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16th June 2020

Ms. Aileen Fallon,
Clerk to the Committee,
Special Committee on COVID-19 Response,
Leinster House,
Dublin 2.

Re: Submission on Testing & Tracing (SCC19R-I-0148)

Dear Ms. Fallon,

I refer to your invitation from the Special Committee to make a written submission on the topic of Testing and Tracing.

Please find attached (in a separate document) a submission paper from the HSE for the attention of the Committee members.

If any further information is required please do not hesitate to contact me.

Yours sincerely,

Ray Mitchell

Ray Mitchell
Assistant National Director
Parliamentary Affairs Division

Encl.

Testing and Contact Tracing during COVID-19

Submission to the Special Committee on COVID-19 Response (Oireachtas Committee) in respect of testing and contact tracing during the COVID-19 pandemic.

(16.06.2020)

SUBMISSION PAPER IN RELATION TO MATTERS RAISED IN LETTER OF JUNE 5th 2020, BY THE SPECIAL COMMITTEE ON COVID-19 RESPONSE (OIREACHTAS COMMITTEE) IN RESPECT OF TESTING AND CONTACT TRACING DURING THE COVID-19 PANDEMIC.

16th JUNE 2020

Contents

1. Introduction

This submission contains an update on the end-to-end COVID-19 testing infrastructure, from referral, community swabbing, laboratory testing, provision of results, effectiveness of testing, contact tracing and the new COVID Tracker App.

The HSE recognises that the availability of widespread, responsive testing with a short turnaround time is critical to the public health response to the COVID-19 pandemic. While the National Public Health Emergency Team (NPHET) sets the testing framework, the HSE is responsible for ensuring the delivery of the required testing model and capacity.

2. Overview

The HSE has developed the existing testing infrastructure, taking unprecedented measures to build a robust end-to-end process with multiple pathways at great pace. It has been described in the initial response as building a plane while flying it.

There are three phases to the implementation of the testing and tracing strategy:

1. Immediate response needed to ensure state could respond to the challenge of COVID-19
2. Summer 2020 through winter 2020/2021 as services restore and flu season impacts
3. On-going requirement for testing and tracing beyond 2020

2.1 Steps in Testing and Tracing

The current model is based primarily on GP referral, community sampling centres staffed by temporarily reallocated HSE staff, laboratory contracts and a contact tracing model based on using third level colleges and civil service departments.

This end-to-end process has faced challenges, most notably laboratory capacity and the supply of reagents. Challenges were also experienced with the communication of negative results. The testing backlog has been cleared and checks are underway to investigate and deal with any residual issues.

2.2 Initial Capacity Required

Notwithstanding these challenges, the capacity required has been delivered within the timeframe required by NPHET to assist Ireland in moving through the phases of response to the pandemic. Testing infrastructure now has the capacity to deliver 100,000 coronavirus tests per week across our end to end swabbing, laboratory and contact tracing infrastructure with a median turnaround time of < 3 days. Although this capacity is not currently being used, it is important to state that the capacity is in place to cover a range of possible strategies related to managing the growth of the disease.

2.3 Current Testing Strategy

NPHET has developed a testing and tracing framework, which is underpinned by a PCR testing strategy. The PCR testing strategy was developed by the Health Protection Surveillance Centre (HPSC) and is kept under review on an on-going basis by NPHET. This will require constant monitoring and be subject to change as the disease response progresses.

In the initial phases, referrals have gone from 20,000 per day to 4,000 per day and fluctuated based on the case definition and NPHET testing strategy decisions. The testing and tracing model has to be able to cope with these fluctuations.

2.4 Current Performance

Considerable enhancements have been made to contact tracing to reduce the turnaround times. Overall, for both routine and complex cases which are made by the Contact Tracing Centres and Public Health, the median time to complete communication of results and contact tracing is 21.6 hours. Our target is <24 hours. A series of improvements have been put in place to ensure that over 86 per cent of cases are now being tested and traced within three days. Currently, c80% of GP referrals result in swabs being taken the same day or next day. We have many examples of tests taking place within a matter of a few hours from GP referral.

As of the 19th May, we are now testing all close contacts of people who have tested positive for COVID-19. We schedule tests twice within the 14 days from their contact with the confirmed case. This type of testing will allow us to identify and better understand the prevalence of those carrying COVID in the community. A close contact of a confirmed case also now receives an SMS for up to 14 days after they were last in contact. The SMS asks about their health status, and if they become symptomatic, advises them to ring their GP or a newly designated contact tracing centre to arrange a test.

The mass testing programme undertaken for residential care facilities, including nursing homes, mental health facilities and disability service facilities is now complete. Future testing in these settings will continue in line with public health advice. The total number of tests completed as part of the residential care facilities mass testing programme is 103,546.

2.5 Improvement Plans

Along with increased capacity, we have recently introduced ten key improvement initiatives aimed at further tightening the turnaround time and reducing the likelihood of delays or any errors:

1. Automatic texting of confirmed negative cases, speeding up receipt of this result to 97% of those tested;
2. A helpline for GPs to track delayed results (80% of these have been resolved in a 24-hour target to date)
3. 14-day active management of contacts of a confirmed case;
4. Automatic test referral for contacts of confirmed cases;
5. Automatic testing for contacts of a confirmed case;
6. Automated scheduling of appointments to reduce waiting times;
7. Improved notification of complex cases to our public health teams; and
8. Automated IT solution that now transfers test results to our contact tracing teams in 90 minutes where previously it was 24 hours;
9. Implemented a dashboard highlighting volumes and turnaround times in real time for each step of the process, allowing proactive monitoring and investigation of potential issues; and
10. Developed a digital simulation model of the end to end testing infrastructure to test potential scenarios, allowing us to predict performance and where bottlenecks may occur.

