Service Priorities and Programmes

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Development of Clinical Indictors: Rate of serious clinical deterioration in acute general wards

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Introduction
Modified Early Warning Score (MEWS) has been widely implemented in the acute general wards in Tuen Mun Hospital for detection of Serious Clinical Deterioration (SCD). However, given the paucity of information on its usefulness and not being incorporated in any clinical performance gauging systems, the actual potentials of MEWS were largely undermined and, in turn, significantly crippled the detection of SCD. Literature suggested two-third of patients developed identifiable signs of deterioration within 6 hours of arrest. (1) There was an urge to develop clinical indicators to measure the effect of improvement after the implementation of SCD and to longitudinally monitor the performance of TMH.

Objectives
To benchmark TMH's performance against international standards. Results obtained can be utilized by top leaders to assess the longitudinal trend at department level. If the rates increased or reached the upper control limit, underlying causes will be pursued.

Methodology
Literature reviews focusing on the designs, definitions and results of developed systems employed to detect clinical deteriorations was done. The mostly quoted measurements are the rate of cardiac arrest without DNACPR, the rate of the unplanned ICU admissions and the rate of unexpected death without DNACPR. (2-8) While Methods used in a landmark study developed by Hillman, and a consensus leaded by Perberdy el at (8, 9) from the American Heart Association were adopted.

Result
Rates of clinical deteriorations per 1000 inpatient admissions in 2012 were compared to the weighted rates, with adjustment according to admissions of 7 large studies (2-8): The Rate of cardiac arrest without DNACPR was 2.32 locally and 3.52 internationally; the unexplained ICU admission was 1.54 locally and 5.68 internationally; and

unexplained death without DNACPR being 2.23 and 1.11 respectively. Four clinical indicators based on the consensus leaded by Peberdy et al (9) were developed with adjustment done per local situations (excluded elective day-case admission). Rates of TMH and individual departments were monitored and reported quarterly to Cluster Clinical Governance Committee, respective Chiefs of Service, Service Director of Quality and Safety Division, and the Cluster Chief Executive through encrypted emails and presentations using graphs and tables. The rates of 2013 Quarter 1 to 3 were static; the rate of death without DNACPR was 5.10, the rate of cardiac arrest without DNACPR was 5.35, the rate of unscheduled ICU consultation was 10.35, and the composite rate of the above was 14.07. The project will go on by adding control limits to identify special-cause variation when more data are available.