Table 1. Pharmacogenetic testing not related to definitive diagnosis or prediction of risk of developing a genetic disease requiring medical care (2nd edition)

Gene name	Objective
Covered by insurance	
CYP2C9	Decision whether to administer and the maintenance dose of siponimod fumarate
UGT1A1	Prediction of the risk of serious adverse reactions (especially neutropenia) with irinotecan[a]
NUDT15	Prediction of the risk of leukopenia and other adverse reactions with azathioprine, and decision on whether to administer azathioprine Prediction of the risk of leukopenia and other adverse reactions with mercaptopurine
Not covered by insurance	
CYP2B6	Prediction of the risk of QT prolongation with efavirenz
CYP2C19	Prediction of the risk of QT prolongation and other adverse reactions with escitalopram Prediction of antiplatelet action of clopidogrel Relationship between the efficacy of proton pump inhibitors in the treatment of gastroesophageal reflux disease[b] Precaution on how to increase the dosage of lacosamide
CYP2D6	Prediction of the risk of adverse reactions with atomoxetine Decision whether to administer and the dose of eryglustat Prediction of the risk of adverse reactions with codeine, dihydrocodeine, and tramadol Decision to avoid adverse reactions of tetrabenazine Determination of brexpiprazole dosage Precaution in the method of increasing the dose of venlafaxine Determination of vortioxetine dosage
CYP3A5	Determination of tacrolimus dosage [c]
NAT2	Prediction of the risk of hepatic injury from isoniazid [d]
VKORC1	Determination of warfarin dosage

& CYP2C9	
TPMT	Prediction of the risk of myelosuppression with thiopurine preparations
SLCO1B1 (*OATP1B1*)	Prediction of the risk of adverse drug reactions with statins[e]
ABCG2 (*BCRP*)	Prediction of the risk of adverse reactions with imatinib, erlotinib, gefitinib, and sunitinib [f, g]
*HLA-A*31:01*	Prediction of the risk of severe drug eruptions due to carbamazepine
*HLA-B*15:02*	Prediction of the risk of severe drug eruptions due to carbamazepine
*HLA-B*57:01*	Prediction of the risk of hypersensitivity due to abacavir
*HLA-B*58:01*	Prediction of the risk of severe drug eruptions due to allopurinol
*HLA-DQA1*02:01*	Prediction of the risk of serious hepatic dysfunction with lapatinib
*HLA-DRB1*07:01*	Prediction of the risk of serious hepatic dysfunction with lapatinib

Note 1) The list includes in vitro diagnostic reagents approved by insurance in Japan, drug inserts, interview forms, medical practice guidelines, and multiple articles, which were judged to have a certain level of strength of evidence for their usefulness in medical practice.

[a] *UGT1A1* is the gene responsible for constitutional jaundice, but the elevated serum bilirubin levels in constitutional jaundice associated with the genetic mutation diagnosed by insurance are mild and generally do not require medical intervention.

[b]Gastroesophageal reflux disease (GERD) practice guideline 2021 revised 3rd edition. The Japanese Society of Gastroenterology

[c] Immunosuppressant TDM Standardization Guidelines 2018 [Organ Transplantation]. The Japanese Society of Therapeutic Drug Monitoring, The Japan Society for Transplantation

[d] Azuma J, Ohno M, Kubota R, et al. *NAT2* genotype guided regimen reduces isoniazid-induced liver injury and early treatment failure in the 6-month four-drug standard treatment of tuberculosis: a randomized controlled trial for pharmacogenetics-based therapy. Eur J Clin Pharmacol. 2013 May;69(5):1091-101. doi: 10.1007/s00228-012-1429-9. Epub 2012 Nov 14.

[e] Giacomini KM, Balimane PV, Cho SK, et al. International Transporter Consortium commentary on clinically important transporter polymorphisms. Clin Pharmacol Ther. 2013 Jul;94(1):23-6. doi: 10.1038/clpt.2013.12.

[f] Hira D, Terada T. BCRP/ABCG2 and high-alert medications: Biochemical, pharmacokinetic, pharmacogenetic, and clinical implications. Biochem Pharmacol. 2018 Jan;147:201-210. doi: 10.1016/j.bcp.2017.10.004. Epub 2017 Oct 13.

[g]Loss-of-function mutations in the *ABCG2 gene* are associated with the development of hyperuricemia due to impaired uric acid elimination. However, unlike in the pathogenesis of other single-gene diseases, other factors such as lifestyle habits including alcohol consumption and diet, and obesity are also associated with elevated serum uric acid levels.

Establishment and Revision History

Enactment Revision	Date	Version number	Revision details	Board Approval Date
Enactment	May 9, 2022	First edition	-	–
Revision	April 1, 2023	2nd ed.	The following information was added CYP2C19: Precaution on how to increase the dosage of lacosamide CYP2D6: Prediction of the risk of adverse reactions with codeine, dihydrocodeine, and tramadol CYP2D6: Decision to avoid side effects of tetrabenazine CYP2D6: Precaution in the method of increasing the dose of venlafaxine CYP2D6: Determination of vortioxetine dosage	April 1, 2023