Further improvement plans include:

- Patients will soon be able to ring their GP out of hours service to be referred for a coronavirus test;
- A series of proposed improvements have been identified by Public Health and are under consideration;
- Bulk testing in congregated settings (factories, nursing homes etc) – introducing a central team to co-ordinate the process from referral for testing; to communication of results and contact tracing.

As well as the improvements outlined above, we are working to launch a new contact tracing app, which is aimed at controlling the spread of COVID-19. The aim of the app is to support the health services to quickly trace close contacts and map and predict the spread of COVID-19 to others in our community in the phases ahead. The more people that download and use the app, the more effective it will be. The app will operate on a voluntary and fully opt-in basis. It uses Bluetooth to securely collect and share anonymous information. The app sends you a notification if you've been in close contact with someone who tests positive for COVID-19. Field testing is underway with volunteers from An Garda Síochána, which will allow us to validate how the app performs in everyday situations. Our research to date clearly illustrates a willingness among the public to actively participate in the fight against COVID-19 by downloading and using the COVID Tracker App. The app will be launched once it is fully operational and the necessary consultation has taken place within the HSE, Department of Health, Data Protection Commission and wider Government.

2.6 Sustainability of current model and future plans

The initial testing and tracing model was put in place in order to meet the immediate requirements of the COVID-19 crisis. Much of the infrastructure that is in place is not sustainable in the longer term. This includes factors such as;

1. Use of HSE clinical staff reassigned temporarily to staff sampling centres
2. Use of sports grounds and other community facilities as sampling centres
3. Reassignment of laboratory equipment and staff normally used for other clinical laboratory testing in hospitals
4. Short term laboratory provider contracts
5. Use of third level colleges and staff to undertake contact tracing.

The design of a sustainable model, that will operate for the next 18+ months has commenced. This critical project will run during the summer months with a target implementation date in the early Autumn.

3. Daily and weekly capacity

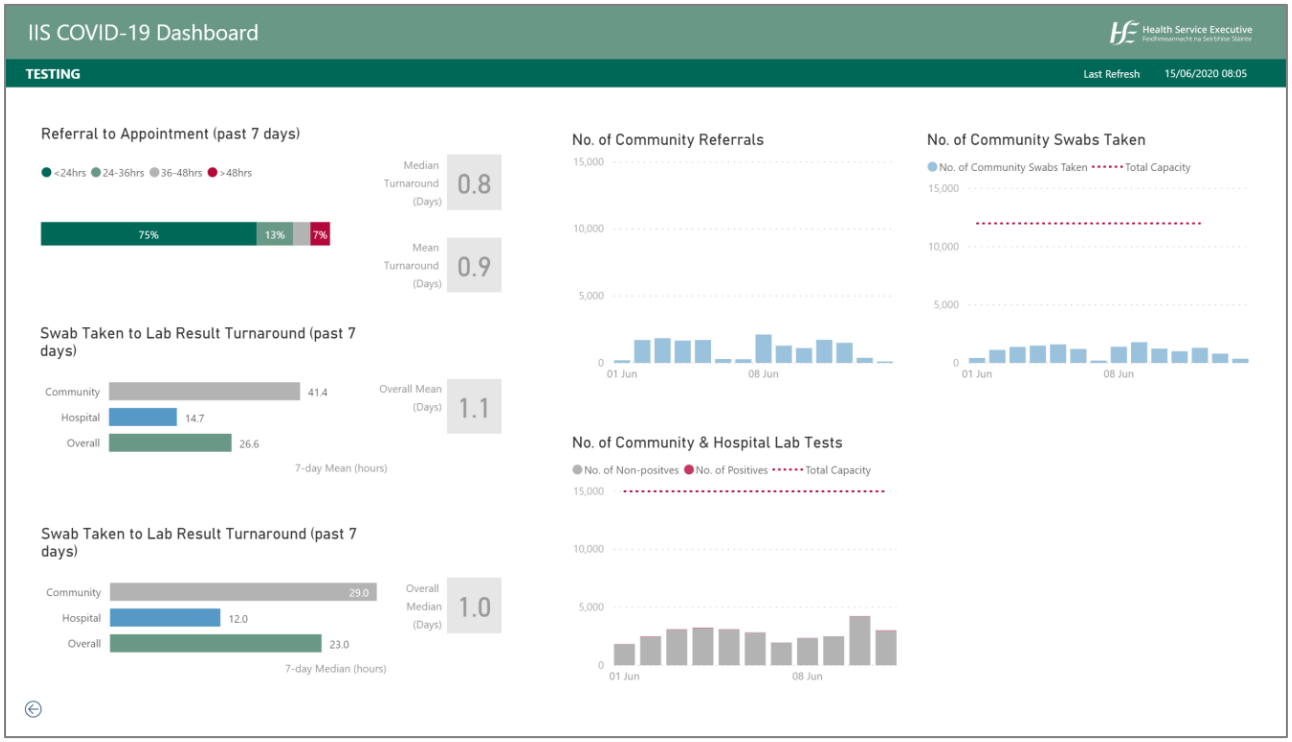
The capacity to swab, process, communicate and contact trace 100,000 PCR tests for COVID-19 per week has been in place since May 18th 2020, equating to a daily capacity of approximately 15,000 tests.

However, this capacity threshold has not been used to date. Over the past four weeks, the average weekly number of tests processed was 22,862. The maximum number of tests performed in a single week was approximately 61,000 in early May.

3.1 Testing activity

Current testing volumes are low and trending downwards, which is a positive indication of the reduced incidence of the disease in the country. Last week, approximately 20,000 tests were taken across our community and acute settings. Of these tests, 40% were from the community and 60% were taken in a hospital setting.

Figure 1. Information on the length of time from turnaround times from GP referral to appointment, swab taken to test result, as of 15th June 2020.



3.2 Tracing Activity

Last week, a total of 612 calls were made in the Contact Tracing Centres. A total of 148 of these were Call 1s which involve the communication of positive results. A total of 464 calls related to contact tracing; that is the gathering of contact details for close contacts of confirmed cases and communication to these close contacts.

