

HLA

Related CPIC guideline(s):

Gene(s)	CYP2C9, HLA-B
All possible diplotype(s)	[*1/*2, Other/Other]
# missing variants (CYP2C9)	0/53
HLA-B	Tool(s) detecting Other/Other = ATHLATES,HLA-HD,KOURAMI

Drug: phenytoin

Diplotype: [*1/*2, Other/Other]

Implications	Reduced phenytoin metabolism; higher plasma concentrations will increase probability of toxicities.
Metabolizers Status	N/A, N/A
Phenotype (Genotype)	An individual carrying one normal activity allele plus one decreased or no function allele.
Recommendations	Consider 25% reduction of recommended starting maintenance dosed (based on patient's clinical characteristics). Subsequent maintenance doses should be adjusted according to therapeutic drug monitoring and response.
Guideline strength	Moderate


Gene(s)	HLA-A, HLA-B
All possible diplotype(s)	[Other/Other, Other/Other]
HLA-A	Tool(s) detecting Other/Other = ATHLATES,HLA-HD,KOURAMI
HLA-B	Tool(s) detecting Other/Other = ATHLATES,HLA-HD,KOURAMI

Drug: carbamazepine


Diplotype: [Other/Other, Other/Other]

Implications	Normal or reduced risk of carbamazepine-associated cutaneous adverse reactions
Metabolizers Status	N/A, N/A
Phenotype (Genotype)	"Normal" or reduced risk of carbamazepine-associated cutaneous adverse reactions in the absence of HLA-B*15:02 and HLA-A*31:01 alleles (often reported as "negative" on a genotyping test)
Recommendations	Use carbamazepine per standard dosing guidelines
Guideline strength	Strong

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Gene(s)	HLA-B
All possible diplotype(s)	Other/Other
HLA-B	Tool(s) detecting Other/Other = ATHLATES,HLA-HD,KOURAMI

Drug: abacavir**Diplotype: Other/Other**

Implications	Low or reduced risk of abacavir hypersensitivity
Metabolizers Status	N/A
Phenotype (Genotype)	Very low risk of hypersensitivity (~94% of patients) in the absence of *57:01 alleles (reported as "negative" on a genotyping test)
Recommendations	Use abacavir per standard dosing guidelines
Guideline strength	Strong


Drug: allopurinol**Diplotype: Other/Other**


Implications	Low or reduced risk of allopurinol-induced SCAR
Metabolizers Status	N/A
Phenotype (Genotype)	Low or reduced risk of allopurinol SCAR (absence of *58:01 alleles (reported as "negative" on a genotyping test))
Recommendations	Use allopurinol per standard dosing guidelines.
Guideline strength	Strong


Drug: oxcarbazepine**Diplotype: Other/Other**

Implications	Normal or reduced risk of oxcarbazepine-associated cutaneous adverse reactions
Metabolizers Status	N/A
Phenotype (Genotype)	"Normal" or reduced risk of oxcarbazepine-associated cutaneous adverse reactions in the absence of HLA-B*15:02 alleles (often reported as "negative" on a genotyping test)
Recommendations	Use oxcarbazepine per standard dosing guidelines
Guideline strength	Strong

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Related publication(s) for HLA-ADR association:

HLA-A*01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Clozapine : 1 publication(s)

agranulocytosis	Caucasian	Schizophrenia					7 / 31	17 / 77		11266078
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HLA-A*01:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.76	35 / 134		37 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.38	3 / 134		21 / 107	21570397

Antibacterial drugs : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					3 / 24		7 / 80	31089385
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					2 / 20		7 / 80	31089385


Antiepileptic drugs : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.308	5.444 (0.311 - 95.21)			1 / 10	1 / 50		24856347
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Epilepsy					5 / 34		7 / 80	31089385


Carbamazepine : 5 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS)	Japanese	Epilepsy					0 / 61	6 / 376		21149285
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.33	6.14 (0.24 - 155.12)	0.21	5.65 (0.57 - 55.86)	1 / 36	0 / 64	3 / 528	22348435

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Carbamazepine : 5 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	1	3.13 (0.12 - 80.69)			1 / 24	0 / 24		22348435
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	European	Epilepsy			0.503	2.2 (1.1 - 4.7)	14 / 28		2731 / 8862	30972788
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	European	Epilepsy			0.06	3.3 (1.5 - 7)	14 / 28		124 / 529	30972788

