COVID-19 surveillance robot: rapid innovation for public health pandemic management

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Background:
COVID-19 surveillance added a significant workload to the eight HSE-Departments of Public Health in Ireland. HSE-HPSC rapidly developed a fit-for-purpose robot to navigate the national infectious disease reporting system (CIDR) to automate three manual processes; laboratory records,

notifications and contact-tracing data; which takes a surveillance scientist 26 minutes per case on average.

Methods:

HSE-HPSC managed and delivered a multidisciplinary project team to develop the rapid solution. The robot was designed to operate the CIDR system using an agreed set of rules, developed through business process analyses of the 'first wave', stakeholder engagement and technical collaboration. Development began in April 2020, and went live in August 2020 after phases of testing, piloting, and hyper-care.

Results:

1. Successful integration: The robot aligned COVID-19 surveillance data across three national HSE information systems.
2. Degree of automation: The robot processed greater than 80% of cases just like a human. The remaining 20% are flagged by the robot for data quality checks by the regional public health teams.
3. Time-saving: The robot operates quicker than a human, 3.3minutes per case compared to 26minutes. Therefore for every 100 cases, the robot saves 38hours per day.
4. Out-of-hours capacity: Robots currently operate for 22hours per day, resulting in overtime cost-savings for the HSE.
5. Surge capacity: The automation was expanded to 42 robots for 'third-wave' surge capacity.
6. Sustainable change in surveillance system: Robots can be expanded for surveillance of other notifiable diseases.

Conclusions:

The robot:

- delivered a fit-for-purpose pandemic resource
- relieved the underfunded public health system of the administrative burden of COVID-19 surveillance
- delivered timely data for epidemiological reporting by the HSE-HPSC to the National Public Health Emergency Team.

Key messages:

- Through rapid collaboration, the robot successfully delivered a fit-for-purpose public health resource that aligned COVID-19 data across HSE information systems and achieved time/cost savings.
- The robot strengthened the public health surveillance response in Ireland.