ribavirin).	1A	*Consult doctor before use
		IFNL4 g.1332A>C	A/A	The patient with HCV genotype 1 may have increased response (lower SVR) and shorter treatment cycle to peginterferon alfa and ribavirin therapy.	1B	
17	Peginterferon Alfa-2B	IFNL4 g.5710G>A	G/G	The patient with Hepatitis C genotype 1 may have higher response rates (SVR) to triple therapy (telaprevir, peginterferon alfa-2a/b and ribavirin).	1B	*Consult doctor before use
		IFNL4 g.1332A>C	A/A	The patient with HCV genotype 1 may have increased response (lower SVR) and shorter treatment cycle to peginterferon alfa and ribavirin therapy.	1B	
		ITPA c.124+21A>C	A/A	The patient with chronic hepatitis C may have an increased risk of anemia but a decreased risk of thrombocytopenia when taking peg interferon alfa-2b and ribavirin.	2B	
		ITPA c.94C>A/G	C/C	The patient with chronic hepatitis C may have an increased risk of anemia but a decreased risk of thrombocytopenia when taking peg interferon alfa-2b and ribavirin.	2B	

2. Sulfonamide antimicrobial Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
18	Sulfamethoxazole and Trimethoprim	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with sulfamethoxazole / trimethoprim (co-trimoxazole).	FDA	Normal response expected
19	Sinomin	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with sulfamethoxazole.	FDA	Normal response expected
20	Sulfadiazine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with sulfadiazine.	FDA	Normal response expected
21	Sulfasalazine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with sulfadiazine.	FDA	Normal response expected

3. Quinolone antimicrobial Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
22	Norfloxacin	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with norfloxacin.	FDA	Normal response expected

4. Nitrofurans antimicrobial Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
23	Nitrofurantoin	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with nitrofurantoin.	FDA	Normal response expected
24	Furazolidone	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with furazolidone.	other source	Normal response expected

5. Anti-tuberculostatic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
25	Streptomycin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
26	Isoniazide	NAT2	*4/*4	The subject is a NAT2 rapid acetylator and may have a lower, but not absent, risk of liver injury when treated with isoniazid.	2A	Normal response expected
27	Pyrazinamide	NAT2	*4/*4	The subject is a NAT2 rapid acetylator and may have a lower, but not absent, risk of liver injury when treated with Rifater (containing isoniazid, pyrazinamide and rifampin).	2A	Normal response expected
28	Rifampin	NAT2	*4/*4	The subject is a NAT2 rapid acetylator and may have a lower, but not absent, risk of liver injury when treated with Rifater (containing isoniazid, pyrazinamide and rifampin).	2A	Normal response expected

6. Antifungal Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
29	Voriconazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	1A	Normal response expected

7. Aminoglycoside antibiotics

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
30	Amikacin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
31	Netilmicin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
32	Sisomicin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
33	Etimicin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
34	Kanamycin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
35	Gentamicin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
36	Tobramycin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
37	Micronomicin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	
38	Neomycin	MT-RNR1 m.1555A>G	Wild-type	The subject with the 1555A allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	1B	Normal response expected
		MT-RNR1 m.1494C>T	Wild-type	The subject with the 1494C allele may have a lower, but not absent, risk of experiencing aminoglycoside-induced hearing loss.	2B	

Respiratory system Drugs

1. Anti-asthmatic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
39	Budesonide	CRHR1 c.1107+111C>T	C/C	The subject treated with budesonide may have a normal response.	2B	Normal response expected
40	Salbutamol	ADRB2 c.46A>G	A/A	The children with asthma may have a decreased response to salbutamol and may have an increased risk of asthma exacerbations.	2A	*Consider alternatives or use with caution
41	Formoterol	ADRB2 c.46A>G	A/A	The children with asthma may have a decreased response to formoterol, be alert to insufficient treatment.	other source	*Consider alternatives or use with caution
42	Salmeterol	ADRB2 c.46A>G	A/A	The children with asthma may have a decreased response to salmeterol, be alert to insufficient treatment.	2A	*Consider alternatives or use with caution
43	Montelukast	LTC4S c.-444A>C	A/A	The patient with asthma may have a normal response to montelukast.	3	Normal response expected
		LTA4H c.-1400C>T	T/T	The patient with asthma may have a normal response to montelukast.	3	
		ALOX5 c.432-6550A>G	G/G	The patient with asthma may have an increased response to montelukast.	3	

