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Short Communication

COVID-19 contact tracing: The Welsh experience

Diana Bright [a,*], Graham Brown [b], Richard J. Roberts [c], Simon Cottrell [d], Ashley Gould [e], Amrita Jesurasa [e], Philip Daniels [f], Llion Davies [a]

[a] Knowledge Directorate, Public Health Wales, Floor 5, Number 2 Capital Quarter, Tyndall Street, Cardiff, South Glamorgan, Wales, CF10 4BQ, UK
[b] Health Protection Division, Public Health Services Directorate, National Public Health Service for Wales, Preswylfa, Hendy Road, Mold, Flintshire, CH7 1PZ, UK
[c] Health Protection Division, Public Health Services Directorate, Public Health Wales, Floor 4, Number 2 Capital Quarter, Tyndall Street, Cardiff, South Glamorgan, Wales, CF10 4BQ, UK
[d] Health Protection CDSC, Public Health Wales, Floor 4, Number 2 Capital Quarter, Tyndall Street, Cardiff, South Glamorgan, Wales, CF10 4BQ, UK
[e] Health and Wellbeing Directorate, Public Health Wales, Floor 5, Number 2 Capital Quarter, Tyndall Street, Cardiff, South Glamorgan, Wales, CF10 4BQ, UK
[f] Policy, Research and International Development Directorate, Public Health Wales, Floor 5, Number 2 Capital Quarter, Tyndall Street, Cardiff, South Glamorgan, Wales, CF10 4BQ, UK

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ABSTRACT

Objective: Contact tracing is one of the key public health response actions to control the outbreak of a novel virus. This paper describes the preparation process, activation and operational experience for contact tracing of individuals in response to confirmed COVID-19 cases in Wales.
Study design: A descriptive approach has been adopted and lessons learned from our initial public health response to COVID-19 will be used to develop a new operational model for contact tracing in Wales.
Methods: As part of preparations for the response in Wales, Public Health Wales formed a Contact Tracing Cell (CTC) ready to be mobilised in the event of a confirmed case.
Results: Trial activation of the CTC during the preparation period helped to resolve some issues before 'real' activation. A highly flexible approach was needed due to the constant changes to the guidance that required rapid understanding, updates to pathways and clear communication to contact tracers.
Conclusions: Our experience and recommendations may benefit future efforts to control the spread of the virus in Wales and elsewhere, particularly in supporting COVID-19 outbreaks in enclosed settings such as care homes or in geographically localised areas. Learning from the initial public health response to COVID-19 will guide the delivery and implementation of a new contact tracing model as we move to a later stage of the pandemic when containment measures become feasible in localised outbreaks. This may include scaling-up the CTC to mobilise contact tracers to local teams and the potential use of digital technologies to support the next operational model of the CTC in Wales.

1. Background

The outbreak of COVID-19 caused by SARS-CoV-2 has rapidly spread to many countries since it was first announced on December 31, 2019 [1, 2]. COVID-19 outbreak dynamics indicated sustained human-to-human transmission, including family clusters and healthcare settings in January 2020 [3]. On March 11, 2020, The World Health Organisation recognised COVID-19 to be a global pandemic [4]. Contact tracing is one of the key public health response actions to control an outbreak of a novel virus [5–7], particularly in the absence of a vaccine [8].

As part of the preparedness response, Public Health Wales (PHW) formed a Contact Tracing Cell (CTC) ready to be mobilised in the event of a confirmed case diagnosed in Wales. This article describes briefly the preparation process, activation, and operational experience for contact tracing of individuals in response to confirmed COVID-19 cases in Wales. We describe our experience and some of the lessons learned so that our learning may be transferable to later stages of the pandemic or future novel virus outbreaks.

* Corresponding author.
E-mail addresses: diana.bright@wales.nhs.uk (D. Bright), Graham.Brown@wales.nhs.uk (G. Brown), Richard.Roberts3@wales.nhs.uk (R.J. Roberts), Simon.Cottrell@wales.nhs.uk (S. Cottrell), Ashley.Gould@wales.nhs.uk (A. Gould), Amrita.Jesurasa@wales.nhs.uk (A. Jesurasa), Philip.Daniels2@wales.nhs.uk (P. Daniels), Llion.Davies2@wales.nhs.uk (L. Davies).

