

Updated COVID-19 testing strategy for Cwm Taf Morgannwg

Previous COVID-19 testing strategy in CTM

An initial COVID-19 testing strategy from Cwm Taf Morgannwg (CTM) was written and approved by Cwm Taf Morgannwg UHB Strategic Co-ordinating Group (Gold) on 23rd April 2020. This initial testing strategy outlined the levels of COVID-19 testing at the time, estimates of demand and capacity for testing, and the plans for increasing testing in CTM.

Since the approval of the “COVID-19 testing strategy in CTM” there have been many changes in COVID-19 testing in CTM. The levels of COVID-19 testing, the groups that are eligible for testing, the tests available and the routes for testing have all changed dramatically in the 6 weeks since the previous strategy was approved. Many of the plans for testing in CTM outlined in that strategy have been achieved, and many more COVID-19 tests are being undertaken in a wider range of people in CTM than when the initial strategy was written.

However, policy decisions on COVID-19 testing at a UK and Wales level, and the availability of different types of COVID-19 tests, have meant that testing plans have had to deviate from those announced in the initial strategy. Wales announced the “*Test, Trace, Protect*” strategy on 13th May 2020, which outlines the new contact tracing system that began in Wales on 1st June 2020. A key strand to this strategy is testing all symptomatic individuals and tracing their contacts. CTM Health Board is also beginning to return to usual business as part of the recovery phase. This strategy document brings together the ongoing work around improving testing in CTM to meet the testing demands as lockdown is eased across Wales, and routine healthcare work is resumed.

Aims of COVID-19 testing strategy

1. Consolidate reductions in the transmission of COVID-19 within the CTM community by encouraging compliance with self-isolation guidance for symptomatic individuals and their households.
2. Reduce transmission of COVID-19 within the CTM community by encouraging compliance with self-isolation for individuals with confirmed COVID-19 and their contacts, as part of Welsh Government’s “*Test, Track, Protect*” strategy.
3. Protect vulnerable people, both within closed settings and in the community, by reducing their risk of exposure to COVID-19.
4. Enable key workers, from the NHS, public sector and private sector settings, to return to work as quickly as possible following a negative COVID-19 test result.
5. Surveillance of COVID-19 within the CTM community to enable greater understanding of the epidemiology of SARS-CoV-2 in the CTM population and better planning of the COVID-19 response.
6. Support future plans for easing of lockdown restrictions, and enable rapid response to local outbreaks once general social isolation guidance has been eased.

Background - Current COVID-19 testing in CTM

Type of test

There are two main types of test for COVID-19: antigen tests and antibody tests. Up until 1ST June 2020 in the UK the only type of testing that was available at a large scale for COVID-19 was PCR antigen testing for active infection using an oropharyngeal or nasopharyngeal swab. In CTM residents can access PCR antigen testing through two main routes:

- Oropharyngeal swabs organised by CTM health board and taken in hospitals, mass testing centres and coronavirus testing units, or care homes and private residences by testing centre staff. These swabs are currently processed in UHW and RGH.
- Oropharyngeal and nasal swabs that are delivered to people's homes using the Amazon courier service and are processed in England.

Since 1st June antibody serology testing has been available. This test provides information on a person's immune response to a historic COVID-19 infection. This test is currently taken using a phlebotomy sample of blood, and the test is processed in CTM hospital laboratories.

Groups of people who are eligible for testing

Currently in CTM PCR testing for active COVID-19 infection is taking place in a range of situations:

1. Testing of hospital inpatients with symptoms consistent with COVID-19.
2. Testing of symptomatic key workers or their household members as defined by Welsh Government in the "*Key (critical) workers testing policy: coronavirus (COVID-19)*" on 18th May 2020.
3. Testing in Care Homes including:
 - a. All residents who are due to be discharged from hospital into a Care Home
 - b. All residents who are entering a Care Home from the community or another care setting.
 - c. All residents and staff members of care homes reporting a possible case of Covid-19 in a resident or member of staff.
 - d. All residents and staff members in all care homes as part of a rolling programme of routine care home testing. This testing for residents is undertaken every 2 weeks for elderly care facilities, and every 3 weeks for other types of long-term living facilities. Staff at elderly care facilities are being tested every week for 4 weeks from 15/06/20 – 06/07/20.
4. Testing of symptomatic prisoners through healthcare services within the prison.
5. Testing of all symptomatic members of the public regardless of age.
6. Testing of a random sample of asymptomatic healthcare workers through a rolling programme of asymptomatic healthcare worker tests in CTM hospital and community healthcare services.