4. Availability of labs, including details of procurement and provision

4.1 Summary

The HSE National Testing and Tracing programme is responsible for implementing the PCR testing strategy set by NPHET. The initial testing and tracing model was put in place in order to meet the immediate requirements of the COVID-19 crisis. We have built up a network of 46 laboratories providing COVID-19 testing. In order to achieve the necessary 15,000 tests per day, contracts and services have been put in place with public and private laboratories.

4.2 Laboratory Strategy

The HSE laboratory strategy is based on three objectives. These are the:

- Provision of 100,000 testing capacity per week as directed by NPHET
- Providing good information on the testing process
- Implementation of a national programme

The acute hospital laboratory capacity has been built up to deal with primarily critical in-patient and staff testing. Community testing capacity has been developed under the clinical governance of NVRL with agreements with 3rd party laboratories. In addition, commercial partners were secured in both Ireland and Germany.

The laboratory services and product market for COVID-19 testing became a globally competitive market with countries vying for access to laboratory services and essential reagent and testing kits. This created enormous challenges to secure sufficient capacity and produce supply lines for Ireland.

In order to address these issues the HSE laboratory strategy was to:

- Diversify testing platforms within our hospitals to ensure continued supply of test kits and reagents
- Secure private laboratory capacity to support community testing as none of the HSE laboratories can deal with the high volume required
- Secure a solution on island which can provide fast turnaround and dedicated capacity for the HSE
- Ensure more than one private partner to reduce risk of supply chain, staffing and contractual difficulties
- Increase capacity in the public system for a more sustainable long-term capacity.

5. Scaling up testing following removal of restrictions

5.1 Summary

The HSE recognises that the availability of widespread, responsive testing with a rapid turnaround time is critical to the public health response to the COVID-19 pandemic. It has a key public health role in:

- Enabling disease surveillance;
- The identification and understanding of spread of the disease;
- Understanding characteristics of the disease;
- Enabling and enhanced understanding of incidence and management of outbreaks;
- Understanding of incidence in different geographical locations and age groups;
- Triggering key public health actions to break chain of transmission of virus.

This process is also vital to support any future changes in the case definition and the continued easing of restrictions on movement as society returns to normal.

5.2 Future demand

The degree to which the maximum testing capacity of 100,000 tests per week is used is determined by demand. Future demand is determined by the four testing demand factors below:

1. The testing referral criteria set by NPHET
2. The extent to which these are understood and applied by the population in general (i.e. the extent to which those who fulfil the criteria call their GP for a referral to be tested)
3. The rate of viral transmission in the population (i.e. the effective reproductive number, Rt)
4. Other components of the national testing strategy
    a. Testing of HCWs in the Nursing Home (NH) setting
    b. Testing of hospital patients
    c. Testing of other HCWs

With regard to the fourth testing demand factor above, the demand for testing in respect of these items will depend on the specific requirements and recommendations of the NPHET. This includes:

1. The volume of testing subject (population of NH staff for example)
2. The required cycle and frequency of the testing cycle (e.g. HCWs are required to be tested over a seven-day period and this is to be repeated weekly)
3. The duration of any component of the testing strategy (e.g. HCWs in Nursing Homes are to be tested in this way for four weeks).

Bearing this in mind, it can be noted that there are approximately 33,000 nursing home Healthcare workers. Simulation of the proposal to test all of these on a rolling seven-day basis for four consecutive weeks shows that the current system and processes can tolerate this level of additional demand, with the impact being an increase in average turnaround times of less than 0.5 days.

5.3 Aligning the different actions taken by NPHET against the testing strategy

The goal of end-to-end testing and tracing pathway is to control transmission of COVID-19 in the general population. To achieve this purpose, the testing and tracing pathway must be sensitive and timely; i.e. it must ensure testing of probable cases of COVID-19 and complete contact tracing in laboratory confirmed cases in a timely way.

HSE has a simulation model in place to enable it to examine planning parameters and turnaround time performance of the E2E pathway under different scenarios. This gives the opportunity to be very specific about testing capacity and impact on turnaround times of any amendment to the existing strategy. This allows for agile decision making and early warning of actions required to add additional capacity or implement process enhancements.

Simulation modelling by the HSE demonstrates that, within a given set of planning parameters, the turnaround time performance of the end to end pathway is impacted by testing strategy and the rate of viral transmission in the population. Our work tells us that testing strategy changes (demand factor 4) have greater potential to destabilise end to end pathway than changes in community activity (demand factors 1 – 3), especially in short term. This underscores the need for continued close engagement between NPHET and HSE on implementation planning.

6. Investigation of capacity and outcomes of differing testing pathways - healthcare workers; community-based contact; in-hospital contact; congregated settings

Throughout the pandemic to date, the intention has been to seek out potential cases and test them as soon as is practical. From the start we have sought to use guidance from WHO / European Centre for Disease Prevention and Control on what should be the symptoms we sought out and tested. As we moved on, we were continually learning from experiences elsewhere and increasingly in Ireland, to focus our testing.

6.1 Healthcare workers

From the outset, it's important to state that healthcare workers have always been a priority group for testing and contact tracing. A new, separate testing strategy for healthcare workers makes a number of recommendations, including serological testing of healthcare workers in some facilities.

An operational plan is also currently being developed to test healthcare workers in nursing homes on a week-by-week basis, over a four-week timeframe.

6.2 Inpatient admissions

In terms of in-patient admission, we have sent out interim advice to all hospitals for elective admissions which states that people who are to be admitted electively should self-isolate for two weeks beforehand and get tested 72 hours before they are admitted. It is envisaged that the window of 72 hours for testing will be reduced to 48 hours shortly. In terms of emergency treatment, when a patient is admitted they are risk assessed at the point of entry according to the likelihood of COVID-19 and what symptoms they may or not present with.