EGF receptor inhibitors : 1 publication(s)

maculopapular exanthema (MPE)	Unknown	Cancer	0.4008	1.446 (0.472 - 4.428)			4 / 38	25 / 172		23057547
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Lamotrigine : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	1	2 (0.04 - 78.77)	0.976	2.03 (0.07 - 29.33)	1 / 3	2 / 10	50 / 253	27888155
drug-induced hypersensitivity syndrome (DIHS)	Caucasian	Epilepsy	1	2 (0.04 - 78.77)	1	2.03 (0.07 - 29.33)	1 / 3	2 / 10	50 / 253	27888155

Levetiracetam : 1 publication(s)

maculopapular eruption (MPE)	Indian	Epilepsy	1	0.58 (0.02 - 13.05)			0 / 10	3 / 50		28101480
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NSAID and 'multi-ingredient cold medication' : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complications	Diverse	Common cold			0.17		2 / 39		20 / 133	28278336
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HLA-A*11 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Tetanus antitoxin : 1 publication(s)

maculopapular eruption (MPE)	Han Chinese	Tetanus			0.12	0.24 (0.07 - 0.89)	3 / 15	/ 118	143 / 283	27749688
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HLA-A*11:01 (No. of detecting tools = 2/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			0.26396	0.33	8 / 134		19 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.97	4 / 48		11 / 121	21570397

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Antibacterial drugs : 2 publication(s)

Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections	0.02			0 / 24	16 / 80	31089385
Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections				1 / 20	16 / 80	31089385

Antiepileptic drugs : 1 publication(s)

Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Epilepsy	0.003			0 / 34	16 / 80	31089385
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Carbamazepine : 11 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy		0.1 (0.05 - 0.2)			13 / 112	83 / 152		24268988
drug-induced hypersensitivity syndrome (DIHS)	Han Chinese	Epilepsy		1.9 (0.7 - 4.9)			16 / 23	83 / 152		24268988
maculopapular exanthema (MPE)	Han Chinese	Epilepsy		0.74 (0.4 - 1.4)			24 / 51	83 / 152		24268988
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy		2.68 (1.4 - 5.1)			42 / 60	67 / 144		16538176
drug-induced hypersensitivity syndrome (DIHS)	Han Chinese	Epilepsy		0.99 (0.3 - 3)			6 / 13	67 / 144		16538176
maculopapular exanthema (MPE)	Han Chinese	Epilepsy		0.58 (0.2 - 1.6)			6 / 18	67 / 144		16538176
maculopapular exanthema (MPE)	Han Chinese	Epilepsy	0.931		0.769		22 / 40	28 / 52	37 / 72	23830818
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS)	Japanese	Epilepsy					7 / 61	68 / 376		21149285
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.54	0.75 (0.3 - 1.89)	0.86	1.07 (0.49 - 2.38)	9 / 36	22 / 64	141 / 528	22348435
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.38	0.6 (0.19 - 1.9)			9 / 24	12 / 24		22348435
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	0.002	63.89 (2.46 - 45610000)	0.007	28.29 (1.42 - 180.77)	2 / 2	4 / 23	38 / 253	27888155

Clarithromycin : 1 publication(s)

drug-induced skin reaction (DISI)	Han Chinese	Bacterial infections	0.38	4.55 (1.13 - 18.35)	7.22	1.47 (0.46 - 4.75)	7 / 12	8 / 34	138 / 283	29575644
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Lamotrigine : 2 publication(s)


maculopapular exanthema (MPE)	Han Chinese	Epilepsy	0.52		0.538		19 / 43	16 / 44	37 / 72	23830818
Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	0.395	10.5 (0.12 - 11530000)	0.784	2.83 (0.1 - 41.29)	1 / 3	0 / 10	38 / 253	27888155


Levetiracetam : 1 publication(s)

maculopapular eruption (MPE)	Indian	Epilepsy	0.33	0.23 (0.02 - 2.36)			1 / 10	13 / 50	28101480
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NSAID and 'multi-ingredient cold medication' : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complications	Diverse	Common cold		0.00791	0.0743 (0.00438 - 1.26)	0 / 39		19 / 133	28278336
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Phenytoin : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.3856	1.5 (0.6 - 3.6)		14 / 26	49 / 113		20235791	
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	1	1.04 (0.04 - 14.68)	1	0.71 (0.03 - 5.85)	1 / 2	3 / 28	38 / 253	27888155