Case definition for testing

The case definition for testing for COVID-19 in for the general population in CTM is aligned with the PHE COVID-19 case definition for COVID testing. This was updated on 18th May 2020 to include anosmia. The current case definition is:

- Fever of >37.8
- And/or a new continuous cough

- And/or a loss of, or change in, normal sense of taste or smell (anosmia)

On 9th April CTM Gold group approved a broader definition for testing of health and social care workers and their household contacts to include (any or a combination of the following symptoms):

- A fever (37.8c or higher)
- A new continuous cough
- New onset of influenza like illness (including muscle aches and tiredness)
- Cold like symptoms (including headache, runny nose, sore eyes - that is not consistent with hay fever)
- Loss of sense of taste or smell

This broader case definition is remaining for health and social care workers, due to their higher rates of infection compared to the general population and the vulnerable groups of patients and residents that they come into contact with through their work. This aims to reduce transmission of COVID-19 in health and social care settings, which are known to be locations that have seen higher rates of COVID-19 transmission.

Results

Results of COVID testing are delivered in different ways depending on the location of the testing.

- Hospital inpatients will have their results delivered by their clinicians.
- Symptomatic key workers and their household members, and asymptomatic healthcare workers tested as part of the random testing programme, who are tested in the mass testing centre are currently informed of their results via an automatic text message system. Those who cannot receive an automatic test message are phoned by staff from the Local Public Health Team or Health Board.
- Anyone who receives a test using the Amazon couriered home delivery test kits receives their results via an automatic test message system.
- Care Home residents have their results delivered to the staff at the Care Home by phone by staff from the Local Public Health Team or Health Board.
- Care Home staff who have their test taken through the online care home staff portal have their result emailed to the care home where they work.
- Prisoners have the results delivered by prison healthcare staff.

Overview of current testing strategy in CTM

Health and Social Care Workers	Asymptomatic	Yellow
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Key Workers from agreed partner organisations including WAST, police and Local Authority	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Key Workers from wider organisations including utilities, food production, transportation and supermarkets	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Enclosed settings- Care Homes	Asymptomatic	Green
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Enclosed settings- Non-care home settings including prisons	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Extremely Vulnerable Groups in the Community	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Vulnerable Groups in the Community	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green
Wider Community	Asymptomatic	Red
	Mild-Moderate Symptoms	Green
	Severe Symptoms	Green

Key

In Current Testing system	Partially in Current Testing system	Not in Current Testing system
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Severe symptoms = someone who is hospitalised with COVID-19 symptoms

Mild-moderate symptoms = someone who has COVID-19 symptoms but is well enough to remain at home and does not require hospitalisation

Types of testing

The CTM COVID1-19 testing strategy will rely on three types of COVID-19 test: PCR and LAMP tests for active infection; and serology antibody test for previous infection. PCR tests are being processed in three different locations: PHW laboratories, English laboratories (through Amazon couriered home tests and the Care Home portal home delivery tests), and RGH laboratory.

1. PCR antigen testing for active infection using an oropharyngeal swab that is processed centrally by PHW in UHW.

- Currently in Wales the majority of PCR antigen testing is being carried out in the PHW UHW laboratory.
- 2. PCR antigen testing for active infection using a nasal and oropharyngeal swab that is ordered through the Amazon couriered home delivery service and processed in England.
 - Currently anyone with symptoms in Wales can order an Amazon home delivery test on a first come, first served basis. These tests are sent to England to be processed in English laboratories. The allocation of tests is decided at a UK wide level with 21,200 tests available in the UK each day.
- 3. PCR antigen testing for active infection using a nasal and oropharyngeal swab that is ordered through the Care Home portal for home delivery to Care Homes and processed in England.
 - The Care Home portal offers home delivery self-swap kits to care homes in the UK, in order to test care home staff. Care Homes are able to order tests for their staff members every Monday. These tests are delivered and collected from the care home by courier, and the tests are processed in an English laboratory. This offer of weekly testing of care home staff runs from 15/06/20 – 06/07/20.
- 4. PCR antigen testing for active infection in Royal Glamorgan Hospital laboratories
 - Royal Glamorgan Hospital are due to have four different types of PCR antigen testing systems based within their laboratory. The first of these systems, Launch PCR system, became operational at the end of May.
 - Seegene PCR system is due to become operational at the end of June. Three other PCR systems (Cephaid, Biofire and Eplex) have also been ordered, but it is unclear exactly when these will become available or their capacity. It is hoped that they should be delivered by the end of June, but it is unclear when they will be operational.
 - Menarini Rapid PCR test will be a point of care test to give rapid results on COVID-19 infections. It is unclear when this will become available.
- 5. USW LAMP test
 - The University of South Wales (USW) has developed an innovative loop-mediated isothermal amplification (LAMP) test which tests for active infection using a nasal swab. This has undergone the first stages of validation, and is currently demonstrating around 70% sensitivity. Further development of the LAMP test is due to take place in the coming weeks that aim to increase the sensitivity of the test, and these developments will then need to be validated.
 - The LAMP test has the potential to be used both within a laboratory and in a bespoke point of care testing device. We are currently confirming the exact contribution this will make.
- 6. Serology antibody testing
 - Serology antibody testing will test for previous COVID-19 infection and ongoing immunity. This will be useful for mapping past COVID-19 infections across the CTM population. The UK Government secured 10 million antibody tests from Roche Diagnostics and Abbott Laboratories on 21st May 2020. This test involves testing a phlebotomy sample of blood in a laboratory to assess for antibodies to COVID-19. The Roche and Abbot test is currently the only test in the UK that has been validated by PHE as having sufficient sensitivity and