6.3 Large scale testing in congregated settings

The outbreak of COVID-19 in long-term residential settings can have a significant impact on vulnerable residents. The frail elderly are especially at risk and this is compounded by the fact that older people sometimes do not present with the usual symptoms associated with COVID-19.

The HSE has completed a mass testing programme of nursing homes and has tested 42,380 individuals comprising staff and residents. The HSE has now also completed mass testing across the 372 mental health residential service locations and is well advanced in completing mass testing in our 1,269 residential care facilities for people with disabilities where required by the NPHET guidelines.

As the process was established at short notice, a range of approaches were taken to coordinate the mass testing, in order to support the completion of the process as rapidly as possible. For example, some services utilised the National Ambulance Service for completing testing of all staff and residents in a single visit to a facility; for other services, testing kits were distributed to the centres where testing was conducted on-site by staff trained to do so. For others, testing for some staff and residents was completed on site, while some staff were booked to attend a community testing site, when they were not available to attend the centre for testing on a specific day. Broadly the laboratories used to test the swabs turned around the test results within 2/3 days. Where tests were sent to local hospital laboratories, this turnaround time dropped to 24-48 hours. Local Public Health departments subsequently communicated all validated results as they became available. This process has now been reviewed and improvements identified to mitigate risks identified going forward.

7. Testing centres

7.1 Referrals

Members of the public are referred for coronavirus testing by their GPs. Tests can only be carried out with a referral, either from the patients GP or in some cases by the Department of Public Health. Patients receive an appointment time at a testing centre once they are referred by their GP, and that appointment is usually the same day.

7.2 Locations of testing centres

There are a total of 45 Community Testing Clinics available nationally. There is at least one testing centre located in all 26 counties, with Dublin (8), Cork (3), Galway (3), Limerick (3), Donegal (2) Waterford (2), Westmeath (2) and Mayo (2) having more than one centre.

The number of tests per centre varies depending on demand for testing in any specific geographic area. While some centres have been stood down recently due to low demand, these centres are still available to be re-activated should we need them. See the Appendix 1 for details.

7.3 Testing centre activity

From 23rd March to 15th May, a total of 120,960 tests were completed in the community. From 23rd March up to 10th June we completed 157,262 tests in community.

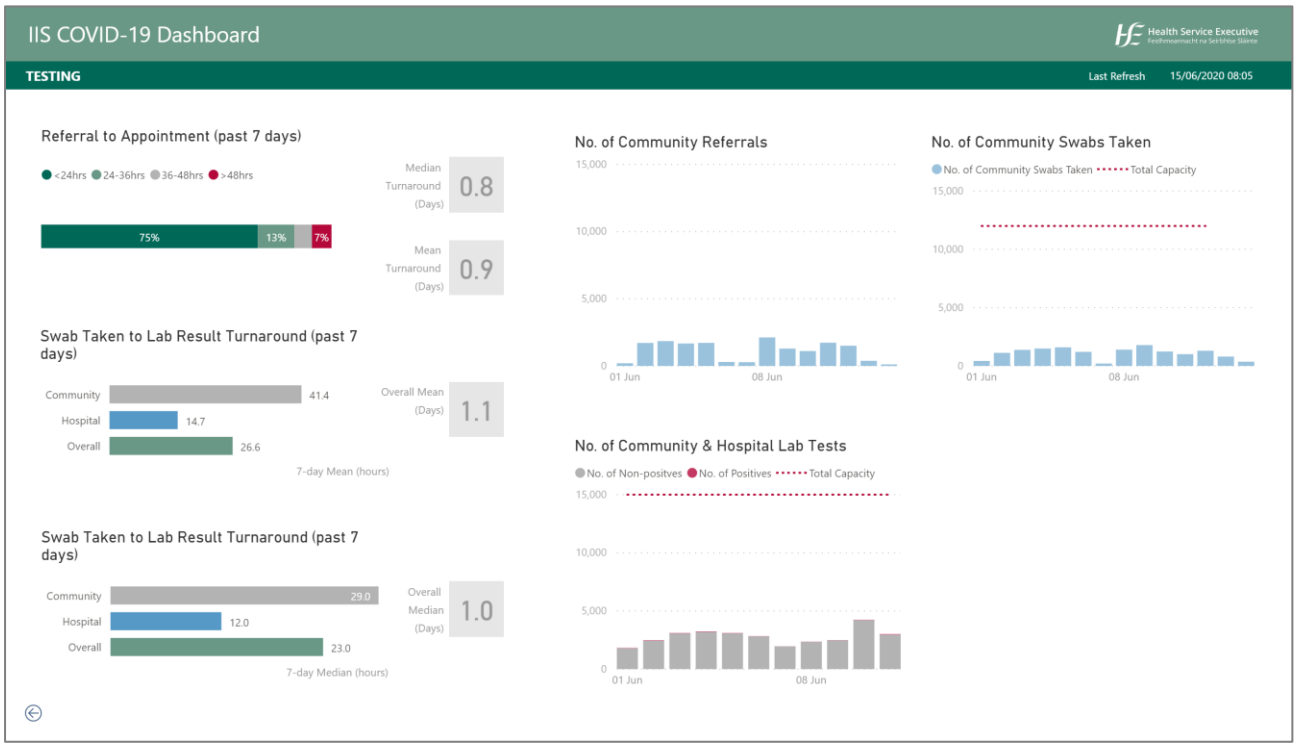
8. Timeline for results

The overall median end-to-end turnaround time COVID-19 tests (both hospital and community) from referral to the completion of contact tracing is c.1.8 days. The median timeline from GP referral to result and contact tracing complete in the community is c.2.3 days. The equivalent time in a hospital setting is c.1.5 days.

Over the past week, approximately 86% of tests have been completed and communicated within our three-day turnaround target.

