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Medicines Optimisation Innovation Centre

Rapid review of pharmacy services changed in response to Covid-19 in Northern Ireland

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Foreword

This rapid review captures the changes to pharmacy services that were implemented in the Health and Social Care (HSC) service in Northern Ireland during the first wave of the Covid-19 pandemic, between March and May 2020. It describes the wide range of interventions by pharmacy teams that were necessary to ensure that patients and the public had access to medicines and pharmaceutical care throughout the emergency.

It is a powerful endorsement of the commitment and professionalism shown by pharmacists and pharmacy teams working in our hospitals, general practices, community pharmacies and support services. It is also a positive reflection of the support provided to the frontline pharmacy workforce by the Health and Social Care Board (HSCB) and Department of Health (DH) and the benefits of partnership working with pharmacy professional and representative bodies and the community and voluntary sector.

The review makes a number of recommendations for actions needed to prepare for future waves of the pandemic and inform changes needed to support the longer term rebuilding of HSC services.

I would like to extend my thanks to all those who took the time to share their experiences, to everyone involved in the initiatives included in this review and to the Medicines Optimisation Innovation Centre for compiling the report.

Cathy Harrison
Chief Pharmaceutical Officer
Department of Health
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Recommendations

Theme	Recommendations	Important for future Covid-19 waves	Important for HSC rebuilding
Access to critical care medicines, devices and medical consumables	Regional systems should be available for monitoring and managing demand and supply of: • Critical care medicines and relevant medical devices • Oxygen • Oxygen and ventilator consumables.	✓	✓
	A regional approach to aseptic pharmacy manufacturing should be introduced to optimise the use of existing staffing and licensed and unlicensed units.	✓	✓
	A regional pharmacy model for supplies required for palliative care should be available.	✓	✓
	Regional oversight of arrangements for the supply for palliative care medicines, oxygen and associated consumables in care homes should be maintained.	✓	✓
	MOIC should continue to provide specialist technical support to assist BSO PaLS with procurement decisions for PPE.	✓	
Seven day services	All Trusts should ensure that pharmacy services are available across seven days in critical care and other essential areas to support their surge and rebuilding priorities.	✓	✓
	A standard regional pharmacy model to support ACAH/ECAH should be introduced.	✓	✓

	A common approach for patient assessment, SACT prescribing, monitoring and supply should be implemented across all Trusts.	✓	✓
	The Regional Antimicrobial Pharmacy Network should agree standard good practice in relation to OPAT.	✓	✓
	Action should be taken to ensure that those under the care of addiction services continue to have access to appropriate treatments.	✓	✓
Community Pharmacy	A commissioning plan should be agreed for community pharmacy services, aligned with HSC surge and rebuilding priorities.	✓	✓
	During surges community pharmacies should reintroduce protected opening hours to allow cleaning, re-stocking and staff breaks.	✓	
	Business continuity monitoring systems for community pharmacy services should be maintained.	✓	✓
General Practice	A regional system should be in place for the ordering and collection of prescriptions with clear messages for the public.	✓	✓
	Standard approaches for the governance of prescribing and safe supply of medicines should be established in Covid-19 centres, GP Out of Hours and Urgent Care Centres.	✓	✓
Care homes	An enhanced pharmacy support model for care homes should be developed, integrating the work of pharmacy teams in Trusts, General Practice and Community Pharmacy.	✓	✓

Virtual clinics, training and communication	A standard approach for the provision of virtual clinics by pharmacy teams in Trusts should be developed.	✓	✓
	A range of delivery methods for remote learning and training are available and should be fully utilised.	✓	✓
	Guidance developed by pharmacy teams should be shared.	✓	✓
Staff wellbeing	Pharmacy staff in all sectors should have access to advice and support for their wellbeing.	✓	✓
	Employers should continue to be innovative with regards to flexible working patterns including working from home.	✓	✓

1. Introduction

This report provides an overview of how pharmacy services in Northern Ireland rapidly adapted in response to the first surge of the Covid-19 pandemic. The review makes recommendations with regards to the future response required to meet further Covid-19 surges and the longer term rebuilding of services.

The review was a specific, defined exercise and considered changes made by pharmacy teams between 9th March 2020 and 18th May 2020 in response to the first wave of the Covid-19 pandemic. The report considered information provided from various pharmacy sectors and made recommendations for improvement. This information cannot be considered a full representation of all the work undertaken by pharmacy services in relation to Covid-19 but rather a summary of evidence that was submitted to the review team.

1.1 Context

Pharmacy services in Northern Ireland are delivered by pharmacy teams who are an essential part of the multi-disciplinary HSC workforce in Northern Ireland providing services for the safe and effective supply, and use of medicines in hospitals, community pharmacies and general practices.

The first reported case of Covid-19 in Northern Ireland was on 27th February 2020. Figures 1 and 2 below show data for the cumulative total of completed laboratory tests and cumulative total of Covid-19 deaths over the period of this review.

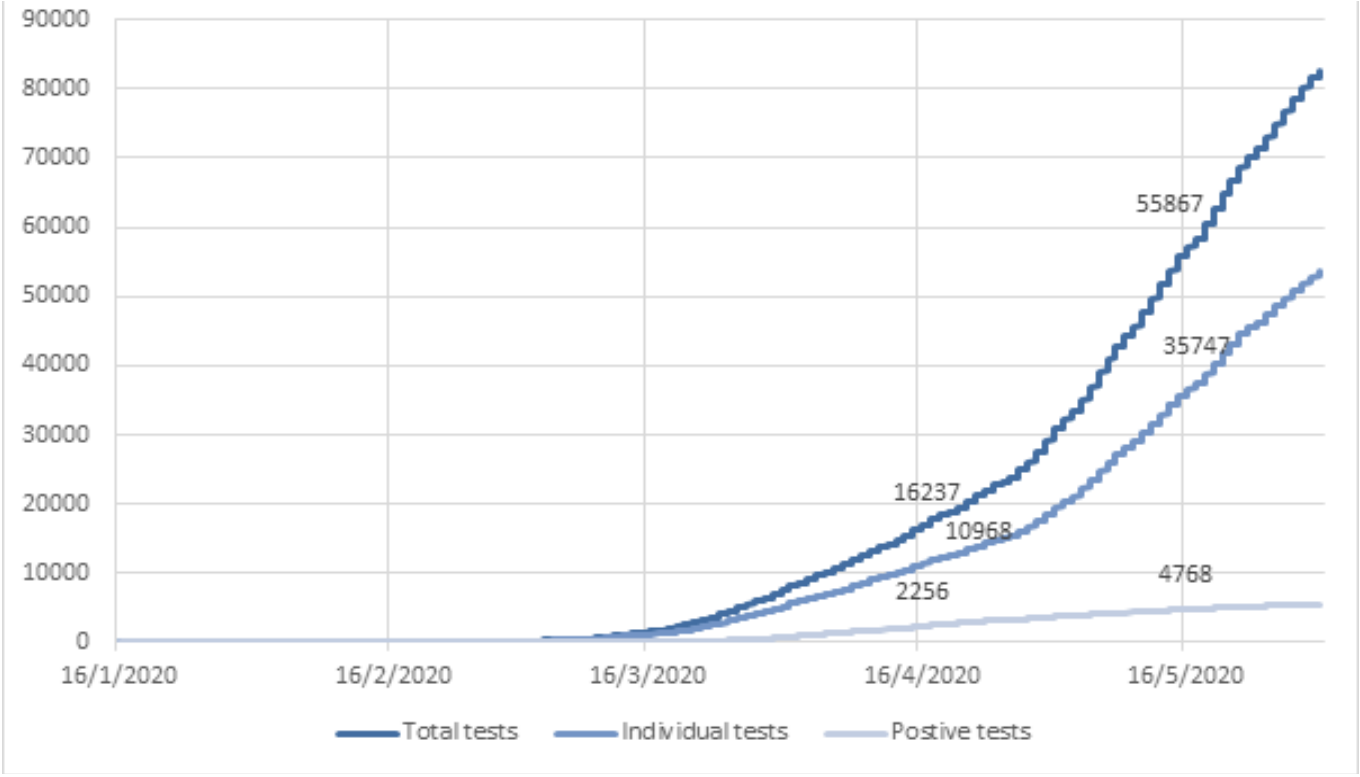

Figure 1: Cumulative total of laboratory completed tests by date of laboratory test (From reporting began to end of May 2020)