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2. Planning & preparation

The CTC was established as a component of the UK 'containment phase' of the COVID-19 response, to be activated in the event of a confirmed case in Wales. The purpose of the CTC was to identify and follow-up individuals who had close contact with a confirmed case to provide them with public health advice to protect them and to protect the wider public from onward transmission.

2.1. Staffing

Initially, the CTC included three contact tracers, one administrator familiar with the health protection Case and Incident Management system (CIMS), and one co-ordinator with health protection expertise. This staffing was based around PHW modelling for dealing with one case per day and word-of-mouth communication from England and elsewhere suggesting between 17 and 50 named contacts per confirmed case (three contact tracers, 30 min per contact over 8 h = 48 contacts). The timing of 30 min per contact was an estimate based on the time to communicate with close contacts of meningococcal septicaemia cases [9] including completion of the necessary documentation notes. Two linked cases (e.g. same family) would have an overlap of contacts resulting in an estimated 35 contacts total. At later stages of planning, new data from England estimated 74 contacts per case. In response, the number of planned contact tracers were increased to six and the duration of operation increased to 12 h. It was then assumed that the CTC would be capable of contact tracing 100 individuals per day, allowing for shift handover periods, briefings to update on guidance changes and comfort breaks. This resourcing was deemed sufficient, assuming the worst-case scenario, to contact trace all close contacts in the event of one confirmed case or in the event of two linked cases in Wales within 24 h.

2.2. Documentation

A tailored data-extension electronic form was added to the health protection CIMS for documenting notes. Contact tracers were also asked to complete the Public Health England (PHE) Form 2a, an Excel form to capture epidemiological details designed to support the strategic analysis and management of the response. As a security precaution, call handlers were advised to keep paper records in the event of loss of digital data. Paper forms mimicking the online system were provided and amended based on contact tracers' feedback.

2.3. Logistics

A room was prepared for the CTC. It included eight stations that were equipped with computers, dual monitors, phones with dial-out capabilities and paper stationery. Call handler packs containing the following were produced:

- Non-prescriptive script to guide call handlers
- Tabulated contact categories as per the PHE guidance
- Advice pathways according to contact category: passive surveillance versus active surveillance
- Pathway for symptomatic contacts
- Frequently asked questions sheet
- A direct free telephone line for contacts to call on a non-urgent basis in case of additional questions

Although there were some concerns around providing written information given the fast-changing nature of the outbreak and subsequent changes in official guidelines, two leaflets were designed for e-mailing out to contacts.

PHW also had a contingency plan to establish an active surveillance cell in a larger room in the event of identifying large numbers of individuals requiring daily phone calls. Staff with different skills set, such as administration staff, could make these phone calls to maintain the contact tracing capacity of the CTC. Real-time IT support was vital to rapidly troubleshoot hardware and software issues.

2.4. Training

As health protection staff were already working at capacity to deal with possible cases of COVID-19 and other aspects of the response, it was decided to mobilise PHW staff from other departments to staff the CTC. These volunteers were trained in the use of the established protocols and how to accurately record activity using the CIMS system. Those with the skill set deemed appropriate to 'cold call' contacts (mainly comprising those with medical or nursing backgrounds and more senior public health practitioners) were also required to attend CTC specific training provided by a public health consultant or registrar (n = 42 trained within one week).

2.5. Trial activation

On February 25, 2020, the CTC was trial activated with an urgent call to the individuals on the shadow rota to attend. As a result, additional staff were rapidly mobilised to be trained and staff the CTC shadow rota. Staff familiar with providing training were re-deployed to take over the COVID-19 in-house training (including the CTC specific training). Early feedback from staff identified concerns around abilities and confidence to undertake calls. Therefore, less experienced staff were reassured that they would have the opportunity to shadow more experienced personnel as part of the training.