For the minority of tests that are delayed, a support service has been established for healthcare workers, GPs enquiring on behalf of their patients and the general public. Over 80% of the requests received are addressed and closed within the target 24-hour timeframe.

Figure 3. This dashboard shows the average turnaround time from GP referral for an appointment date is 0.9 days over the last seven days. While the average swab to lab result turnaround is 1.1 days.



9. Costs of individual tests, projected costs of testing

9.1 Financial Management

Despite the rapid nature of the establishment of the testing and tracing model the HSE has moved to put in robust contract and service management processes around the pathway. For example significant work went into ensuring best value from the laboratory contract negotiations and in the arrangements with the third level sector for contact tracing. A monthly financial monitoring process is in place to monitor the expenditure and ensure maximum value from the state's investment in both public health and financial terms.

It was necessary to forward purchase on reagent and PCR test kits in the initial stages given the global pressures on the market. Considerable success was achieved in ensuring a steady supply of the test kits for the various manufacturers. The HSE's strategy of diversification amongst manufacturers resulted in minimal instances where hospitals could not test due to reagent and test kit supply difficulties. Additionally, a logistics provider has had a contract expand to include COVID-19 testing and delivery timetables have been established which will help improve turnaround times.

There are consultancy and contractor costs required to support the implementation of the testing and trace model in 2020. In addition, there are ICT software and infrastructure costs associated with the various technical solutions required for referral, sampling, testing, providing results and contact tracing. This includes automation of manual data transfers, further automation of manual activities, where possible, and the inclusion of new needs such as active surveillance.

9.2 Summary of Costs – to Week Ending May 15th 2020

This table sets out the expenditure processed to date. Note: there will be additional costs during this period still to be processed once contracts are finalised.

ESTIMATED COVID-19 TESTING CAPACITY COSTS - May 15th	**€'000**
GP Referral (Note 1)	14,447
Cost of taking of COVID - 19 Test (Note 2)	5,138
Laboratory Testing (Note 3)	23,443
Capital, Equipment & reagent supply purchases (Note 4)	32,972
Logistics and support - secure transportation of samples (Note 5)	450
Contact tracing and active surveillance (Note 6)	3,113
Technology and other costs (Note 7)	371
Total cost of testing	**79,934**
Notes on Costs	
1. GP costs are for a total of 481,581 COVID - 19 related telephone consultations	
2. The current costs are reflective of the gross costs of swab tests taken in community centres staffed by temporarily reallocated public service staff in addition to swab testing undertaken by the National Ambulance Service.	
3. The costs of labarotory testing includes the cost of testing in the National Virus Reference Lab (NVRL) and Hospital Labs incl. tests that have been referred to off-site laboratories. No payments have yet been made to private laboratory facilities.	
4. The costs reflected in this category are reflective of the value of payments made to suppliers for molecular test kits and other testing consumables.	
5. This is an estimated cost of logistics for the collection and delivery of test samples.	
6. The costs reflected under contact tracing reflect the gross staffing costs for contact tracing staffed by temporarily reallocated public service staff.	
7. This is the total estimated costs to date for the development of a HSE contact tracing app.	

9.3 Cost of individual laboratory tests

Complex negotiations are on-going and cover a wide range of products needed in the testing process, such as the various testing kits and reagents required. While €120 is the budgeted rate per test, we have managed to secure rates below this budgeted rate. Our independent market assessment shows that Ireland is paying the average test price at this time. However, it is worth noting that the rates and prices have varied, depending on the particular testing products and testing platform used and international demand, right through our response to the COVID-19 pandemic.

Given the global competitive nature of the laboratory provider and supplies market the HSE has had to take a commercially sensitive approach to contract terms with private providers. We are still in the market for on-going supply of reagents and test kits.

We are also constantly monitoring the private sector laboratory market to seek commercial and resilience opportunities which means the state needs to be very sensitive at this point to the commercial rates it has achieved.

9.4 Projected costs

If the state was to require 15,000 per day every day then the projected costs would be in the region of €450m. Clearly this will not be a requirement every day and hence we are constantly monitoring and assessing this expenditure on a weekly and monthly basis to adjust projections. The development of a longer-term testing and tracing strategy will include a financial plan for the ongoing operation of the testing and tracing service.

10. Effectiveness of testing

10.1 PCR Testing Validation and Performance

The current testing strategy in Ireland, based on expert advice, involves laboratory-based pathogen detection using nucleic acid technology (NAT) methods. Specifically, this involves the use of polymerase chain reaction (PCR) techniques. The (PCR) test, tests to see if a person currently has the virus. Diagnostic testing for COVID-19 infection is critical to tracking the spread of the virus, understanding epidemiology, informing case management and reducing transmission. The HSE are only using assays approved by the HSE Pathology Clinical Lead and the National Virus Reference Laboratory. These all have a strong level of specificity and sensitivity in the high 90s.

11. Developments in testing

1.1 About antibody testing

Antibody tests are used to detect antibodies to the COVID-19 virus to see if a person has previously had the virus. 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.

1.2 Study to measure exposure to COVID-19 infection

As of 12th June, letters have issued from the HSE to more than 5,000 people inviting them to participate in the study to measure exposure to COVID-19 infection in the population using an antibody blood test. The presence of antibodies indicates that a person was infected with the COVID-19 virus. Initial results are expected in late August and will enable HPSC estimate prevalence of infection of COVID-19 in the population across different age groups. A representative sample of people in both Dublin and Sligo were invited to participate, as it is representative of the wider population, with higher and lower known levels of infection respectively. It will be possible to provide an overall national estimate of infection in the Irish population. This study will be repeated in other areas of the country over the coming year. Participants will also be asked to complete a short questionnaire and provide a blood sample to test for antibodies, taken by a phlebotomist in a local HSE centre.