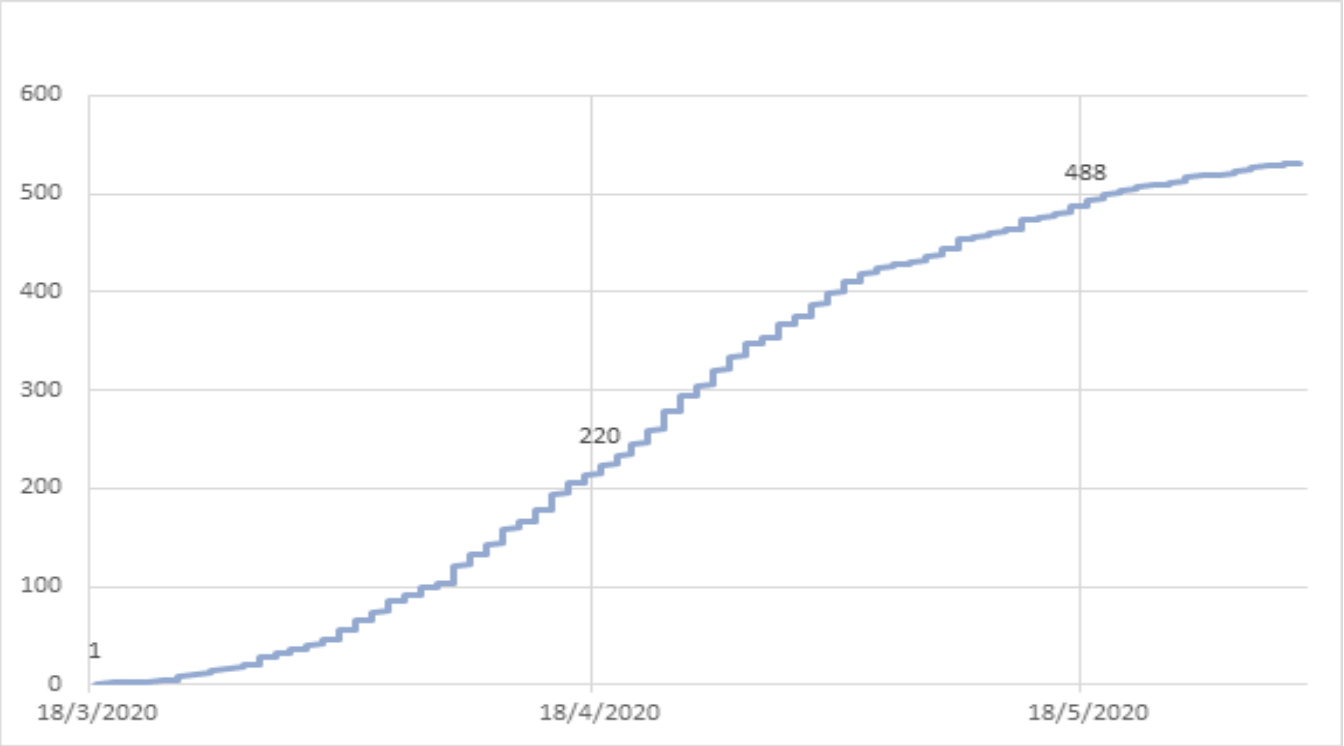

Figure 2: Cumulative Covid-19 deaths by date of death
(From reporting began to end of May 2020)

Consequently HSC services, including pharmacy services, needed to rapidly respond to meet the challenges posed by this new situation. This required service reconfiguration and redesign to meet patient and healthcare professional needs.

The rationale behind these rapid changes made to pharmacy services included the need to:

- Ensure essential supplies, including: medications, oxygen, equipment and associated consumables, were available.
- Improve the use of skill mix and maximise available workforce, including freeing up medical and nursing time for critical patient tasks, and amending working patterns/rotas to meet new demands.
- Reduce footfall and unnecessary travel/face-to-face contact between staff members and patients and staff.
- Enhance communication.
- Provide education and training.
- Preserve Personal Protective Equipment (PPE).

The rapid changes were introduced at a time when pharmacy services were already responding to significant challenges relating to medicines optimisation, for example:

- The cost of avoidable medication errors globally is $42 billion.[1]
- 237 million plus errors occur in England annually with definitely avoidable medication errors costing £98 million every year and 1708 lives.[2]

In Northern Ireland evidence has shown that interventions by the pharmacy team can reduce medicines administration errors from 8.3 % to 1.3 % and avoid costs of up to £825 per patient.[3-6] In addition, Northern Ireland are supporting WHO in their third Global Health Challenge to reduce avoidable Medication Related Harm by 50% by 2023.[1]

In this context the recommendations from this review will also help inform the priority areas for a rebuilding programme for pharmacy services.

1.2 Aims of the rapid review

Prior to any potential further surges, it is critical that what has worked well and what can be improved is examined to inform practice and policies going forward.

As such, **the aims of the rapid review were to:**

- Identify changes to pharmacy service delivery which were made to improve safety, efficiency or effectiveness during the first Covid-19 wave.
- Make specific recommendations for actions needed prior to future waves.
- To inform priorities for the rebuilding of pharmacy services aligned to the HSC rebuilding programme.

1.3 Methodology

In response to the Covid-19 pandemic, the DH established a Health Gold Command with a Strategic Cell and the Emergency Operation Centre in January 2020. This was supported by a Silver Command involving the main HSC organisations overseeing the operational response.

To ensure continuity of medicines supplies and access to pharmaceutical care for the population a dedicated Pharmacy Surge Planning Group was convened to manage service change.

Regular virtual meetings of the Pharmacy Surge Planning Group were held as part of the crisis response. Members of this group (Appendix 1) were tasked to provide evidence and information relating to changes made by their teams through the completion of a bespoke proforma (Appendix 2).

The review of submitted proformas was co-ordinated by the Medicines Optimisation Innovation Centre (MOIC).

2. Results

A total of 83 proformas (Appendix 3) were received. The evidence from these proformas is summarised across the various pharmacy sectors, i.e. community pharmacy, general practice, secondary care, care homes and cross-cutting workforce issues.

Due to the rapid nature of data gathering the information may not be a full representation of all work undertaken by pharmacy services in Northern Ireland but rather a summary of evidence provided by respondents.

2.1 Community Pharmacy

Community pharmacy services were severely impacted from the beginning of the Covid-19 pandemic when public demand for prescribed and over the counter medicines soared. The speed and scale of the public response risked overwhelming primary care in the early weeks and rapid changes were needed to protect services and staff and maintain access to medicines for the public.

