BACKGROUND
Pharmacogenetics (PGx) encompasses the potential to improve therapeutic response and reduce adverse drug reaction in the era of precision medicine. However, Chinese PGx data is limited. To address this issue, we examined the spectrum of 133 actionable pharmacogenetic variants and rare deleterious variants in 108 pharmacogenes using an exome sequencing (ES) cohort.

METHODS
Secondary analysis of ES data was conducted to study pharmacogenetics in 1116 HK Chinese, which included 622 males and 494 females. The projected preemptive pharmacogenetic testing prescription impact was evaluated based on the patient prescription data between January 1, 2019 and December 31, 2019 in the HK public healthcare system, serving 7.5 million people and accounting for approximately 90% of all secondary and tertiary healthcare services provided.

RESULTS
Frequency of actionable pharmacophenotypes in Hong Kong Chinese

- The top three drugs projected to affect the greatest number of patients were:
  - Lipid-lowering drug simvastatin (146,167 patients, frequency: 25.81%),
  - clopidogrel (26,304 patients, frequency: 57.21%), and
  - anti-inflammatory drug ibuprofen (12,000 patients, frequency: 5.39%).

ILLUSTRATION WITH SLCO1B1 AND SIMVASTATIN-INDUCED MYOPATHY

-Discussion and Conclusion
To date, this is the largest Chinese PGx study using ES data. We have demonstrated that secondary use of ES data is feasible for pharmacogenomic analysis, and preemptive pharmacogenetic testing has the potential to support prescription decisions in inpatient and specialist outpatient settings in the HK Chinese population.

Acknowledgement
We would like to thank The Society for the Relief of Disabled Children and The Edward and Yolanda Wong Fund for the support.