

## Parallel Session 4: Translating Knowledge to Primary Healthcare

### T4b - In-depth Study of the Cost-effectiveness of the Risk Assessment and Management Programme for Hypertension (RAMP-HT) for Patients with Uncontrolled Hypertension in Primary Care in Hong Kong

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**Introduction:** The Risk Assessment and Management Programme for Hypertension (RAMP-HT) of the Hospital Authority is an evidence-based, structured multi-component intervention incorporating team-based risk-guided management strategies focusing on total cardiovascular disease (CVD) risk control. RAMP-HT improved blood pressure control of patients with uncontrolled hypertension after 1-year compared to those receiving usual public primary care. This project evaluated the long-term effectiveness on reducing cardiovascular complications and mortality, and the 5-year and estimated lifetime cost-effectiveness of RAMP-HT.

**Methods:** This is a prospective cohort study on adult patients with hypertension without complications or diabetes mellitus receiving public primary care in Hong Kong. A total of 79,161 RAMP-HT participants were matched one-to-one with patients receiving usual care in 2011-2013. Effects of RAMP-HT on CVD and all-cause mortalities were evaluated using Cox proportional hazards regression. The number-needed-to-treat to prevent one CVD event/mortality event was determined. Programme cost of RAMP-HT was collected from the Hospital Authority using costing questionnaires. Public medical costs were estimated based on public health services utilization rates, while a subset of 486 patients completed a survey on private medical costs. Cost-effectiveness of RAMP-HT per CVD and all-cause mortality prevented, and event-free year gained were calculated. A Monte-Carlo simulation model was developed using empirical data to evaluate the lifetime cost-effectiveness of RAMP-HT.

**Results:** After a median follow-up of 5.3 years, RAMP-HT participants had significantly lower cumulative incidences of CVD (9.14%vs.14.95%,  $p<0.001$ ) and all-cause mortality (5.04%vs.10.99%,  $p<0.001$ ) compared to usual care patients, corresponding to a 5.81% and 5.95% absolute risk reduction, respectively. The number-needed-to-treat was 17 to prevent one CVD event and 20 for all-cause death. The total programme cost over 5 years per RAMP-HT patient was HK\$521. RAMP-HT participants had significantly lower direct public medical costs over 5 years than usual care patients (RAMP-HT: HK\$61,904; Usual care: HK\$91,561) but similar annual private medical costs (RAMP-HT: HK\$3,347; usual care: HK\$3,588). The cost invested on RAMP-HT to prevent/ gain 1 event-free-year was HK\$9,058/HK\$1,905 for CVD and HK\$10,345/HK\$3,490 for all-cause mortality. RAMP-HT was estimated to be cost-saving, saving HK\$5,569 per RAMP-HT participant compared to patients receiving usual care over lifetime.

**Conclusion and Implications:** The team-based RAMP-HT, through coordinated use of each healthcare professional's expertise to deliver quality hypertension management, was highly effective in preventing hypertension-related complications and mortality, and saving public healthcare cost. The benefits of integrating such model of care in busy naturalistic primary care were sustainable and could alleviate the burden of public healthcare system.

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