During the early stages of the first wave of the pandemic community pharmacy staff capacity fell to below 70% and rapid adjustments to premises were required to ensure compliance with infection prevention and control requirements. There was also a greater expectation on community pharmacy to provide collection and delivery services for prescription medicines.

Early interventions were taken by the DH and HSCB to ensure that community pharmacies stayed open to supply medicines to the public and to protect their staff. Interventions put in place included financial support, prioritisation of services, business continuity arrangements and changes to opening hours.

Another early intervention was the expansion of the range of medicines held by the existing community pharmacy Palliative Care Network and Supply Services. In addition a number of community pharmacies were added to the network. These changes were carried out in collaboration with Trust palliative care pharmacists to ensure medicines were available in line with recommendations.

Information on further changes made in the community setting is provided below.

2.1.1 Prescription medicines emergency supply service

A new commissioned service was rapidly established in order to permit emergency supply of prescription medicines in the event of GP practice or pharmacy closure. Appropriate training was devised and delivered via remote learning. During April 2020, a total of 262 community pharmacies participated in this new service and 2,223 supplies were made to patients.

2.1.2 Enhanced on call arrangements

During the Covid-19 pandemic it was important to ensure that GP Out of Hours (OOH) medical centres and Covid-19 centres had access to sufficient palliative care medicines to meet patient need. Prior to Covid-19, the Belfast Trust area had an on-call community pharmacy service. In addition, the Northern Trust area had a service provided by secondary care. A new on-call service for other areas was rapidly developed which was provided by community pharmacy along with a back-up service from their respective Trusts. In order to implement this initiative the level of service required had to be established and a service specification and protocol agreed. In addition, participating pharmacies had to be provided with relevant information resources and additional funding.

In Belfast the existing on-call service was enhanced in order to prepare for a potential upscaling of need. Additional funding was added to the on call payment fund for the time period 16th March to 30th June 2020 and the one week on rota fee was temporarily increased.

2.1.3 Medicine deliveries

During the pandemic the stay at home messages and large numbers of people shielding and self-isolating created an excess demand for medicines deliveries which community pharmacies alone could not manage. The community and voluntary sector stepped forward to help and provided an invaluable resource, co-ordinated by Community Development and Health Network (CDHN), which allowed the delivery of medicines to vulnerable, shielding or self-isolating people. Under this scheme 33,750 prescriptions were delivered across Northern Ireland from 252 pharmacies during the reporting period. By the end of August this had increased to 63,121 deliveries. A total of 120 community groups registered with CDHN to deliver this service. The groups were from a broad range of backgrounds, for example, sports clubs, churches, community transport groups and charity groups (e.g. Age Concern, Red Cross).

2.1.4 Monitoring shortages of prescription medicines

To improve surveillance of medicines supply issues and help mitigate the risk of potential shortages the monitoring of drug supply in community pharmacy was undertaken. Arrangements were developed for community pharmacies to report concerns about the availability of prescribed and over-the-counter medicines to Community Pharmacy Northern Ireland (CPNI). CPNI collated and shared these concerns with the HSCB Drug Tariff Co-ordinator for investigation and mitigation. HSCB also engaged with wholesalers on a daily basis to gather information on current stock availability and dates for resupply for those products of concern to community pharmacy contractors. These arrangements depended on regular effective flow of information.

2.1.5 Supporting and protecting the workforce

Staff in community pharmacies observed a rapid upturn in work load and a number of steps were undertaken to support and protect the workforce. These included:

- All pharmacists on the professional register were asked to consider if they had any spare capacity to assist in the pandemic response, particularly in community pharmacies. To facilitate engagement, a single point of contact was established for community pharmacist locums and other support staff. Interested individuals registered with the Ulster Chemists' Association (UCA) who subsequently matched staff with appropriate community pharmacies. A temporary pharmacist register was enacted in April 2020 by way of regulations and all pharmacists who had left the register in good standing in NI over the last three years were reinstated to the register unless they opted out.

- Dental services were scaled down due to the pandemic and an initiative was developed that enabled dental staff to assist with the surge in workload in community pharmacies. Foundation dentists (N=31) and general dental practitioners (N=60+) received remote training to prepare them to work in community pharmacy and 31 were successfully redeployed. A number of Standard Operating Procedures (SOPs) to support their work were developed.

- Pharmacy undergraduates from both schools of pharmacy at Ulster University and Queens University Belfast responded to calls for support from pharmacy services. Information provided by Queen's University Belfast indicated that 148 of their students worked during the pandemic. The vast majority of these students were placed in the community pharmacy sector (80.3%). The remaining students worked in hospital pharmacy (4.5%) or other retail/other settings (15.3%).

- Pharmacy opening hours were reviewed under the Emergency Legislation and flexible arrangements with regard to store opening hours were established. This change to pharmacy opening hours permitted cleaning, re-stocking and staff breaks. In practice this enabled pharmacies to remain closed to the public between 9 & 10 am and to close for one hour over lunch time.

- To provide real time information to assess business continuity status a tool, using citizen space, was developed in order to allow community pharmacy to provide daily feedback to the HSCB on staffing, their ability to provide services and stock issues. These were Red, Amber, Green (RAG) rated. Between 130 and 360 of a total of 535 pharmacies provided information on a daily basis.

- In order to protect community pharmacy staff from infection and comply with social distancing requirements, a number of rapid changes were made to premises and working patterns. Whilst these protected staff, they did cause an increase in workload. Changes included installing screens and partitions, the use of PPE stations, managing access into pharmacy premises, and increased prescription collection/delivery services.

- The HSCB undertook a modelling exercise in order to quantify the likely requirement for PPE in community pharmacy. A logistics process was then implemented to ensure continued supply of PPE to this sector of the profession.

2.1.6 Remote learning

Remote training was offered to community pharmacy staff on a wide range of pertinent issues. In total five sessions were held on a weekly basis and topics included:

- Infection prevention and control and PPE.
- Palliative care.
- Medicines issues (e.g. shortages, emergency supply and opiate substitution).
- Amendments to the misuse of drug regulations.

Training was organised by the HSCB and featured a number of speakers from a range of backgrounds including the HSCB, DH and community pharmacy.

A total of 578 log-ins were recorded over the five sessions. The sessions were supported via the development of a Frequently Asked Questions (FAQs) resource which was hosted on the Business Services Organisation (BSO) website. FAQs were developed using existing evidence-based resources, including those published by the Public Health Agency, Public Health England, or updates and correspondence from various organisations such as the DH or HSCB. In many cases community pharmacists were short-staffed, dealing with an increased workload and overwhelmed with communications and correspondence from multiple organisations. It was therefore important that advice was succinct, easy to locate and understand. The FAQ resource was kept under daily review. When significant updates were made key stakeholders were informed via email. The site received 12,918 page views and 7044 unique hits. A survey conducted by CPNI indicated that 66% of 379 respondents used the BSO website as a source of information.

2.2 General Practice

General Practices faced a number of challenges during the Covid-19 pandemic relating to medicines. The rapid increase in demand for prescription medicines required the establishment of new ordering and collecting arrangements with community pharmacy. Infection prevention and control management led practices to increase their capacity for triaging patients prior to attendance and an increase in the use of technology for virtual consultations. In addition, new primary care Covid-19 centres were established to allow the rapid assessment of those suspected of having Covid-19.

2.2.1 Ordering and collection of prescriptions

In terms of the supply of medicines, a large logistical operation with regards to repeat prescriptions was undertaken. This removed some of the administrative burden and relied heavily on rigorous electronic systems. However, a potential unintended consequence of this action was increased short-term pressure on the community pharmacy sector.