The antibody test being used has recently been shown in international studies to be both sensitive, in that it detects the majority of people with antibodies, and specific in that a positive test is an accurate reflection of infection. Participants who are found to have antibodies for COVID-19 will be asked to take part in a follow-up study. The study will add to our knowledge about how long antibodies last and what protection they may provide against new infection of COVID-19.

12. Future direction of testing

The HSE commissioned a piece of work to develop a strategic plan for the longer-term requirement for testing and tracing. This is complex in that it is far from clear how the disease will progress and hence what the testing requirement may be. Various scenarios will be considered as part of that strategy. It is intended to complete this work by the early autumn.

13. Contact Management Programme – protocols and procedures

13.1 Summary

Our contact management programme (CMP) was established to create additional capacity to deal with the high volumes of contact tracing required in the context of the COVID-19 pandemic. The CMP designed, developed and implemented a training programme for contact tracing, with scripts to guide the contact tracers on the different calls. Over 1,700 people were recruited across the civil and public service and trained in contact tracing.

During week commencing 16th of March, nine contact tracing centres (CTCs) were established around the country. Of the 1,700 people trained, approximately 300 were deployed to Public Health Departments, and approximately 700 were deployed in CTCs. CTCs operate on a seven day a week basis, from 8am until 8pm. The remaining trained staff have not been required to date. Since the middle of March the number of people deployed in the CTCs has varied, based on the number of confirmed cases.

In addition to the CTCs, there is contact tracing activity that is carried out in the Public Health Departments. Public Health Departments have dealt with complex cases and facilities, such as congregate settings, direct provision centres, and workplaces. Infection prevention and control teams in hospitals have contact traced in-patients within their facility; and occupational health departments do the workplace contact tracing for healthcare employees.

13.2 Contact Tracing Process

The CMP uses the COVID Care Tracker (ICT system) to record detected (positive) and not detected (negative) results. The results arrive from the laboratories that carry out the test. The primary laboratory is the National Virus Reference Laboratory (NVRL). The NVRL send results to the HSE five times per day. When the files are received, they are examined and those without a valid contact number are referred to a specialised team who use public service databases to try and establish a valid number. The detected cases with a valid number are bulk uploaded on to the COVID Care Tracker and listed for a Call 1. The not detected cases with a valid number are bulk uploaded and a SMS message goes to the individual, confirming their result.

The Contact Management Programme (CMP) operates a three-call process to contact trace a confirmed case.

1. Call 1 – involves calling the confirmed case, checking their health status and providing the public health advice.
2. Call 2 – usually an hour later, involves capturing the close contacts of the confirmed case, from 48 hours before the onset of symptoms.
3. Call 3 – calling each of the close contacts identified at call 2, to provide public health advice.

The CMP has a manual count of those not contactable per day. In the past seven days the range has been 85% to 100% completion per day for index cases. As the number of cases has reduced the completion rate has increased.

The CMP makes three attempts to contact the close contact. Voice mails are left at call 1 and 3 advising them of the purpose of the call. At least one call is made the following day. If the close contact is not contactable then the call is marked resolved, as there is no address to write to the person. The CMP does a manual count of those close contacts not contactable. In the past seven days the completion rate has varied between 83% and 98% per day.

A further change is being made to the COVID Care Tracker, to allow the capture of county, so that the close contacts, who have not been contacted, can be advised to the relevant Public Health department.

13.3 Active Follow Up

All close contacts have active follow up (previously called active surveillance) for 14 days after they were in contact with a confirmed case. This takes the form of a daily SMS message, asking the person if they have COVID related symptoms, and if they do to call a designated contact tracing centre or their GP, to organise a test.

13.4 Testing of Close Contacts

Following the recommendation by the National Public Health Emergency Team (NPHET), all close contacts of a confirmed case are referred for a test. In reality Day 0 is usually day 3 or 4, as a confirmed case is requested to self-isolate as soon as they contact their GP with symptoms and their result is usually notified within 72 hours. This means that it is usually day 3 or day 4 when the close contact is referred for their first test. The Day 0 and Day 7 referrals are generated automatically by the COVID Care Tracker. There are cases where only one test is ordered, for example, where the first test result is positive, or where there is less than 24 hours between the Day 0 test and the Day 7 test.

13.5 Overview of activity

Over recent weeks the number of confirmed cases has fallen steadily, and requirement for contact tracing has also fallen. Week ending the 18th April 2020 there were a total of 18,371 calls made, and by week ending 29th of May there were a total of 2,741. For illustrative purposes the total calls made and contact tracers used are set out in tables below, for the last three weeks of May.

On the busiest week (week ending 17th April) there were over 200 people doing contact tracing per day in the CTCs. There were an average of 750 Call 1s made per day and over 5,000 Call 1s made during the seven-day period.

By week ending 29th May that figure was 42 people doing contact tracing per day, and the number of CTCs used that week was four, with an average of 100 Call 1s per day.

Week ending 29th May:
○ Total call 1s made – **722** (Average of **103** per day)
○ Total call 3s made – 1,168 (Average of **167** per day)
○ Total calls made – **2,741** (Average of calls **392** per day)**
○ Average number of contact tracers per day – **42***

Week ending 22nd May:
○ Total call 1s made – **916** (Average of **131** per day)
○ Total call 3s made – 1,803 (Average of **258** per day)
○ Total calls made – **3,874** (Average of calls **554** per day)**
○ Average number of contact tracers per day – **50***

Week ending 15th May:
○ Total call 1s made – **1,841** (Average of **263** per day)
○ Total call 3s made – 2,869 (Average of **410** per day)
○ Total calls made – **6,980** (Average of calls **997** per day)**
○ Average number of contact tracers per day – **62***

*The numbers contact tracing reflects those in the contact tracing centres only.
** Includes call 2s, which are not listed in the table

14.Contact tracing app

14.1 Summary

Our contact tracing operation is at the centre of the health service response to combatting COVID-19 and protecting our communities. Ireland is at the forefront of working in collaboration with Apple and Google and a number of European countries to deliver an App. This is a joint effort by commercial companies, governments and health agencies to use Bluetooth technology to reduce the spread of the virus, with user privacy and security central to the design.