specificity (<https://www.gov.uk/government/publications/covid-19-laboratory-evaluations-of-serological-assays>)

- Public Health England have been explicit about the limitations of the antibody tests, stating in their *“Coronavirus (COVID-19) antibody test guidance”*: *“There is no strong evidence yet to suggest that those who have had the virus develop long-lasting immunity which would prevent them from getting the virus again. Therefore, the value of antibody tests is currently limited to answering the question of whether someone has had the virus or not, and providing data and a greater understanding on the spread of the virus.”*
- Welsh Government have specified the priority groups for testing. Teachers are the first priority group, and CTM began its testing programme of teachers on 15/06/20. The next priority group for testing will be health and social care workers, who are due to start receiving antibody testing from the end of June.

Method / Location of testing

CTM has used a mixed model of testing to increase its testing capacity. CTM residents are accessing testing through a number of routes.

1. Staff Testing Units and Mass Testing Centres
 - CTM currently has three Coronavirus Testing Units (CTUs) in operation across CTM and one Mass Testing Centre in Abercynon. These are currently accessible only for both key workers as defined by Welsh Government, and symptomatic members of the public. A proportion of the appointments are available to all symptomatic members of the public, with the remaining appointments reserved for key workers to ensure that they have priority access for testing.
 - These sites are currently undergoing changes: three of the STUs are being closed, and two additional Mass Testing Centres are being opened. These changes will give CTM three Mass Testing Centres in: Navigation Park, Abercynon; Kier Hardy Health Centre, Merthyr; and the Field Hospital in Bridgend. One of the STUs located in Royal Glamorgan Hospital would remain to sample anyone needing an urgent test, pre-operative patients and children under 5.
 - All the CTUs and MTUs are currently operated by Health Board staff. It has been agreed that the operations at the current MTU in Abercynon will be taken over by Deloitte in the coming weeks. The MTUs in Merthyr and Bridgend, as well as the CTU in RGH, will remain under the operational control of CTM.
2. Home testing using staff from the CTUs
 - Currently home testing using staff from Williamstown CTU are available to care home residents. Williamstown CTU is not currently seeing members of the public as all their staff are currently undertaking home testing. The staff from the STUs are able to go to the Care Homes to take swabs from these people who would not be able to travel to the STUs.
3. Home testing using Amazon Couriered home testing kits
 - All symptomatic residents in CTM can request a home test kit delivered via the Amazon couriered home testing service. These tests are sent back to England to be processed, and results are sent out from England using an automated test system.

4. Testing of asymptomatic healthcare workers
 - Asymptomatic healthcare workers are currently being tested as part of a random sampling programme in CTM. 70-75 healthcare workers chosen at random from various sites and roles within hospitals and the community are sampled twice a week, meaning that 140-150 healthcare workers are sampled through this programme each week.
5. Care Home Portal
 - There is also a care home portal where online tests can be ordered and delivered to the care home directly. These tests are for Care Home staff. These tests are sent to England to be processed, and results are emailed to the care home which ordered the test.

This mixed model of testing will continue, with tests delivered through various routes to enable CTM to maximise the number of tests it can deliver and ensuring appropriate testing for different individuals.