2. Antitussive Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
44	Pseudoephedrine Hydrochloride,Chlophenamine Maleate and Dextromethorphan Hydrobromide	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer.	4	Normal response expected
45	Dextromethorphan	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal metabolism of dextromethorphan.	4	Normal response expected

Antiparasitic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
46	Quinine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with quinine.	FDA	Normal response expected
47	Chloroquine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with pyrimethamine.	FDA	Normal response expected
48	Primaquine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with primaquine.	FDA	Normal response expected
49	Pyrimethamine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of hemolysis when treat with pyrimethamine.	3	Normal response expected

Digestive system Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
50	Esomeprazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	3	Normal response expected
51	Omeprazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	2A	Normal response expected
52	Lansoprazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	2A	Normal response expected
53	Rabeprazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	2A	Normal response expected
54	Pantoprazole	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	3	Normal response expected

Antiepileptic

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
55	Carbamazepine	HLA-A *31:01	Positive	The subject treated with carbamazepine may have an increased risk of Severe Cutaneous Adverse Reactions, such as Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis.	1A	*Consider alternatives or use with caution
		HLA-B *15:02	Negative	The subject treated with carbamazepine may have a decreased,but not absent, risk of Severe Cutaneous Adverse Reactions.	1A	
56	Divalproex Sodium	POLG c.1399G>A	G/G	The subject has a decreased risk of valproate-induced acute liver failure.	FDA	Normal response expected
57	Lamotrigine	UGT1A4 c.142T>G/A	G/T	The subject may have an increased metabolism of lamotrigine and a decreased serum concentration, as well as worse response to lamotrigine.	2B	*Increase dose
		SCN2A c.971-32A>G	A/A	The subject treated with lamotrihine may have an increased risk of drug resistance.	3	
58	Phenytoin	HLA-B *15:02	Negative	The subject treated with phenytoin may have a decreased,but not absent, risk of Severe Cutaneous Adverse Reactions.	1A	*Decrease dose
		CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have an increased risk of side effects when treated with phenytoin.	1A	
59	Oxcarbazepine	HLA-B *15:02	Negative	The subject treated with oxcarbazepine may have a decreased,but not absent, risk of Stevens-Johnson Syndrome (SJS).	1A	*Consider alternatives or use with caution
		SCN2A c.971-32A>G	A/A	The subject treated with oxcarbazepine may have an increased risk of drug resistance.	3	
60	Phenobarbital	CYP1A1 c.-30+606G>T	G/G	The promoter activity of CYP1A1 gene is normal. The subject may have a normal response when treated with phenobarbital.	3	*Consider alternatives or use with caution
		SCN2A c.56G>A	G/G	The subject may have a normal response when treated with phenobarbital.	3	
		ABCB1 c.3435T>C	C/T	The subject treated with phenobarbital may have an increased risk of drug resistance.	3	
61	Diazepam	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer and may have normal plasma concentrations of diazepam.	3	Normal response expected
62	Topiramate	SCN2A c.971-32A>G	A/A	The subject treated with topiramate may have an increased risk of drug resistance.	3	*Consider alternatives or use with caution
63	Levetiracetam	STXBP1 c.922A>T	A/A	The subject treated with levetiracetam may have a normal response.	other source	Normal response expected