14.2 Overview of the mobile app

As part of the national response to COVID-19, work is underway to develop a national app for contact tracing and real-time symptom tracking. The app has three main functions 1) contact tracing 2) symptom check-in, 3) COVID-19 stats and information.

The primary purpose of the app is to enable the health services to improve the speed and effectiveness of contact tracing and to map and predict the spread of COVID-19 in support of the overall goal to flatten the curve and prevent the spread of COVID-19 to others in our community.

As well as supporting the government's overall efforts in the immediate fight against COVID-19, the app will have particular benefits in helping people return to normal life as restrictions ease.

14.3 Consent based model

Since adoption of contact tracing apps is voluntary, transparency and trust are fundamental to their success. The contact tracing app developed for Ireland uses a decentralised architecture around which we have built our data model on the basis of privacy-by-design in full alignment with our

national testing and contact tracing operation. The 'decentralised' approach is best placed to support contact tracing because it maximises the effectiveness of contact tracing across all mobile phone platforms and maximises the protection of privacy, as recommended by the EU European Data Protection Board. It achieves this by minimising the amount of data required, ensuring that most data is held on the users own phone rather than on a centralised (HSE or government controlled) server and uses anonymised and encrypted data.

The provision of other anonymised information through the symptom tracker - such as gender, age category, county of residence - which is of value in public health terms is all provided on the basis of user-preferences. Users of the app can opt out at any time and have the right for their data to be forgotten.

14.4 Privacy and data protection

Privacy-by-design has underpinned all aspects of the App development. The Irish app is being developed to comply with recent European Commission Data Protection recommendations and guidance documents on privacy. Use of the app will be voluntary and data that is provided to the health services will be provided on the basis of consent and user preferences.

The project has developed Data Protection Impact Assessment (DPIA) which has been submitted to the Data Protection Commissioner. The HSE will publish the DPIA and the source code publicly to ensure that there is full transparency about the app and the data utilised within the app.

It is important to be clear that location data from the app is not of interest to the contact tracing services or the HSE. Furthermore, it is important to note that the identity of the person who tests positive for COVID-19 is never disclosed via the app and the privacy of all app users is protected at all times.

14.5 Where are we now?

As the app development is complete, it will be launched once the necessary approvals have been received from the Department of Health, HSE and wider Government.

15.Future capacity to contact trace

As of 10th June, there are still six CTCs in operation. Only one CTC is used per day, given the low level of confirmed cases.

Irrespective of the demand, the HSE will maintain additional contact tracing capacity in the form of CTCs. Work is currently on-going to consolidate capacity into one CTC, with the capacity to manage up to 150 confirmed cases per day. This model also has flex capacity to bring contact tracing capacity back to 9 CTCs, with a capability of managing up to 1,400 new cases per day. The current planning exercise is looking at how quickly capacity can be brought back on, and what are the triggers to stand up additional CTCs.

In addition to this interim measure the HSE is about to commence an exercise to develop an end to end testing and tracing process that can run without impacting on existing HSE services. It is expected to complete this exercise by early autumn.

16.Timeline for Results - contact tracing timeframes

The timeliness of contact tracing has improved significantly since the early days. Over the course of the past few weeks the end to end process has improved significantly. Not detected results, with a valid mobile number, get an SMS message within an hour of being uploaded onto the COVID Care Tracker. Detected cases, who answer their phone, will usually have the contact tracing completed during the working day. As some people are difficult to contact, some cases will run into the next day. Also, the last laboratory file of test results is uploaded around 7.30pm, and contact tracing for these cases commences the following morning. Over the past 14 days the median time to complete contact tracing (all three calls) is one day.

17.Costs of tracing

The costs associated with contact tracing are mainly replacement costs, as the majority of staff involved are redeployed from other civil and public service organisations. The estimated cost to the end of May 2020 is €1.9m.

18.Conclusion

In terms of our future testing and tracing strategy, our approach will reflect new insights into the disease and learning from our experiences in Ireland and around the world. The HSE commissioned a piece of work to develop a strategic plan for the longer-term requirement for testing and tracing. This is complex in that it is far from clear how the disease will progress and hence what the testing requirement may be. Various scenarios will be considered as part of that strategy. It is intended to complete this work by the early autumn.

In order to achieve the necessary 15,000 tests per day/ 100,000 tests per week, we have built up a network of 47 sampling centres, 46 laboratories providing COVID-19 testing and 9 contact tracing centres. In addition to the improvement initiatives set out at the beginning of this submission, further work is underway to further reduce turnaround time of results and ensure the testing processes are sustainable. These include addressing key data challenges at source and driving improvements in public health to support consistent ways of working including data management across all public health facilities. Work has also commenced on preparation for autumn/winter 2020 and dealing with some of the risks of the initial model deployed. This will involve detailed capacity planning and consideration of options to address the inevitable peaks and troughs of demand.

There is no quick fix or easy answer in our fight against COVID-19. However, testing and contact tracing has a vital role to play, alongside other public health measures such as physical distancing and good hand and respiratory hygiene, to enable us to work together to maintain low levels of community transmission of COVID-19, as we ease restrictions. Testing and contact tracing along with other public health measures will be part of our lives until a vaccine has been developed and delivered.

Appendix 1

Table 1. Current status of community test centres.