2.2.2 New ways of working - virtual clinics

In primary care, the skills of the General Practice Pharmacists were utilised in a range of therapeutic areas, for example, management of anticoagulation, diabetes, asthma and mental health. Whilst some of these areas would be routine business for the General Practice Pharmacist team, the innovation was that much of it was carried out remotely.

Development of robust communication methods and networks were required to agree and facilitate implementation of numerous changes in primary care and to enable the exchange of information. Novel methods were adopted for communication between healthcare professionals (e.g. between practices and federations) and between General Practice Pharmacist staff and patients. Examples included: telephone, videoconference and messaging systems. In community pharmacy, a number of technological solutions for communication with patients were also used, for example, virtual consultation, use of adherence support apps and text messaging reminders.

2.2.3 Primary Care Covid-19 centres

Primary Care Covid-19 centres were set up in each Trust area to provide community care for patients with Covid-19 symptoms who did not require admission to hospital. These centres needed to adopt a one-stop approach to medicine supply, as the patients and their household

were self-isolating and therefore could not attend a community pharmacy to collect medicine(s). In addition, the centres opened outside of usual pharmacy opening hours so plans were needed to address this issue.

A medicines management group was set up with relevant stakeholders to discuss and address any medicines related issues within the centres. A stock list was drawn up considering the items which would potentially be required to treat Covid-19 symptoms and similar or related conditions. This was informed by stock kept by existing GP OOH facilities, NICE Covid-19 rapid guidelines and palliative input from the Regional Palliative Medicines Group. A small number of lower level (schedule 4 and 5) controlled drugs (CDs) were included in this list as the Covid-19 situation developed. A small range of prepacked and over-labelled medication was required to cover the majority of clinical scenarios so patients could receive any medicine needed at the time of their consultation by direct supply.

The stock list was shared with the regional licensed hospital manufacturing unit, Victoria Pharmaceuticals at Belfast HSC Trust and an ordering process was set up in collaboration with the distribution company, Movianto. This enabled safe and rapid access (within 24 hours) for each primary care Covid-19 centre to acquire a stock of over-labelled packs of medicines. Arrangements were established between Trust pharmacies and the centres in each area to supply other required items, which were not suitable for distribution via Victoria Pharmaceuticals.

To support medicine management and ensure appropriate governance, a template SOP and a summary document of prescribing guidance were produced for distribution to the centres.

Between April and May 2020 approximately 7,600 packs of 'take-home' medications were supplied.

One challenge which was not resolved was access to higher schedule CDs within the centres. A number of options were explored in relation to this but none were considered possible within legislative constraints.

2.2.4 Remote learning

General Practice Pharmacists were able to access remote training through a number of means. In some instances, bespoke Q & A sessions using video conferencing were organised in order to meet identified training needs (e.g. anticoagulation training and use of oxygen training). In other instances, the staff utilised webinars provided by a range of bodies (e.g. Royal College of General Practitioners and Royal College of Nursing).

2.3 Secondary care

As Covid-19 cases rose in Northern Ireland the number of people requiring hospital treatment increased. This posed several challenges including the need to provide dedicated facilities with adequate critical care beds that had full access to the required oxygen supply, critical care medicines and devices. In order to prioritise the treatment of Covid-19 patients, a number of routine services were reduced. This permitted the redeployment of staff across services and the reallocation of physical space and beds across the HSC estate.

In a number of areas Trusts were able to provide enhanced clinical pharmacy services, such as pharmacist prescribing for discharge, as there was a reduction in patient numbers. In one Trust, down turn of services and changes to the hospital estate to facilitate social distancing allowed redeployment of clinical pharmacists to areas that don't have funded services and as a result rates of completed medicines reconciliations increased to 80-90% (baseline less than 50%), showing what can be achieved when all services receive a clinical pharmacy service.

2.3.1 Pharmacy support for the surge

2.3.1.1 Nightingale Hospital

A Nightingale hospital was established at the Belfast City Hospital site with a view to this being the regional centre for intensive care patients in Northern Ireland. In order to run the Nightingale hospital, appropriate pharmacy services were required. This necessitated an intensive work programme to be carried out over a very limited time frame. **Key aspects included:**

- Development of robust communication methods which included: use of Microsoft teams, development of posters/written material, regular calls, and exchange of information within the pharmacy and wider hospital teams.
- Establishment of safe working environments within the pharmacy including: limiting access to the Nightingale pharmacy, provision of scrubs/uniforms, strict cleaning regimens and establishment of remote access.
- Set up of a new dispensary and distribution methods. This included: extended hours, new ward profiles and top up procedures, provision of rapid intubations kits, Continuous Renal Replacement Therapy (CRRT), clinical trial supplies and medical gases.
- Development of a robust replenishment system for medicines incorporating procurement, stores and administration elements.
- Provision of clinical pharmacy service seven days per week.

The Nightingale hospital was stepped down on 13th May 2020.

2.3.1.2 The role of pharmacy teams in critical care

Given the increased number of critical care beds across the region, clinical pharmacy input needed to be rapidly increased. In addition, an extended pharmacy service was required over seven days. To meet this need, pharmacists and, in some Trusts, pharmacy technicians were redeployed from areas that were providing reduced services to patients. These individuals required intensive training which was delivered over a short period using a range of methods (e.g. shadowing, one-to-one teaching, national teaching and webinars).

The enhanced pharmacy teams undertook a range of tasks including drug histories, medicines use reviews and participated in daily ward rounds. Pharmacy related documentation was also developed to promote safer prescribing, administration and monitoring of medicines.

Some Trusts provided a clinical pharmacy technical service in critical care and this was particularly noteworthy. This service addressed stock issues including: medical/surgical disposables related to ventilators, CRRT devices and nutritional products. A range of communication methods were adopted including:

- Technician attendance at post ward round meetings with the clinical pharmacists to ensure tasks were actioned.
- Liaison with the step down wards to ensure continuity of supply.
- Implementation of a handover sheet to improve communication within the team.

2.3.1.3 Covid-19 wards

The designation of wards within hospitals as Covid-19 wards provided a number of medicine related challenges. In the first instance, a review of stock holding was required to establish the correct range and volume of products that needed to be available in order to meet the likely patient need.

Other challenges included ensuring that medicines were stored in “clean” areas whilst still being readily available in high pressure situations. In order to preserve critical drug stocks and to prevent unnecessary disposal of drugs that had entered a “red” area a number of novel kits were introduced, for example, rapid sequence induction (RSI) kits used for intubation and cardiac resuscitation pouches.

One site established new processes for inpatient supplies and administration of medicines were established. Pharmacy technicians were responsible for maintaining medicines supplies. Medicines were delivered to wards in disposable wipe-able bags rather than re-usable pouches. Medicines were stored as individual patient-labelled packs in clear bags stored in “clean” areas outside Covid-19 bays/rooms, thus permitting rapid access when required.

Dispensaries developed a number of systems to reduce footfall and to assist with social distancing requirements. These included:

- Altering staff shift patterns.
- Establishing remote ordering systems.
- Minimising entry of clinical staff into dispensaries.
- Arranging collection of medicines by ward technicians at set times.
- Providing enhanced delivery schedules by pharmacy support staff.

In order to minimise contact with suspected or confirmed Covid-19 patients, telephones and other technologies were used by the pharmacy team to obtain patient medication lists for the medicine reconciliation process. In light of the fact that face-to-face contact was not possible at discharge, additional information was added to the discharge medicine record sheet.