Antidiabetic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
64	Metformin	C11orf65 c.175-5285G>T	G/T	The patient with Diabetes Mellitus, Type 2 may have a decreased response to metformin.	2B	*Adjust dose base on clinical response
		SLC47A1 c.922-158G>A	G/G	The patient with diabetes mellitus or polycystic ovarian syndrome may have a decreased response to metformin.	3	
		SLC22A2 c.808T>G	G/G	The subject may have normal clearance of metformin.	3	
		SLC22A1 c.1222A>C/G	A/G	The subject treated with metformin may have a poor response and may have an increased risk for gastrointestinal side effects.	3	
65	Glibenclamide	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have a decreased risk of hypoglycemia.	3	Normal response expected
		G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency and may have a decreased risk of hemolysis or hemolytic anemia.	FDA	
66	Glipizide	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have a decreased risk of hypoglycemia.	3	Normal response expected
		G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency and may have a decreased risk of hemolysis or hemolytic anemia.	FDA	
67	Gliquidone	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have a decreased risk of hypoglycemia.	3	Normal response expected
		G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency and may have a decreased risk of hemolysis or hemolytic anemia.	FDA	
68	Glimepiride	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have a decreased risk of hypoglycemia.	3	Normal response expected
		G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency and may have a decreased risk of hemolysis or hemolytic anemia.	FDA	
69	Gliclazide	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have a decreased risk of hypoglycemia.	3	Normal response expected
		G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency and may have a decreased risk of hemolysis or hemolytic anemia.	FDA	
70	Rosiglitazone	SLCO1B1 c.521T>C	C/T	The activity of drug transporter encoded by SLCO1B1 gene is decreased. The subject may have higher plasma concentrations of rosiglitazone.	3	*Decrease dose
71	Repaglinide	SLCO1B1 c.521T>C	C/T	The activity of drug transporter encoded by SLCO1B1 gene is decreased. The subject may have higher plasma concentrations of repaglinide.	3	*Decrease dose

Immunosuppressants

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
72	Tacrolimus	CYP3A5	*3/*3	The subject is a CYP3A5 poor metabolizer. Initiate therapy with standard recommended dose. Use therapeutic drug monitoring to guide dose adjustments.	1A	Normal response expected
73	Sirolimus	CYP3A5	*3/*3	The subject is a CYP3A5 poor metabolizer. Initiate therapy with recommended starting dose.	2A	Normal response expected
74	Ciclosporin	CYP3A5	*3/*3	The subject is a CYP3A5 poor metabolizer and may require a normal dose of cyclosporine to reach target blood concentration.	2B	Normal response expected
75	Mercaptopurine	TPMT c.719A>G/C	A/A	The subject is a TPMT normal metabolizer and may have normal concentrations of thioguanine nucleotides (TGN) metabolites. Start with normal starting dose and and adjust doses of mercaptopurine without any special emphasis on mercaptopurine compared to other agents. Allow at least 2 weeks to reach steady-state after each dose adjustment.	1A	*Decrease dose
		NUDT15	*1/*5	The subject is a NUDT15 intermediate metabolizer and may have increased risk of thiopurine-related leukopenia, neutropenia, myelosuppression. Start with reduced starting doses (30-80% of normal dose) and adjust doses of mercaptopurine based on degree of myelosuppression and disease-specific guidelines. Allow 2-4 weeks to reach steady-state after each dose adjustment. If myelosuppression occurs and depending on other therapy, emphasis should be on reducing mercaptopurine over other agents. If normal starting dose is already < 75 mg/m2/day or 1.5 mg/kg/day, dose reduction may not be recommended.	2B	
76	Thioguanine	TPMT c.719A>G/C	A/A	The subject is a TPMT normal metabolizer and may have normal concentrations of thioguanine nucleotides (TGN) metabolites. Start with normal starting dose and adjust doses of thioguanine and of other myelosuppressive therapy without any special emphasis on thioguanine. Allow 2 weeks to reach steady-state after each dose adjustment.	1A	*Decrease dose
		NUDT15	*1/*5	The subject is a NUDT15 intermediate metabolizer and may have increased risk of thiopurine-related leukopenia, neutropenia, myelosuppression. Start with reduced doses (50% to 80% of normal dose) and adjust doses of thioguanine based on degree of myelosuppression and disease-specific guidelines. Allow 2-4 weeks to reach steady-state after each dose adjustment. If myelosuppression occurs, and depending on other therapy, emphasis should be on reducing thioguanine over other agents.	2B	
77	Azathioprine	NUDT15	*1/*5	The subject is a NUDT15 intermediate metabolizer and may have increased risk of thiopurine-related leukopenia, neutropenia, myelosuppression. Start with reduced starting doses (30-80% of normal dose) and adjust doses of azathioprine based on degree of myelosuppression and disease-specific guidelines. Allow 2-4 weeks to reach steady-state after each dose adjustment.	1A	*Decrease dose
		TPMT c.719A>G/C	A/A	The subject is a TPMT normal metabolizer and may have normal concentrations of thioguanine nucleotides (TGN) metabolites. Start with normal starting dose and and adjust doses of azathioprine based on disease-specific guidelines. Allow 2 weeks to reach steady state after each dose adjustment.	1A	