CHO	Site Name	Site Address	Current Status
CHO1	Breffni Park, Cavan	Kingspan Breffni Park, Park Lane, Creighan, Co. Cavan	**Active**
CHO1	Lakeside, Ballyshannon	Lakeside Centre, Beleek Road, Ballyshannon, Co. Donegal	**Closed**
CHO1	Carrick on Shannon	Irish Wheelchair Association, Castlecarra Road, Attifinlay, Carrick On Shannon, Co. Leitrim	**Active**
CHO1	Sligo Drive Through	IDA ATB Building, Finisklin Business Park, Finisklin Road, Sligo	**Active**
CHO1	Monaghan	Monaghan GAA Centre of Excellence, Cloghan, Annyalla, Co. Monaghan	**Active**
CHO1	O'Donnell Park, Letterkenny	St. Eunan's GAA Club, O'Donnell Park, Sallaghagraine, Letterkenny, Co. Donegal	**Active**
CHO2	Castlebar Swimming Pool	Castlebar Swimming Pool - Mayo Co Co	Available
CHO2	McHale Park, Castlebar	Mc Hale Park GAA Pitch, 60 McHale Road, Drumconlan, Castlebar, Co. Mayo	**Active**
CHO2	Renmore Community Hall	Renmore Community Hall – Eircode: H91W259	Available
CHO2	Craughwell Health Centre	Craughwell Health Centre, Craughwell, Co Galway,	Available
CHO2	Roscommon	Roscommon University Hospital, Athlone Rd, Roscommon, F42 AX61	Closed
CHO2	Roscommon	Fire Station, Knockroe, Castlerea, Co Roscommon	**Active**

CHO	Site Name	Site Address	Current Status
CHO2	Galway Airport	Galway Airport, Carnmore East, Co. Galway	**Active**
CHO3	Gaelic Grounds, Limerick	Páirc na nGael, Ennis Road, Limerick	**Active**
CHO3	Dooradoyle	St. Gabriel's School & Centre, Springfield Drive, Dooradoyle, Limerick	Available
CHO3	Roxboro Road	Southside Community Education Campus, Child & Family Centre, Roxboro Road, Galvone, Limerick	Available
CHO3	The Derg, Nenagh	The Derg Centre, Gortlandroe Business Park, Nenagh, Co. Tipperary	**Active**
CHO3	St Gabriel's Pool, Limerick	St. Gabriel's School & Centre, Springfield Drive, Dooradoyle, Limerick	Available
CHO3	Mc Neville Park, Rathkeale	Mc Neville Park, Rathkeale, Co Limerick	Pending
CHO3	Semple Stadium	Ardán Uí Chuinneáin, Semple Stadium, Thurles, Co Tipperary	Pending
CHO3	Cusack Park, Ennis	Francis St, Ennis, Co. Clare	**Active**
CHO4	Parc Ui Chaoimh	Security Desk, Pairc Ui Chaoimh, The Marina, Ballintemple, Cork	**Active**
CHO4	Tralee ITT	South Campus, Clash, Tralee, Co Kerry.	**Active**
CHO4	Ballymullen Barracks	Ballymullen Road, Tralee, Co. Kerry	Pending
CHO4	Dunmanway	Randal Og GAA Club, Ballinacarriga Community Centre, Dunmanway, Co Cork	**Active**
CHO4	Mallow Racecourse	Cork Racecourse, Killarney Road Mallow, Co. Cork	**Active**
CHO5	Carlow	Tinryland GAA Club, Rathcrogue, Carlow	Available
CHO5	Nowlan Park, Kilkenny	Nowlan Park GAA, O'Loughlin Road, Kilkenny	**Active**

CHO	Site Name	Site Address	Current Status
CHO5	Clonmel	Moyle Rovers GAA, Monroe, Clonmel, Co. Tipperary	**Active**
CHO5	Wexford	Arden House, Whitemill Industrial Estate, Wexford	**Active**
CHO5	Dungarvan	Waterford GAA, Fraher Field, Dungarvan, Co. Waterford	**Active**
CHO5	Waterford (WIT Arena)	WIT Arena, West Campus, Carriganore, Co. Waterford	Available
CHO5	Waterford (Kilcohan)	former St Martin's School, Ashley Drive, Waterford	**Active**
CHO6	Clonskeagh Hospital	Conference Room, Clonskeagh Hospital, Clonskeagh, Dublin 6	**Active**
CHO6	Glenside Road, Wicklow	Day Centre, Glenside Road, Wicklow	**Active**
CHO6	St. Michael's Dun Laoghaire	St Michaels Testing Centre, St Michael's Hospital, Crofton Road, Dun Laoghaire, Co Dublin	Stood Down
CHO7	Aviva Stadium	Landsdowne Road, Dublin 4	**Active**
CHO7	Tallaght Stadium	Whitestown Way, Dublin 24	**Active**
CHO7	Lucan Sarsfields	Lucan Sarsfields GAA, Newcastle Road, Lucan, Co. Dublin	Stood Down
CHO7	St. Conleth's Newbridge	St Conleth's Community College, Station Road, Newbridge, Co. Kildare	**Available**
CHO8	St. Loman's Hospital, Mullingar	St. Lomans Hospital, Delvin Road, Mullingar, Co. Westmeath	**Active**
CHO8	Navan RFC	Navan Rugby Football Club, Balreask Old, Navan, Co. Meath	**Active**
CHO8	Tullamore Drive Through	Clonminch Road, Tullamore, Co. Offaly	**Active**
CHO8	Dundalk Institute of Technology	Marshes Upper, Dundalk, Co. Louth	**Active**
CHO8	Portlaoise GAA Centre	Laois GAA Centre of Excellence, Portlaoise	**Active**

CHO	Site Name	Site Address	Current Status
CHO8	Longford Drive Through	Army Barracks, Longford	**Active**
CHO8	Athlone AIT Drive Through	Athlone Institute of Technology	**Active**
CHO9	Croke Park (Walk-In)	Croke Park GAA Handball Centre, Sackville Avenue, Drumcondra, Dublin 3	**Active**
CHO9	Croke Park (Drive-Thru)	St Joseph's Avenue Entrance, Croke Park, Drumcondra, Dublin 3	**Available**