2.3.1.4 Critical care step down facilities

In advance of the first anticipated surge it was recognised that in many areas the care home sector was operating at almost full capacity. In this context the need for an interim community stepdown down facility was identified. Pharmacy services for this unit were established by means of effective collaboration between pharmacy teams in primary and secondary care. Robust medicines processes, including governance and supply systems were established and anticipated staffing levels were agreed

2.3.2 Maintaining critical supplies

2.3.2.1 Critical care medicines supplies

Covid-19 presented a number of challenges for critical care. A key challenge was the availability of medicines required in the critical care setting as global demand for such products had soared. Mathematical modelling, using real world data to help inform likely product volume and medication choices was undertaken. The clinical expertise and data was provided by Trust critical care pharmacists and modelling was undertaken by the team at MOIC. This information was provided to the Critical Care Medicines Acute Surge Workstream core team. This group had membership including pharmacists, procurement and commissioning experts and public health and critical care clinicians from across the HSC and the information provided helped inform procurement both regionally and nationally.

2.3.2.2 Intravenous (IV) production

At Trusts a number of modifications were made relating to the production of Intravenous (IV) drugs that would be required in critical care settings. Within Aseptic units, derogation to Schedule 10 of the Medicines Act 1968 - Exemptions for pharmacists, was provided to permit small batch production of some medicines. Additionally, some Trusts created near patient production units to allow redeployed pharmacy and nursing staff to prepare a range of products that were normally made a ward level. The operational plans for these required authorisation from Trust Executive Management Teams. The advantages of these changes included:

- Optimal use of staff skill mix.
- Preservation of PPE.
- Availability of critical medications in ready to use preparations.
- Complex medicines required for intensive care units (ICU) could be prepared and given up to 7-day expiry.
- Ability for strict aseptic technique to be used in product preparation in less pressured environments.
- Reduced burden in critical care units.

The near patient production units are being stood down as surge one has now passed, however, there is the potential for these units to be re-instated in the future.

In a related initiative, Victoria Pharmaceuticals prepared ready to use insulin for regional use within the hospital setting. The advantages of this included that this high risk drug was manufactured on a uniform basis in a licenced manufacturing unit. Use of the same product regionally also confers a patient safety benefit.

2.3.2.3 Introduction of rapid sequence induction (RSI) packs

It was anticipated that multiple patients would require RSI to facilitate intubation once admitted to hospital with severe Covid-19, both in the emergency department or for deteriorating patients on inpatient ward areas. Multiple drugs are required for intubation in an emergency situation and there was a need for all RSI drugs required to be on-hand.

Due to staff redeployment and the expected surge in patient numbers there was a need to ensure that staff who were unfamiliar with the drugs required for intubation would be able to get a 'pack' in an emergency situation that would contain everything that was required. It was also expected that availability of the appropriate skill mix of anaesthetic staff may have been compromised by demand for intubation, therefore, RSI packs would enhance safety of managing these scenarios for staff involved. Other benefits of packs included, the ability to minimise staff exposure by removing the need to pass essential medication from a 'cold' to a 'hot' area, and the ability to eliminate the need for staff to doff PPE to access drugs and re-donn to enter the clinical area thereby saving vital time in the management of a deteriorating patient.

In order to implement the initiative agreement was reached between emergency department and anaesthetic medical staff on the contents of the RSI pack, and where the packs would be needed. Discussions were held with procurement about the drug contents and potential number of packs required. A designated CD register for the RSI packs was also developed.

2.3.2.4 Controlled drugs (CDs)

In hospital settings new protocols for CDs including: ordering, delivery, receipting and destruction were established in a number of locations. In some instances electronic solutions were utilised. Some of these changes required derogation from the Medicines Inspectorate. This was granted following risk assessments, taking cognisance of legislative requirements, Trust policies and discussions with the relevant Accountable Officers. New temporary protocols were written which enabled pharmacy teams to assume a greater role in CD management at ward level. The pharmacy team also assisted with ward based denaturing and destruction in the event that CDs could not be returned to the dispensary. Changes made, though complex from a legal perspective, had a significant impact at clinical level.

2.3.2.5 Supply to private hospitals

In some cases services were moved from HSC sites to private hospital sites. The work included some surgical procedures and services provided by programme treatment units. However, certain critical drugs were not available via the usual private hospital supply chains (e.g. neuromuscular blockers, unlicensed specials, specialist biologics and some cancer treatments). One challenge was that the Trust did not hold the appropriate Wholesale Distribution Authorisation (WDA), and therefore derogation was required in order to allow supply. Storage requirements at the private sites were also reviewed and in some instances CD cabinets and fridges were supplied.

2.3.2.6 Clinical trials supply

A number of Covid-19 clinical trials were rapidly established and a bespoke delivery and supply method for trial drugs was developed by Trusts' pharmacy procurement teams. The Trust Clinical Trials Pharmacists facilitated the rapid set up and initiation of the Covid-19 trials.

2.3.3 Maintaining access to pharmaceutical care and supplies for non-Covid-19 patients

2.3.2.1 Acute/Enhanced care at home (ACAH/ECAH)

In some Trusts additional pharmacy staff were redeployed into ACAH/ECAH teams. This led to an increase in the provision of clinical pharmacy services, including the number of medicines reconciliations completed. Clinical pharmacy staff, also focused on antibiotic use in order to amend both selection and administration regimens to reduce frequency of visits and contacts between patients and staff. Using this model there was an improved supply chain, with distribution being decentralised via the use of on-site facilities

2.3.3.2 Systemic Anti-Cancer Treatment (SACT)

A number of Trusts provided information on modifications to SACT services and delivery. The initiatives developed reduced footfall to departments, which helped to protect shielding patients and decreased the need for face-to-face contact for staff. In addition, it facilitated remote working.

The exact models varied but there were a number of common themes:

- Increased use of pharmacist independent prescribers.
- Remote means for patient consultation and counselling, including telephone were adopted.
- A library of haematology SACT regimens was used to enable electronic prescribing via individualised PDF forms.
- Novel collection/delivery mechanisms for medicines were employed. These included drive through collection models and home delivery options.
- In some instances longer courses of treatment were provided or dosing regimens were altered to reduce contacts – it was noted that a potential risk was wastage if treatment stopped.
- Routine blood taking required to permit continuing treatment was transferred to primary care.

2.3.3.3 Out-patient antimicrobial therapy (OPAT)

A further area in which footfall could be reduced was in the management of patients with complex infections. A number of Trusts trialled the remote review of patients and/or use of electronic systems in order to establish treatment plans for patients with such infections.

In the hospital setting enhanced use of the OPAT team enabled early discharge of some patients and permitted appropriate home care to be established. In some cases this was facilitated by ensuring that IV-oral switching occurred in a timely fashion. For those at home, ongoing treatment was agreed during telephone consultations and electronic systems were used to record the consultation. In these models medicines were collected by patients or their representatives.

2.3.3.4 Palliative care service

It was anticipated that during the first Covid-19 surge many more patients would require palliative and end of life care. In order to manage this increase some Trusts redeployed pharmacists to their palliative care teams. Pharmacists were rapidly upskilled via intensive training in palliative care pharmacy focusing on end of life care. The pharmacy service was delivered over six days and a variety of activities were undertaken, including:

- Reviewing and prescribing medicines, including anticipatory care medicines.
- Stopping medicines.
- Advocating for patients and prompting staff to manage symptoms.
- Improving transitions of care via improvements in the discharge processes.
- Provision of specialist medicines advice to other healthcare professionals.