Tetanus antitoxin : 1 publication(s)

maculopapular eruption (MPE)	Han Chinese	Tetanus		0.21	0.26 (0.07 - 0.95)	3 / 15	/ 118	138 / 283	27749688
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HLA-B*08:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.68	28 / 134		31 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.49	3 / 48		16 / 121	21570397

Antibacterial drugs : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					0 / 24		2 / 80	31089385
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					1 / 20		2 / 80	31089385


Antiepileptic drugs : 1 publication(s)


Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Epilepsy					4 / 34		2 / 80	31089385
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Carbamazepine : 3 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS)	Vietnamese	Epilepsy					0 / 38	1 / 25		25938071
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	European	Epilepsy		0.348		1.5 (0.7 - 3.5)	8 / 28		1835 / 8862	30972788
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	European	Epilepsy		0.113		2.1 (0.9 - 4.9)	8 / 28		85 / 529	30972788

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EGF receptor inhibitors : 1 publication(s)

maculopapular exanthema (MPE)	Unknown	Cancer	0.3929	0.638 (0.194 - 2.097)		4 / 38	12 / 172		23057547
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Lamotrigine : 1 publication(s)

drug-induced hypersensitivity syndrome (DIHS)	Caucasian	Epilepsy	0.114	12.6 (0.27 - 11530000)	0.716	3.22 (0.11 - 47.14)	1 / 3	0 / 10	34 / 253	27888155
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NSAID and 'multi-ingredient cold medication' : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complications	Diverse	Common cold			0.0483		1 / 39		20 / 133	28278336
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Phenytoin : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	1	1.63 (0.05 - 28.75)	1	0.81 (0.04 - 6.7)	1 / 2	2 / 28	34 / 253	27888155
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HLA-B*56:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	3.59	6 / 134		1 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.49	0 / 48		2 / 121	21570397

Antibacterial drugs : 2 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					1 / 24		1 / 80	31089385
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Bacterial infections					0 / 20		1 / 80	31089385


Antiepileptic drugs : 1 publication(s)


Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),acute generalized exanthematous pustulosis (AGEP)	Unknown	Epilepsy					0 / 34		1 / 80	31089385
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Carbamazepine : 3 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS),maculopapular exanthema (MPE)	Japanese	Epilepsy	0.532	2.286 (0.133 - 39.203)			1 / 15	1 / 33		22211527
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.48	0.28 (0.01 - 7.67)			0 / 13	1 / 12		22348435
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Thai	Epilepsy	0.3055	3.15 (0.31 - 31.62)			3 / 42	1 / 42		20345939

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NSAID and 'multi-ingredient cold medication' : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complicatoin	Diverse	Common cold		0.575		0 / 39	4 / 133	28278336
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Oxcarbazepine : 1 publication(s)

maculopapular exanthema (MPE)	Han Chinese	Epilepsy	0.33	6.16 (0.24 - 156.27)	0.07	22.85 (2.01 - 259.72)	1 / 14	0 / 28	2 / 1236	23829937
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Phenytoin : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.4654	2.2 (0.2 - 25.5)			1 / 26	2 / 113		20235791
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HLA-C*01:02 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Carbamazepine : 6 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.0086	0.26 (0.1 - 0.6)			8 / 60	54 / 144		16538176
drug-induced hypersensitivity syndrome (DIHS)	Han Chinese	Epilepsy		1.04 (0.3 - 3.2)			5 / 13	54 / 144		16538176
maculopapular exanthema (MPE)	Han Chinese	Epilepsy		1.67 (0.6 - 4.3)			9 / 18	54 / 144		16538176
Stevens-Johnson syndrome (SJS)	Korean	Epilepsy		2.1 (0.4 - 10.8)			3 / 7	13 / 50		21917426
drug-induced hypersensitivity syndrome (DIHS)	Korean	Epilepsy		0.6 (0.2 - 2.5)			3 / 17	13 / 50		21917426
drug-induced skin reaction (DISI)	Korean	Epilepsy		1.3 (0.4 - 4.2)			6 / 24	13 / 50		21917426