Prioritisation

If testing demand outstrips capacity, either sampling or analytical capacity, then the priority groups for testing are:

1. Symptomatic individuals in hospitals
2. Symptomatic individuals in Care Homes
3. Symptomatic key workers

Testing in all other groups would be decided on a case-by-case basis, depending on the situation and the mismatch in testing capacity and demand. When designing and implementing further local COVID-19 testing policies for additional groups in CTM the following issues need to be taken into consideration:

- The current demand for COVID-19 testing in CTM
- The most recent predictions for future demand for COVID-19 testing in CTM
- The current sampling and analysing capacity for COVID-19 tests in CTM
- The most recent predictions for future sampling and analysing capacity for COVID-19 tests in CTM

Future Developments

The first priority for this strategy is to ensure that the current groups who are eligible for testing are reliably able to receive a COVID-19 test, through an appropriate route and in a timely manner. The COVID-19 response is likely to be ongoing for at least another 6-12 months, and so the testing strategy needs to ensure that the CTM response is sustainable and considers the long-term impacts of large scale COVID testing.

This strategy will also need to be reviewed on a regular basis. The COVID-19 situation is changing rapidly, and this strategy may need to be reviewed due to changes in:

- The prevalence of COVID-19 in the CTM population
- National UK and Welsh Government policy on COVID-19 testing

- National UK and Welsh Government policy on wider issues related to COVID-19 including the lifting of lockdown restrictions
- The availability of existing and novel COVID-19 tests
- The level and types of activity conducted in the Health Board

Unlike the previous strategy there will not be a large increase in the groups of people who are eligible for testing, as the range of people who are eligible for testing has already greatly increased. All symptomatic individual in CTM are now eligible for testing, alongside further offers for testing in specific groups including key workers, health and social care staff, and care home residents.

However, there will be an increase in testing in certain groups of people listed below:

1) Increased testing for pre-operative patients

Patients who are requiring elective surgery will require pre-operative COVID-19 testing in the community before their admission to hospital.

2) Testing of healthcare staff in clean clinical areas

Asymptomatic healthcare staff working in non-COVID, clean areas may be required to undergo testing to reduce the risk of COVID-19 into these clinical areas.

3) Serology antibody testing

Serology antibody testing in teachers was rolled out in CTM from 15/06/20. There are also plans to begin testing health and social care staff by the end of June. The further plans for serology testing in Wales are not yet defined.

4) Potential for testing of other targeted groups

There may be the requirement to test other targeted groups, either through antigen or antibody testing.

Limitations

There are a range of factors which have the potential to limit the plans to implement the testing strategy and the ongoing COVID-19 testing in CTM.

1) Staff

Staff will be needed to carry out a range of roles within the ongoing testing response in CTM. The issues around staffing levels were outlined in the initial testing strategy. Some of these issues remain such as staffing levels being affected by staff who need to shield due to vulnerabilities, or self-isolate due to either themselves or a close contact becoming unwell. In the initial strategy it was outlined that clinical staff may be required to be redeployed to treat COVID patients in field hospitals. This is not an issue currently due to the decreasing number of hospitalised COVID patients in CTM, however could become an issue again if there is a second peak of COVID infections later in the year. However, a more immediate issue around staffing is the requirement of staff to return to their original roles as more of the Health Boards usual work resumes during the recovery stage.

Some of the processes will involve staff in specific roles or who have certain skills that mean that fewer people are able to carry out their role or they are in higher demand during COVID-19. These staff are

highlighted in bold in the list below. As testing will be ongoing for at least the next 6-12 months it is important to identify sustainable staffing resources for this period.

- Booking of tests by administrative staff
- **Taking the swabs for children over 5 and adults by Nurses or Health Care Assistants.**
- **Taking the swabs for children under 5 by paediatric nurses. There are limited numbers of staff trained in taking swabs for children under 5 compared to other staff groups.**
- **Taking blood samples for antibody testing by phlebotomists, or other healthcare workers that are trained in phlebotomy skills including nurses. There are limited numbers of staff trained in phlebotomy compared to other staff groups.**
- Transporting tests by drivers
- **Running tests in the laboratories in UHW and RGH by laboratory staff. There are limited numbers of laboratory trained staff in CTM compared to other staff groups.**
- Communicating results by administrative staff, for results of care home residents and those who cannot receive their result through the automated text system.

2) COVID-19 test availability and capacity

The ability to implement the testing strategy depends on the testing availability and capacity of all the test which make up the testing strategy.

- Capacity of PHW laboratories to process PCR antigen tests
- Capacity of RGH laboratory to process PCR antigen tests
- Validation and availability of USW developed LAMP test
- Availability of serological antibody testing

3) Infrastructure and IT systems

Infrastructure and IT systems will also be required to ensure that the testing strategy can be implemented. These resources need to be available for 6-12 months minimum whilst COVID-19 testing is ongoing. This includes:

- Vehicles to transport tests
- Locations and infrastructure to house test sites
- Locations, IT and telephony services to enable administrative staff to support the testing process, including booking tests, arranging test kits and delivering results.
- IT systems to feed back the results of testing into surveillance teams.

References

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