One Trust reported that during the management of 194 patients, a total of 1309 interventions were made, of these 80% were grade 4 and 5% were grade 5/6 as measured using the Eadon scale.* This team collected some qualitative feedback from other members of the palliative care team (N=21) with 100% of respondents indicating that the presence of the pharmacist improved both the quality and safety of patient care.

2.3.3.5 Specialist Medicines - utilisation of virtual clinics and remote monitoring

In all Trusts remote clinics and consultations, as already described, were used as part of a range of larger initiatives. However, evidence was also provided relating to stand-alone clinics in other areas.

Examples of clinic areas in secondary care included:

- Erythropoietin stimulating agents (ESA) clinic for renal anaemia.
- HIV medication.
- Infliximab for inflammatory bowel disease (IBD) from infusion to subcutaneous delivery.
- Self-monitoring of anticoagulation.
- Education for carers of patients requiring assistance to manage medicines for renal transplant.

*Eadon scale is a scale ranging from 1 to 6 reflective of quality of pharmacist care, where grades ≥4 indicate a significant intervention resulting in improved standards of patient care which ultimately prevent major organ damage to the patient or even death.

The clinics used a variety of communication platforms including telephone, video conference and Skype. In some conditions a blood sample was required and these were taken by community teams. Following consultation, medicines were delivered to patient homes. In some instances, the drug delivery route was altered to allow continuation of treatment via patient self-administration (e.g. IV Infliximab for IBD was changed to a subcutaneous product – it was noted that the latter product was more expensive).

Some Trusts implemented a comprehensive delivery mechanism for medicines covering a range of areas (e.g. medicines for Multiple Sclerosis, Cystic Fibrosis and Cancer treatments). This service utilised Trust transport drivers who had been released from other duties. Such services demonstrated an efficient use of staff and were well received by patients.

2.3.3.6 Substitute prescribing clinics

In order to reduce the need for daily supervision of opioid substitution medication in community pharmacy a number of patients were switched from daily sublingual buprenorphine to a monthly subcutaneous administration which was undertaken in secondary care. In addition, a number of high risk patients were identified as requiring more intensive monitoring and in these cases, a more rapidly dissolving buprenorphine product was authorised for use. This ensured that supervision could occur, but that shorter contact time was required.

2.3.3.7 Prison supply

Weekly medication supply for lower risk medicines was changed to monthly supply to minimise footfall and reduce dispensary workload.

2.4 Care Homes

During the pandemic care homes required additional support in caring for vulnerable groups, often with complex needs. The progression of Covid-19 can be extremely rapid and the end of life symptoms often very distressing for patients, with delirium and agitation particularly common. The frailty of care home patients along with the rapid deterioration at end of life meant the normal process and timelines involved in obtaining prescriptions to help manage symptoms was not adequate. Non-Covid-19 related clinically urgent conditions were also continuing to present in care homes.

Particular challenges faced in providing care to residents of care homes included:

- Limited access to care homes due to Covid-19 infection prevention and control measures.
- A fragile supply chain for end of life drugs, susceptible to short term shortages exacerbated by stockpiling by some prescribers in advance of the expected Covid-19 surge.

2.4.1 Provision of urgent pandemic packs to care homes

It was identified that a regional pathway for palliative medicine supply to care homes was needed to ensure a consistent approach, and protect the supply chain. The HSCB established a virtual steering group who were tasked with developing a regional pathway for palliative care medicines supply.

The model agreed upon was to issue care homes with urgent pandemic packs. The content of the pack was agreed with consideration to evidence base, clinical need, appropriate formulations and preservation of supply lines. The packs contained medication that could be used to treat patients requiring clinically urgent treatment (for Covid-19 and non-Covid-19 conditions) on the direction of a prescriber.

To expedite supply, Victoria Pharmaceuticals agreed to assemble the pandemic packs as a once-off and arrange distribution. Comprehensive guidance for care homes and prescribers was developed, including a process for replenishment of the packs via community pharmacies. The packs were distributed to care homes using a phased approach after authorisation from the Regulation and Quality Improvement Authority (RQIA), initially prioritising care homes with a confirmed or suspected case of Covid-19. All information was posted on the BSO website and updated regularly as each wave of packs was distributed. Training was incorporated into remote learning sessions to promote appropriate use of packs. Urgent pandemic packs were delivered to 233 homes during April and May 2020.

2.4.2 Use of unused medicines

In recognition of pressures within supply chains and the immediate need for access to treatment for rapidly deteriorating care home residents, a decision was taken to develop a policy, including a governance framework, to enable clinicians in the best interest of the care home/hospice patient to use available medicines, previously prescribed but unused, during the Covid-19 pandemic. The policy was for use in exceptional circumstances where the prescribed medicine under consideration could not be obtained in the usual way.

The policy was developed and shared with all care homes/hospices during April 2020 and was supported by a training package and video. It was also hosted on the BSO website to allow access by all healthcare professionals. The policy was stepped down on 18th May 2020.

2.4.3 Enhanced pharmacy support for care homes

Covid-19 presented many challenges related to medication in care homes and enhanced pharmacy support was required. Work in the care home setting involved roles for the Trust led Medicines Optimisation in Older People (MOOP) team working with General Practice Pharmacists and community pharmacies. MOOP is a consultant pharmacist led team of specialist pharmacists with clinical expertise in the care of older people.

A key development was improving communication and dealing with medication related queries, particularly between care homes and the relevant pharmacy teams.

As pharmacy teams had limited access to care homes due to infection prevention and control measures MOOP staff implemented remote medicines review via participation in virtual ward rounds with the care home team. A proforma was developed to enable care home staff to prioritise residents requiring medicines review and to prepare a summary of the residents profile ahead of the remote ward round. In addition, a pathway was developed and tested for medicines review of care home residents admitted to hospital. Remote learning was used to deliver a suite of education sessions prepared by the regional MOOP leads and delivered to care home staff covering issues such as the use of pandemic packs. Tools were also developed to enable consistent practice in medicines optimisation, for example, in relation to Acute Kidney Injury (AKI) and sick day guidance.

General Practice Pharmacists provided a range of support measures for care home residents and staff including: liaison with community pharmacy regarding treatment options, responding to oxygen queries, reuse of medicines protocols, and sourcing palliative care medicines.

2.5 Other critical supplies

Pharmacy expertise was required to ensure maintenance of other critical supplies, namely oxygen, oxygen and ventilator consumables and personal protective equipment (PPE).

2.5.1 Oxygen capacity and oxygen and ventilator consumables

Initial modelling relating to the first Covid-19 surge indicated that large numbers of patients would require high intensity treatments including oxygen therapy. In addition, it was anticipated that levels of oxygen use in domiciliary settings would also increase. This presented a number of challenges including:

- Calculating maximal deliverable oxygen capacity across all hospital sites in the region.
- Calculating the likely patient demand in hospital settings, including an assessment of ventilator device type.
- Assessing availability of oxygen therapy consumables including ventilator specific items.
- Assessing the concentrator and cylinder availability in community settings.
- Reviewing the logistics of supply in community settings, including the prescribing and dispensing processes.