Psychiatric Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
78	Citalopram	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended standard dosing.	1A	Normal response expected
79	Escitalopram	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	1A	Normal response expected
80	Paroxetine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and has normal metabolism of paroxetine. The serum concentrations may be normal. Initiate therapy with recommended standard dosing.	1A	Normal response expected
		HTR1A c.-1019G>C	C/C	The patient with panic disorder who is treated with paroxetine may have a normal response.	2B	
81	Sertraline	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	1A	Normal response expected
82	Venlafaxine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal clearance of mirtazapine. The plasma concentrations of mirtazapine may be normal.	2A	Normal response expected
83	Amitriptyline	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and has normal metabolism of amitriptyline. The plasma concentrations of active drug may be normal. Initiate therapy with recommended starting dose.	1A	Normal response expected
		CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	1A	
84	Doxepin	CYP2C19	*1/*1	The subject is a CYP2C19 normal metabolizer. Initiate therapy with recommended starting dose.	1A	Normal response expected
		CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and has normal metabolism of doxepin. The plasma concentrations of active drug may be normal. Initiate therapy with recommended starting dose.	1A	

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
85	Mirtazapine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal clearance of mirtazapine. The plasma concentrations of mirtazapine may be normal.	2A	Normal response expected
86	Desipramine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and has normal metabolism of desipramine. The plasma concentrations of active drug may be normal. Initiate therapy with recommended starting dose.	1A	Normal response expected
87	Bupropion	ANKK1 c.2137G>A	A/G	The subject has decreased response to bupropion and may be less likely to quit smoking.	3	*Consider alternatives or use with caution
88	Oxazepam	UGT2B15 c.253T>G	G/G	The subject treated with oxazepam may have increased clearance and decreased serum concentrations.	2B	*Increase dose
89	Lorazepam	UGT2B15 c.253T>G	G/G	The subject who is treated with lorazepam may have increased clearance and decreased serum concentrations.	2B	*Increase dose
90	Risperidone	DRD2 c.-585A>G	A/A	The patient with schizophrenia may be more likely to have improvement in symptoms when treated with risperidone.	2A	Normal response expected
91	Haloperidol	COMT c.472G>A	G/G	The patient treated with schizophrenia may have a decreased risk for developing extrapyramidal symptoms when treated with haloperidol.	3	Normal response expected
92	Clozapine	COMT c.472G>A	G/G	The patient with schizophrenia may have a normal response when treated with clozapine.	3	Normal response expected
93	Olanzapine	PPARG c.34C>G	C/C	The patient with schizophrenia may have lower weight gain when treated with olanzapine.	3	Normal response expected

