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## Rapid Response in Seoul

*Rapid response system via multi-tier response system with fire engine or additional ambulance*



### BRIEF BACKGROUND

Rapid response is important for improving the survival outcomes of out-of-hospital cardiac arrest (OHCA). As ambulance response time increased due to traffic congestion and increased demand for emergency medical services (EMS) in the metropolitan city, the Seoul Metropolitan Fire Department implemented a cardiopulmonary resuscitation (CPR)-targeted multi-tier response system in 2015.

### STEPS TAKEN

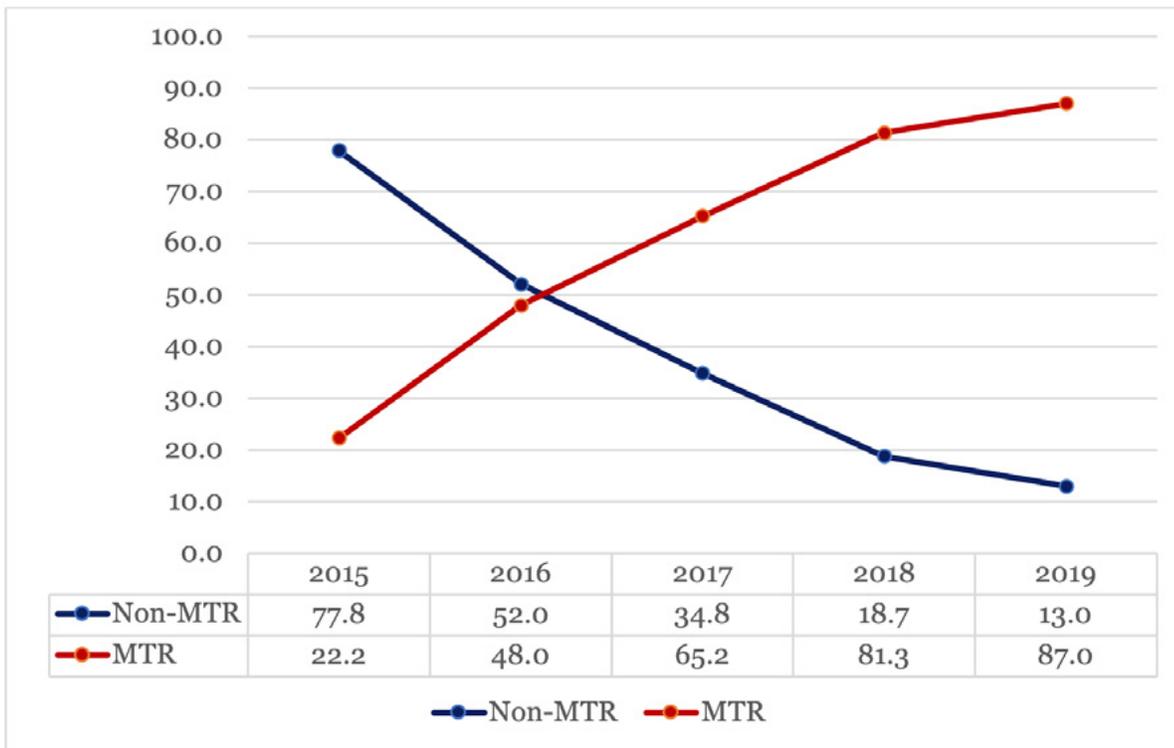
In 2015, the Seoul Metropolitan Fire Department implemented a multi-tier response system, in which a single-tiered ambulance response system existed. The multi-tier response program had the following three components: 1) detection of OHCA by a dispatcher; 2) ambulances dispatch or fire engines in addition to routine ambulance dispatch, and 3) performance of team CPR. In the multi-tier response system, the first arriving team starts chest compressions and defibrillates when necessary. After other vehicles arrive, all team members provide high-quality, comprehensive CPR according to the team CPR protocol.

### CHALLENGES

For early dispatch, the role of the dispatcher is essential to quickly detect cardiac arrest and dispatch multiple vehicles. Therefore, the Seoul Metropolitan Fire Department installed an automated external defibrillator in a fire engine and provided high-quality basic life-support training to fire engine members. In addition, the Seoul Metropolitan Fire Department educated EMS providers on why multiple vehicles should be dispatched in case of OHCA, even in a situation where EMS demand increased.

### RESULTS

The multi-tier response rate continued to increase from 22.2% in 2015 to 87.0% in 2019. The ambulance-ambulance response became the mainstay, and 97% of the total multiple-tier response was ambulance-ambulance in 2019. Because ambulance-ambulance response was implemented in nearly 90% of OHCA cases, team CPR has become a routine CPR practice in the field. Although the number of ambulance calls continued to increase from 2015 to 2019 (511,758 in 2015 to 536,821 in 2019) and traffic congestion continued to increase, the median response time was maintained at 7 min from 2015 to 2019.



## OUTLOOK

Multi-tier response has been sufficiently implemented to respond to most patients with OHCA. As multi-tier response increased, the provision of advanced cardiac life support (ACLS) interventions, such as advanced airway management and intravenous access, also increased. Therefore, ACLS procedures with high-quality CPR should be one of the main targets of the next EMS CPR-quality program.

## CONTACT

Sun Young Lee: sy2376@gmail.com



*Multi-tier response team CPR simulation*