In order to meet these challenges a number of interlinked work-streams were progressed. At a regional level two groups were established to consider the likely hospital and community clinical demands. Coupled with this, mathematical modelling was used to establish the oxygen system capacity across Northern Ireland. A prioritised work programme to enhance oxygen supplies was undertaken with BOC. This included a daily SIT-REP outlining available oxygen resources. A report was also produced in relation to weekly concentrator installations and removals in community settings. Changes also included the ability of respiratory specialists to sign the Hospital Oxygen Order Form (HOOF) and on 10th April the commissioning of BOC to install concentrators into nursing homes on a named patient basis. A prioritised work programme to enhance oxygen supplies was undertaken with BOC.

At Trust level medical gas committees, which included relevant pharmacy, clinical and estates staff, provided information for the regional Oxygen Supply Working Group, ensured that oxygen safety alerts were considered and appropriate action taken, and provided daily information for oxygen use. This permitted RAG rating of oxygen use at Trust level. In addition, the collated information provided a regional RAG assurance.

A number of new ventilators were obtained for the region. Robust modelling was required to quantify the daily consumable requirements, both bespoke and generic, to effectively utilise this equipment.

2.5.2 Personal Protective Equipment (PPE)

In response to the Covid-19 pandemic global demand for PPE soared at a time when output from many of the world's largest manufacturers was severely impacted by the lockdown in China. This meant that the HSC could not rely solely on its large contracted suppliers and had to consider alternative sources of PPE. During the first Covid-19 surge the HSC Business Services Organisation Procurements and Logistics Service (BSO PaLS) received in excess of 2,000 individual product leads for various PPE products. Due to the extra demand BSO PaLS had to enter into discussions with suppliers who operated directly or indirectly in markets with which there was a lack of familiarity. A partnership between BSO PaLS and MOIC was formed in order to implement a process for quality assurance of PPE.

MOIC assessed PPE offers against current specifications, where they existed, as well as relevant standards and guidelines issued by relevant authorities. Certificates from the certifying body and test reports were checked and validated. In addition, the design, labelling and packaging of products was assessed for appropriateness. During a six week period from 1st April – 15th May the MOIC team received 592 items to review from 248 suppliers. The use of this novel system ensured that unsuitable products were not purchased and only those meeting the required standards were approved.

2.6 Staff well-being

2.6.1 Pharmacist Advice and Support Service

The Pharmacist Advice and Support Service (PASS) is provided on an ongoing basis to help all Pharmacists, Pre-registration students and their families. PASS provides a range of free, impartial and confidential services.

In response to the Covid-19 situation the Pharmacy Forum Board provided funding for six months (April-September 2020) to ensure that well-being services were also available to other members of pharmacy staff who do not have access to PASS, namely pharmacy technicians, dispensers, healthcare assistants, delivery drivers or anyone providing any other type of pharmacy support role. The new service put in place key support elements for individuals. Including:

- A 24/7 telephone helpline.
- Structured telephone/video counselling (up to six sessions).
- Financial and legal guidance.
- Access to online support at Inspire Hub.

Support available was free, confidential and delivered by the independent workplace wellbeing provider, Inspire.

2.6.2 Working from home

In order to protect shielding and vulnerable pharmacy staff and to assist with the maintenance of social distancing or caring responsibilities a number of Trusts and GP practices established home working systems. The system relied on either staff having access to suitable IT equipment or identifying work that could be completed without this infrastructure. It was noted, that for some staff this presented a challenge as their home environment was not suitable for home working for various reasons including: lack of workspace, presence of young children at home, and/or lack of access to office information/IT equipment. It is accepted that a number of pharmacy functions cannot be completed in a home working environment.

2.6.3 Other initiatives

Other initiatives specific to maintaining pharmacy staff wellbeing included:

- **Essential worker designation** - Community pharmacy staff were provided with vouching documentation identifying them as essential workers so that they could access shopping, free public transport and car parking. Additional documentation was not required by staff in secondary care who were able to use their HSC Trust identification to avail of any essential worker benefits.
- **Childcare access** - Community pharmacy staff were facilitated to access HSC Trust childcare schemes where there was availability to do so. Those employed in GP practice or by HSC Trusts had access to childcare if needed.
- **Psychological support** - Trust pharmacy staff were able to access psychological support via occupational health and clinical psychology.

2.7 Cross sector training issues

As described throughout this report a number of training issues were addressed in specific work settings. In addition, there were a number of cross sector examples that are outlined below.

2.7.1 Pre-registration trainees

Due to the significant disruption to the pre-registration training programme a number of mitigating steps were required, including:

- Additional funding to enable the 2019/20 cohort to continue in employment.
- The Pharmaceutical Society of Northern Ireland (PSNI) delayed the professional exam until August 2020 and identified further exam centres to permit adequate social distancing.
- Collaboration between the PSNI, Pharmacy Forum NI, Universities and the Northern Ireland Centre for Pharmacy Learning and Development to design and launch an enhanced education programme for pre-registration students commencing July 2020.
- Liaison with NI universities and the General Pharmaceutical Council to accredit pragmatic solutions to enable the timely completion of MPharm degrees whilst ensuring level of attainment of learning outcomes was maintained and enabling graduates into pre-registration training.

2.7.2 Guidance development

A number of guidelines relating to clinical practices were rapidly developed. For example:

- Palliative care guidance was developed which aimed to promote safe and effective prescribing of appropriate subcutaneous medication and alternative non-injectable medications for adults (with or without Covid-19) who were dying. The guidance covered content based on patient need, administration and drug availability considerations. The guide included pictorial kardexes and Zoom was used to deliver training.
- A drug interaction guide for novel clinical trial drugs was produced for staff working in red areas within hospitals where access to computers and mobile phone apps was limited.
- Updated Antimicrobial guidance for use during the pandemic was developed for hospital sites.
- Guidance produced for use in community pharmacy included staff protection checklists and guidance for community pharmacists to consider when closing during a pandemic.

2.7.3 Training videos

In order to ensure that annual mandatory training in Aseptics could be completed without the need for face-to-face contact, one Trust developed in-house training videos. This ensured that social distancing could be maintained and that training could be completed flexibly. The training completion rate for staff was 100%.

3. Recommendations

Theme	Recommendations	Important for future Covid-19 waves	Important for HSC rebuilding
Access to critical care medicines, devices and medical consumables	Regional systems should be available for monitoring and managing demand and supply of: • Critical care medicines and relevant medical devices • Oxygen • Oxygen and ventilator consumables.	✓	✓
	A regional approach to aseptic pharmacy manufacturing should be introduced to optimise the use of existing staffing and licensed and unlicensed units.	✓	✓
	A regional pharmacy model for supplies required for palliative care should be available.	✓	✓
	Regional oversight of arrangements for the supply for palliative care medicines, oxygen and associated consumables in care homes should be maintained.	✓	✓
	MOIC should continue to provide specialist technical support to assist BSO PaLS with procurement decisions for PPE.	✓	
Seven day services	All Trusts should ensure that pharmacy services are available across seven days in critical care and other essential areas to support their surge and rebuilding priorities.	✓	✓
	A standard regional pharmacy model to support ACAH/ECAH should be introduced.	✓	✓

	A common approach for patient assessment, SACT prescribing, monitoring and supply should be implemented across all Trusts.	✓	✓
	The Regional Antimicrobial Pharmacy Network should agree standard good practice in relation to OPAT.	✓	✓
	Action should be taken to ensure that those under the care of addiction services continue to have access to appropriate treatments.	✓	✓
Community Pharmacy	A commissioning plan should be agreed for community pharmacy services, aligned with HSC surge and rebuilding priorities.	✓	✓
	During surges community pharmacies should reintroduce protected opening hours to allow cleaning, re-stocking and staff breaks.	✓	
	Business continuity monitoring systems for community pharmacy services should be maintained.	✓	✓
General Practice	A regional system should be in place for the ordering and collection of prescriptions with clear messages for the public.	✓	✓
	Standard approaches for the governance of prescribing and safe supply of medicines should be established in Covid-19 centres, GP Out of Hours and Urgent Care Centres.	✓	✓
Care homes	An enhanced pharmacy support model for care homes should be developed, integrating the work of pharmacy teams in Trusts, General Practice and Community Pharmacy.	✓	✓