During this period, the CTC location was moved to a larger space with the capacity to expand the number of work stations as required. It was also co-located with other elements of the COVID-19 response to facilitate communications between the various cells.

3. Cell activation

The cell was activated late in the evening of February 27, 2020 in response to a single travel-related confirmed case diagnosed in Wales. The case was interviewed by a Consultant in Communicable Disease Control who identified the close contacts. Once activated, the CTC contact traced 10 close contacts within 1 h. The average time for a phone call was longer than 30 min. The documentation was time-consuming due to the requirement to complete three records per contact (paper, CIMS data-extension, Form 2a).

There was an interval of 6 days before the next confirmed case in Wales. During this period further staff were trained and senior leaders were identified to support the increasing logistical complexities and manage the communication around changing guidance and situation-specific requirements. Formal teleconferences including the devolved administrations were established by PHE, facilitating shared learning across the UK. Over the following weeks, the CTC remained active, with an increasing workload, including daily active surveillance phone calls. The maximum contact tracing demand in one day was in response to nine new confirmed cases.

3.1. CTC capacity

Once it was apparent that sustained community transmission was occurring in the UK, it was recognised that existing contact tracing capacity would be overwhelmed. PHW projections for the CTC were estimated based on the mean number of contacts per case for the first 19 cases in Wales (between six and nine contacts per case) and on PHE estimates (March 12, 2020) confirming that cases would double every three days. CTC staffing by this time included 24 contact tracers. Demand estimates projected for increasing CTC resource to 48 contact tracers (assuming 30 min per contact) suggested that the number of new cases was going to exceed CTC capacity by 25–March 27, 2020.

Box 1
Recommendations from our experience and lessons learned.

- Trial activation of the CTC during the preparation period to resolve issues before 'real' activation.
- Identification of adequate numbers of staff as early as possible to ensure that they are trained.
- Recognition that the pool of staff mobilised to answer incoming calls from possible cases will include the same pool of staff appropriate to staff the CTC.
- Provision of 'listening in' opportunities for newly trained inexperienced staff to gain confidence prior to going solo.
- Identification of more than one senior leader during the preparation stages to allow resilience and the ability to manage rapid tactical level adaptation in a constantly evolving response, whilst maintaining operational safety and timeliness.
- Early identification of staff who can work in teams to manage rotas during a response that required several additional rotas beyond the CTC.
- Provision of real-time on-site IT support given the large numbers of staff being provided with access to the health protection online system.
- Engagement with other CTCs to ensure a consistent approach and to troubleshoot issues.

The UK Government announced the move to the 'delay phase' of the COVID-19 response on March 12, 2020 [10]. In line with the UK approach, the CTC stopped contact tracing and wound down activities. Final calls were made to those on active surveillance to ensure they were updated on the current advice and to inform them that follow-up daily calls would not occur. On a single day, 234 individuals were contacted by the CTC.

4. Conclusions and lessons learned

This article describes the Welsh experience of contact tracing in the event of confirmed cases of COVID-19. The mobilisation of non-health protection staff within the organisation to staff the CTC (from administrative to senior leadership roles) provided resilient support to the acute health protection service and freed up health protection teams to deal with more complex issues in relation to the COVID-19 response.

Planning the CTC based upon previous experience in contact tracing meningococcal septicaemia cases was logical, however, major differences were noted once the CTC was activated. For example, many contacts (around 50% for the first activation) had symptoms in keeping with the possible case definition for COVID-19, thus required adding to the 'possible case' line listing and community testing pathway. There were also many changes to the guidance that required rapid understanding, updates to pathways and clear communication to contact tracers and therefore, a highly flexible approach was required (See Box 1).

The PHW CTC role in contract tracing individual cases has now been superseded by supporting COVID-19 outbreaks in enclosed settings such as care homes. Learning from the initial public health response to COVID-19 is needed to enhance the delivery and implementation of contact tracing as we move to a later stage of the pandemic when containment measures may be introduced in localised areas including outbreaks in food and meat processing plants. This may include scaling-up the CTC to mobilise contact tracers to local teams and the potential use of digital technologies to support the next operational model of the CTC in Wales.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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