Cardiovascular and Cerebrovascular Diseases Drugs

1. Antiplatelet Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
6	Aspirin	LTC4S c.-444A>C	A/A	The subject who is treated with aspirin may have a decreased, but not absent, risk of urticaria.	2B	*Consider alternatives or use with caution
		CHIA c.304G>A/C	G/G	Patient with asthma may have a decreased risk of aspirin induced asthma.	3	
		ABCB1 c.3435T>C	C/T	The subject who is treated with aspirin may be more likely to suffer from aspirin resistance.	other source	
94	Clopidogrel	CYP2C19	*1/*1	The subject is a CYP2C9 normal metabolizer and may have normal platelet inhibition. Initiate therapy with recommended starting dose.	1A	Normal response expected

2. Anti-thrombotic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
95	Warfarin	VKORC1 c.-1639G>A	A/A	The subject have a normal response to warfarin and may require a normal dose.	1A	*Consult doctor before use
		CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer.	1A	
		CYP4F2 c.1297G>A	G/G	The subjectt have a normal metabolism of vitamin K1 to hydroxyvitamin K1 and may require a normal dose.	1A	

*According to the FDA Label for warfarin, the expected maintenance daily dose for adult is 0.5-2mg. Pediatric use is based on adult data and recommendations, and available limited pediatric data.

3. Anti-hypertensive Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
96	Benazepril	ADRB2 c.46A>G	A/A	The subject may have a poor response to benazepril.	3	*Increase dose
		ACE	I/I	The subject may have a poor response to benazepril.	3	
97	Fosinopril	ACE	I/I	The hypertension patient may have a poor response to fosinopril.	other source	*Increase dose
98	Captopril	ACE	I/I	The subject may have a normal response to captopril.	2A	Normal response expected

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
99	Lisinopril	ACE	I/I	The subject may have a poor response to lisinopril.	3	*Increase dose
100	Perindopril	AGTR1 c.*86A>C	A/A	The subject may have a poor response to perindopril.	3	*Increase dose
		ACE	I/I	The subject may have a poor response to perindopril.	3	
101	Enalapril	ACE	I/I	The subject may have a poor response to enalapril.	3	*Increase dose
102	Carvedilol	UGT1A1 c.211G>A	A/G	The patient with angina or heart failure may have decreased glucuronidation of carvedilol.	3	*Decrease dose
		CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal clearance of carvedilol. The plasma concentrations of mirtazapine may be normal.	3	
103	Candesartan	AGTR1 c.*86A>C	A/A	The subject may have a normal response to candesartan.	3	Normal response expected
104	Losartan	CYP2C9	*1/*3	The subject is a CYP2C9 intermediate metabolizer and may have decreased metabolism of losartan.	3	*Increase dose
		AGTR1 c.*86A>C	A/A	The subject may have a normal response to losartan.	3	
105	Metoprolol	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal conversion of metoprolol. The plasma concentrations of metoprolol may be normal. Initiate therapy with recommended standard dosing.	2A	Normal response expected
		ADRB1 c.1165G>C	C/C	The subject may have a normal response to metoprolol.	3	
106	Propranolol	ADRB2 c.46A>G	A/A	The subject may have a poor response to propranolol.	3	*Increase dose

4. Anti-heart failure Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
107	Bucindolol	ADRB1 c.1165G>C	C/C	The subject may have a normal response to bucindolol.	3	Normal response expected
108	Digoxin	ABCB1 c.3435T>C	C/T	The subject may have increased plasma concentrations of digoxin.	2A	*Decrease dose

5. Diuretic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
109	Bumetanide	ADD1 c.1378G>T/A	G/T	The subject may have a normal response to bumetanide.	3	Normal response expected
110	Furosemide	ADD1 c.1378G>T/A	G/T	The subject may have a normal response to furosemide.	3	Normal response expected
111	Spirolactone	ADD1 c.1378G>T/A	G/T	The patient with liver cirrhosis may have a poor response to spironolactone.	2B	*Increase dose
112	Hydrochlorothiazide	ADD1 c.1378G>T/A	G/T	The subject may have a normal response to hydrochlorothiazide.	3	Normal response expected
113	Torasemide	ADD1 c.1378G>T/A	G/T	The subject may have a normal response to torasemide.	3	Normal response expected
114	Indapamide	ADD1 c.1378G>T/A	G/T	The subject may have a normal response to indapamide.	other source	Normal response expected