Clarithromycin : 1 publication(s)

drug-induced skin reaction (DISI)	Han Chinese	Bacterial infections	0.21	5.4 (1.31 - 22.28)	0.73	3.05 (0.94 - 9.88)	7 / 12	7 / 34	89 / 283	29575644
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Lamotrigine : 1 publication(s)

maculopapular eruption (MPE)	Korean	Epilepsy	0.086	2.96 (0.92 - 9.53)	0.033	2.68 (1.11 - 6.5)	12 / 21	9 / 29	161 / 485	26282450
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NSAID and 'multi-ingredient cold medication' : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complicatoin	Diverse	Common cold			0.686		1 / 39		8 / 133	28278336
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Phenytoin : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.1103	0.4 (0.1 - 1.2)			5 / 26	41 / 113		20235791
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Tetanus antitoxin : 1 publication(s)

maculopapular eruption (MPE)	Han Chinese	Tetanus			0.09		8 / 15	/ 118	88 / 283	27749688
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HLA-C*07 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Clozapine : 1 publication(s)										
agranulocytosis	Caucasian	Schizophrenia	0.02				20 / 31	30 / 77		11266078

HLA-C*07:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
EGF receptor inhibitors : 1 publication(s)										
maculopapular exanthema (MPE)	Unknown	Cancer	0.1241	0.424 (0.176 - 1.023)			9 / 38	20 / 173		23057547
Lamotrigine : 3 publication(s)										
Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	0.846	4.5 (0.08 - 327.95)	1	1.26 (0.04 - 18.02)	1 / 3	1 / 10	72 / 253	27888155
drug-induced hypersensitivity syndrome (DIHS)	Caucasian	Epilepsy	0.217	18 (0.47 - 3603.25)	0.403	5.03 (0.35 - 142.38)	2 / 3	1 / 10	72 / 253	27888155
maculopapular eruption (MPE)	Korean	Epilepsy	0.254		1		0 / 21	3 / 29	3 / 485	26282450
NSAID and 'multi-ingredient cold medication' : 1 publication(s)										
Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),severe ocular complicatoins	Diverse	Common cold			0.555		10 / 39		43 / 133	28278336


Phenytoin : 2 publication(s)

Stevens–Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Caucasian	Epilepsy	0.754	1.83 (0.26 - 12.6)	1	1.26 (0.24 - 5.86)	3 / 2	6 / 28	72 / 253	27888155
drug-induced hypersensitivity syndrome (DIHS)	Caucasian	Epilepsy	1	0.57 (0.02 - 7.71)	1	0.63 (0.03 - 6.11)	1 / 5	7 / 28	72 / 253	27888155


HLA-DPB1*04:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Bucillamine : 1 publication(s)										
bucillamine-induced proteinuria	Japanese	Rheumatoid arthritis		1.02			2 / 25	36 / 460		24899791

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HLA-DPB1*14:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Bucillamine : 1 publication(s)										
bucillamine-induced proteinuria	Japanese	Rheumatoid arthritis		0.5			0 / 25	17 / 460		24899791

HLA-DQA1*01:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Amoxicillin-clavulanate : 2 publication(s)										
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.62	27 / 134		35 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.79	14 / 48		45 / 121	21570397


HLA-DQA1*05:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Amoxicillin-clavulanate : 2 publication(s)										
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.73	51 / 134		53 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.98	25 / 48		63 / 121	21570397


HLA-DQB1*02:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
Amoxicillin-clavulanate : 2 publication(s)										
drug induced liver injury (DILI)	Caucasian	Bacterial infections			0.4724	0.55	42 / 134		49 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.64	19 / 48		61 / 121	21570397

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Clozapine : 1 publication(s)

agranulocytosis	Caucasian	Schizophrenia	0.07	2.22 (0.92 - 5.36)			13 / 30	20 / 77		11146763
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HLA-DQB1*05:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.65	23 / 134		30 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.69	10 / 48		36 / 121	21570397

