Bumrungrad Personalized Medication Review

Mr. Test Data

HN xxx xxx xxx

Bumrungrad International HOSPITAL

Personalized Medication Review

Name Mr. Test Data HN xxx xxx xxx Date of birth

Collected Date:

Reported Date:

Personalized Medicine report

Genetic Testing for Drug Metabolism
PGx panel – BH MedGene test **

Current medications

1- **Thrombo Ass® (acetylsalicylic acid or Aspirin)** is a blood thinner used in the prevention of cardiovascular disease, such as heart attack or stroke. This medicine is partially metabolized by CYP2C9 enzyme. Since you have a normal function of CYP2C9, you may have a good drug response. However, the side effects, such as bleeding should be of concern as a blood thinner, especially concomitant use with other drugs or supplements with blood thinning property; for example, fish oil, garlic extract, ginkgo biloba extract, etc.

2- **Ezeroso® (Rosuvastatin+Ezetimibe)** is a combination of lipid lowering agents.

1) Rosuvastatin is a lipid lowering agent in hydrophilic statin group. It is transported into the liver by SLCO1B1 drug transporter then removed from the body. It is also eliminated by CYP2C9 and CYP3A4 enzyme in a minor pathway. Since you have a decreased function of SLCO1B1, you may have an increased risk of side effects, such as myalgia. You are recommended to avoid use of the drugs mainly metabolized by CYP3A4 enzyme, such as Simvastatin and high dose Atorvastatin. A limited dose of Rosuvastatin (≤ 20 mg/day) may be prescribed along with the side effect monitoring. If higher dose is needed for desired efficacy, doctor may consider a combination therapy (i.e., Rosuvastatin plus non-statin guideline directed medical therapy). Creatine phosphokinase (CK) test may also be ordered if statin induced muscle toxicity is suspected.

2) Ezetimibe is a non-statin lipid lowering agent which its metabolism may associate with SLCO1B1 drug transporter. Though, you have a decreased function of SLCO1B1, the medicine may be less likely to cause muscle toxicity. You may be recommended to use non-statin drug as an alternative in case of statin intolerance.

3- **Concor® (Bisoprolol)** is a medicine used in heart rate control and hypertension. It is eliminated by CYP2D6 and CYP3A4 in a minor pathway. Since you have an intermediate function of CYP3A4 enzyme and a normal function of CYP2D6, you may generally have a good drug response due to higher drug level. However, be aware of the side effects, such as hypotension, fatigue, and slow heart rate.

4- **Urosin® (Tamsulosin hydrochloride)** is a medicine used in treatment of prostate disease. It is eliminated by CYP3A4 and CYP2D6 enzyme in a major pathway. Since you have a normal function of CYP2D6, but an intermediate function of CYP3A4, you may have a good drug response due to higher drug level. However, the side effects, such as orthostatic hypotension, headache and dizziness should be closely monitored.

5- **Finasterid® (Finasteride)** is a medicine used in treatment of prostate disease. It is eliminated by CYP3A4 enzyme in a minor pathway. Since you have an intermediate function of CYP3A4, you may have a good drug response due to higher drug level. However, the side effects, such as orthostatic hypotension and sexual disorder should be monitored.

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6- **Pantoloc® (Pantoprazole)** is an antacid used in gastric condition. It is eliminated by CYP2C19, CYP2D6 and CYP3A4 enzyme in a minor pathway. Since you have a normal function of CYP2C19 and CYP2D6, but an intermediate function of CYP3A4, you may have a good response. It would be recommended to initiate standard daily dosing and increase the dose if you have inadequate response. For the treatment of H. pylori infection and the treatment of erosive esophagitis, the doctor may consider increasing the dose by 50-100% from the standard dose.

Past medications

1- **Sortis® (Atorvastatin)** is a lipid lowering agent in the statin group. The medicine is transported into the liver by SLCO1B1 drug transporter then removed from the body. It is also eliminated by CYP3A4 enzyme in a major pathway. Since you have an intermediate function of CYP3A4 and considering together with a decreased function of SLCO1B1, you may be at a high risk of statin side effects, such as myotoxicity due to higher drug level. It would be recommended to avoid use of Simvastatin. If a low dose of Atorvastatin is needed, it should be used with caution along with side effects monitoring. Doctor may prescribe an alternative hydrophilic statin, such as Rosuvastatin and Pravastatin with a limited dose, or may consider a non-statin lipid lowering agent, such as Ezetimibe to lower the risk of side effects.

2- **Jardiance® (Empagliflozin)** is an oral hypoglycemic agent which increases excretion of glucose in urine. Its metabolism may associate with SLCO1B1 drug transporter. Since you have a decreased function of SLCO1B1, you may have a good drug response. As the medicine causes you to lose water, you should drink plenty of water, especially during exercise or in hot weather. It would be also recommended to keep hygienic to prevent the drug's side effect, such as genitourinary infection and be sure to seek medical help promptly if you have severe nausea, vomiting, belly pain, feeling tired, and trouble breathing.

3- **Melatonin** is a supplement which helps control sleep cycle. It is mainly eliminated by CYP1A2 enzyme. Since you have an ultra-rapid function of CYP1A2, the drug elimination may be increased in the presence of inducers, such as tobacco smoke, consumption of regular coffee, cruciferous vegetables or chargrilled meats leading to lower drug level. If you have an inadequate response, it would be recommended to increase the drug dose or consider another option which is not associated with CYP1A2.

Drug interaction

The concomitant use of drugs with hypotensive property, such as **Urosin® (Tamsulosin hydrochloride)**, **Concor® (Bisoprolol)**, **Tritazide®(Ramipril and Hydrochlorothiazide) and Tritace® (Ramipril)** is effective to control blood pressure but may enhance hypotension, headache and dizziness. Therefore, the daily blood pressure should be monitored closely, especially when your medications are adjusted. To minimize dizziness and light-headedness due to lowering of your blood pressure, get up slowly when rising from a seat or lying position.

CYP3A4 enzyme is responsible for the metabolism of more than half of the prescription drugs. In addition to the genetic factor, there are others, such as some other drugs, food, or supplements which may alter the response to the drugs metabolized by CYP3A4 enzyme.

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CYP3A4 potent inhibitors; for example, clarithromycin, erythromycin, diltiazem, itraconazole, ketoconazole, ritonavir, verapamil, goldenseal and grapefruit could slow the drug clearance leading to higher drug level, on the other hand, CYP3A4 strong inducers; for example, phenobarbital, phenytoin, rifampicin, St. John's Wort and glucocorticoids could decrease exposure of the active drug. **You should bring your lists of all current medications and supplements to the hospital or pharmacy every visit, so that a doctor or pharmacist could check some possible drug interaction or side effects among them.**

Regarding antidiabetic injection; **Ozempic® (Semaglutide) and Saxenda® (Liraglutide)**, anti-rheumatic injection; **Enbrel®(Etanercept)** and oral medications; **Tritazide® (Ramipril and Hydrochlorothiazide), Tritace®(Ramipril), Aerius® (Desloratadine),** supplements; **Dekristolmin® (Cholecalceferol), Folsan® (folic acid)** and other products from VitalLife, the response including the efficacy and side effects of them could not be predicted from the genetic testing for drug metabolism (BH-MedGene; myDNA).

Note: The prediction is based on simply the genetic profile. Other factors such as patient's current condition, kidney and liver function, and drug interaction among drugs, etc. may also be considered by the doctor if your medication treatment would be adjusted.

Reviewed by R. Ph 1

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Approved by: R.Ph 2

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