6. Statins

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
115	Atorvastatin	SLCO1B1 c.521T>C	C/T	The subject treated with atorvastatin may have higher serum concentrations, which will increase the risk of composite adverse events. Consider a reduced dose and the maximum dose should not exceed 40 mg/day.	other source	*Decrease dose
116	Fluvastatin	SLCO1B1 c.521T>C	C/T	The subject who is treated with fluvastatin may have higher serum concentrations and an increased risk of liver dysfunction and rhabdomyolysis.	other source	*Decrease dose
117	Pitavastatin	SLCO1B1 c.521T>C	C/T	The subject who is treated with pitavastatin may have higher serum concentrations and an increased risk of liver dysfunction and rhabdomyolysis.	other source	*Decrease dose
118	Pravastatin	APOE	E3/E3	The subject may have a poor response to pravastatin.	3	*Increase dose
		LDLR c.*666T>C	T/T	The subject may have a normal response to pravastatin.	3	
119	Rosuvastatin	SLCO1B1 c.521T>C	C/T	The subject who is treated with rosuvastatin may have higher serum concentrations and an increased risk of statin-related myopathy.	2A	*Decrease dose
120	Simvastatin	SLCO1B1 c.521T>C	C/T	The subject who is treated with simvastatin may have higher serum concentrations and an increased risk of statin-related myopathy.	1A	*Decrease dose

7. Anti-anginal Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
121	Nitroglycerin	ALDH2 c.1510G>A	A/G	The subject may have a decreased enzyme activity of ALDH2, which may decrease the metabolism of nitroglycerin. The response of nitroglycerin to myocardial ischemia is decreased.	other source	*Consider alternatives or use with caution

8. Anti-arrhythmic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
122	Propafenone	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer. The plasma concentrations of propafenone and the active metabolite 5-hydroxypropafenone may be normal. Initiate therapy with recommended standard dosing.	2A	Normal response expected
123	Amiodarone	NOS1AP c.178-13122C>T	C/T	The subject may have an increased risk of drug-induced ventricular arrhythmia and QT prolongation when treated with amiodarone.	3	*Consider alternatives or use with caution

Anti-gout Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
124	Allopurinol	HLA-B *58:01	Negative	The subject has a decreased risk of Severe Cutaneous Adverse Reactions when treated with allopurinol.	1A	Normal response expected

Analgesic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
125	Codeine	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal morphine formation. Use label recommended age- or weight-specific dosing.	1A	Normal response expected
126	Morphine	OPRM1 c.118A>G	G/G	The subject may have a decreased response to morphine.	2B	*Increase dose
127	Methadone	CYP2B6 c.516G>T	G/G	The subject may have a normal metabolism to morphine.	2A	Normal response expected
		ABCB1 c.3435T>C	C/T	The subject may have a normal response to morphine.	2B	
128	Oxycodone	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer.	2A	Normal response expected
129	Tramadol	CYP2D6	*1/*10	The subject is a CYP2D6 normal metabolizer and may have normal conversion of tramadol. The plasma concentrations of tramadol may be normal. Initiate therapy with recommended standard dosing.	1B	Normal response expected

Narcotic Drugs

No.	Drug	Gene	Result	Interpretation	Level	Recommendation
130	Prilocaine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of methemoglobinemia when treat with prilocaine.	FDA	Normal response expected
131	Lidocaine	G6PD	Without G6PD mutation	The subject doesn't have a mutation associated with G6PD deficiency, and may have a reduced, but not absent, risk of methemoglobinemia when treat with lidocaine.	FDA	Normal response expected

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