Bucillamine : 1 publication(s)

bucillamine-induced proteinuria	Japanese	Rheumatoid arthritis		0.77			3 / 25	69 / 460		24899791
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Oxcarbazepine : 1 publication(s)

maculopapular exanthema (MPE)	Korean	Epilepsy	0.254	0.23 (0.03 - 1.95)	0.012	0.13 (0.02 - 0.93)	1 / 40	7 / 70	82 / 485	27666425
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HLA-DRB1*01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Flucloxacillin : 1 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections	0.459				7 / 51	13 / 64		19483685
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HLA-DRB1*01:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Amoxicillin-clavulanate : 2 publication(s)


drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.68	18 / 134		23 / 107	21570397
drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.75	4 / 48		14 / 121	21570397


Antiepileptic drugs : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.167	10.2 (0.842 - 123.558)			1 / 10	0 / 50		24856347
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Bucillamine : 1 publication(s)

bucillamine-induced proteinuria	Japanese	Rheumatoid arthritis	0.83		3 / 25	65 / 460	24899791
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Carbamazepine : 2 publication(s)

maculopapular exanthema (MPE)	Han Chinese	Epilepsy	0.169	0.056	4 / 40	1 / 52	1 / 72	23830818
Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.013	14 (1.53 - 128.1)	4 / 54	1 / 176		28476759

Clozapine : 1 publication(s)

agranulocytosis	Caucasian	Schizophrenia	0.06		3 / 31	20 / 77	11266078
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Co-trimoxazole : 1 publication(s)

maculopapular exanthema (MPE),Stevens-Johnson syndrome (SJS)	Caucasian	HIV			11 / 53	12 / 83	19374512
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EGF receptor inhibitors : 1 publication(s)

maculopapular exanthema (MPE)	Unknown	Cancer	0.5782	0.812 (0.254 - 2.6)	4 / 38	15 / 173	23057547
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Nevirapine : 2 publication(s)

drug-induced hypersensitivity syndrome (DIHS)	Diverse	HIV	0.14	0 / 54	3 / 103	23328091	
drug-induced skin reaction (DISI),drug induced liver injury (DILI)	Caucasian	HIV		0 / 26	3 / 72	7 / 164	16868443

HLA-DRB1*03 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Flucloxacillin : 1 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections	0.557				16 / 51	24 / 64	19483685
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HLA-DRB1*03:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Allopurinol : 1 publication(s)

Stevens-Johnson syndrome (SJS),toxic epidermal necrolysis (TEN),drug-induced hypersensitivity syndrome (DIHS)	Han Chinese	Gout	0.0000028	12.7	0.00085	10.3	33 / 51	17 / 135	14 / 93	15743917
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections			1	0.71	30 / 134		31 / 107	21570397
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Amoxicillin-clavulanate : 2 publication(s)

drug induced liver injury (DILI)	Caucasian	Bacterial infections	1	0.83	10 / 48	29 / 121	21570397
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Carbamazepine : 1 publication(s)

maculopapular exanthema (MPE)	Han Chinese	Epilepsy	0.024	0.75	3 / 40	14 / 52	8 / 72	23830818
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Clozapine : 1 publication(s)

agranulocytosis	Caucasian	Schizophrenia			10 / 31	14 / 77	11266078
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Co-trimoxazole : 1 publication(s)

maculopapular exanthema (MPE), Stevens-Johnson syndrome (SJS)	Caucasian	HIV			13 / 53	17 / 83	19374512
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Nevirapine : 1 publication(s)

drug-induced hypersensitivity syndrome (DIHS)	Diverse	HIV	0.086		4 / 54	15 / 103	23328091
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Phenytoin : 1 publication(s)

Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN)	Han Chinese	Epilepsy	0.4618	0.3 (0 - 2.7)	1 / 26	12 / 113	20235791
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HLA-DRB3*01:01 (No. of detecting tools = 3/3)

ADR	Cohort ethnicity	Patient disease	p-value Patients and drug exposed controls	Odds ratio (95% confidence intervals) Patients and drug exposed controls	p-value Patients and population controls	Odds ratio (95% confidence intervals) Patients and population	Patient - carrier/allele frequency	Drug Exposed Controls - carrier/allele frequency	Population Controls - carrier/allele frequency	PMID
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Clozapine : 1 publication(s)

agranulocytosis	Caucasian	Schizophrenia			10 / 31	19 / 77	11266078
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