Virtual clinics, training and communication	A standard approach for the provision of virtual clinics by pharmacy teams in Trusts should be developed.	✓	✓
	A range of delivery methods for remote learning and training are available and should be fully utilised.	✓	✓
	Guidance developed by pharmacy teams should be shared.	✓	✓
Staff wellbeing	Pharmacy staff in all sectors should have access to advice and support for their wellbeing.	✓	✓
	Employers should continue to be innovative with regards to flexible working patterns including working from home.	✓	✓

Next steps

To promote the findings and ensure that timely action is taken to implement the recommendations of this review the following steps will be taken:

- The Chief Pharmaceutical Officer will present findings of the report to The Minister and DH Management Board overseeing the rebuild of services
- Following approval, the Chief Pharmaceutical Officer will write to the HSC Board asking them to work with the five HSC Trusts and other stakeholders to implement the recommendations.
- A virtual conference will be held to share learning from the review and its recommendations.

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Appendices

Appendix 1: Pharmacy Surge Planning Group

Department of Health
Cathy Harrison – Chief Pharmaceutical Officer
Chris Garland – Senior Principal Pharmaceutical Officer (Acting)
Canice Ward – Senior Principal Pharmaceutical Officer

Trust Heads of Pharmacy and Medicines Management
Tracey Boyce (Southern HSC Trust)
Anne Friel (Western HSC Trust)
Dianne Gill (Northern HSC Trust)
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Brenda Bradley - Pharmacy Lead
Teresa Magirr - Assistant Director Commissioning
Lynn Keenan - Pharmacy Co-ordinator (Specialist Medicines)
Andrea Linton – Pharmacy Co-ordinator (New Models of Prescribing)

Medicines Optimisation Innovation Centre
Mike Scott - Director

Public Health Agency
Catherine Coyle – Consultant in Public Health

Appendix 2: Blank proforma

Name of project.

Describe the need for change. What problem were you seeking to address?

What did you do? Provide details of the changes introduced.

What was the result? Provide any metrics available in terms of outputs.

What were the costs? Provide as much detail as possible

Who was involved? Organisations, disciplines and individuals. Name all.

What worked well?
- **Why did it work well?** Is there anything that could make it even better in the future?
- **What you'd consider doing different**

Should this initiative be maintained, improved or paused?

Who should know about this initiative? Is it suitable for wider dissemination or publication?

Appendix 3: Proformas received by sector

Sector	Type of area covered	Title of proforma
Community Pharmacy	Prescription medicines emergency supply service	Community Pharmacy Emergency Supply during a Pandemic Service
	Enhanced on call arrangements	Enhanced On-Call Arrangements in Primary and Secondary Care Ensuring the Belfast on call out of hours community pharmacy service was prepared for the COVID-19 challenge
	Medicines deliveries	Community support for Community Pharmacy
	Monitoring shortages of prescription medicines	Community Pharmacy – relationships with wholesalers
	Supporting and protecting the workforce	Community Pharmacy – Changes to Practice Developing a Business Continuity process through a daily SIT-REP mechanism for Community Pharmacies in Northern Ireland Dental redeployment to support community pharmacy Community Pharmacy Workforce – locum availability Changes to Community Pharmacy Opening Hours School of Pharmacy Volunteering Infection prevention and control including provision of PPE
	Remote learning	Community Pharmacy ECHO sessions Covid-19: FAQs for Community Pharmacy

	Ordering and collection of prescriptions	Re-engineering of medicine management processes in general practice
General Practice	New ways of working – virtual clinics	New ways of working Implementation of a communication infrastructure to support Covid-19 response
	Primary care Covid-19 centres	Ensuring access to medications in COVID centres BHSCT Pharmacy service to Belfast Covid centre (Beech Hall)
	Remote learning	Provision of education and training
Secondary care- Pharmacy support for the surge	Nightingale hospital	Pharmacist prescribing for discharge Re-prioritising work and changes to medicines reconciliation NI Nightingale Hospital at BHSCT, Belfast City Hospital
	The role of pharmacy teams in critical care	Clinical pharmacy technician cover in ICU 7 days per week Skilling up Clinical Pharmacy to allow a 7 day service to be provided to ICU Pharmacy support for Critical care
	Covid-19 wards	Pharmacy Service on BHSCT Covid positive acute hospital sites (March 20-ongoing) Covid wards – clinical pharmacists role
	Critical care step down facilities	(Ramada)- Interim Community Stepdown Facility BHSCT – MOOP (Medicines Optimisation Older People) Pharmacy Role
Secondary care- Maintaining critical supplies	Critical care medicines supplies	Informing critical care drug requirements in response to the COVID-19 pandemic

	Batch IV production	Batch production of IV drugs for ICU and COVID wards (x3 proformas) Victoria Pharmaceuticals: BHSCT. Manufacture and Supply of Ready to Use Insulin in Saline Syringes to Critical Care Units across Northern Ireland
	Introduction of rapid sequence induction (RSI) packs	Introduction of rapid sequence induction (RSI) packs for ED & ICU
	Controlled drugs	BHSCT: Support new ways of working in acute settings out with current policy and legislation (controlled drugs)
	Supply to private hospitals	Working with the independent sector: moving surgery to Kingsbridge Private Hospital Working with the independent sector: Programmed Treatment Unit to Hillsborough Private Clinic Working with Independent sector | BWS Oncology to UIC Trusts new ways of working | Clinical Pharmacist to BWS oncology at UIC
	Clinical trials supply	Access to COVID-19 TREATMENT TRIALS
Secondary care - Maintaining access to pharmaceutical care and supplies for non-Covid-19 patients	Acute/Enhanced care at home	Acute Care at Home Team (AC@HT) Pharmacy changes to cope with COVID-19 pandemic.
	Systemic Anti-Cancer Treatment (SACT)	Review the process for supply of oral systemic anticancer treatment (SACT) to haematology patients, to maintain treatment whilst minimising patient risk of COVID-19 SACT service (x4 proformas) No contact procedure for Haematology chemotherapy prescribing

	Out-patient antimicrobial therapy (OPAT)	Transfer to Electronic Antimicrobial Pharmaceutical Care Plans in SEHSCT Virtual review of antimicrobial Therapeutic Drug Monitoring (TDM) results in BHSCT Virtual review of antimicrobial Therapeutic Drug Monitoring (TDM) results Virtual review of restricted antimicrobials in WHSCT Remote antimicrobial review for ICU patients Review of Southern Health and Social Care Trust (SHSCT) Outpatient Parenteral Antimicrobial Therapy (OPAT) Service during COVID-19 pandemic. OPAT discharge facilitation
	Palliative care service	Pharmacy Palliative care service
	Specialist medicines - utilisation of virtual clinics and remote monitoring	7-day clinical pharmacy service for BCH renal transplant patients and new approaches to provide remote medicines education to carers. BHSCT Medicines Delivery service Remote management of renal anaemia patients prescribed Erythropoiesis Stimulating Agents (ESAs) and establishment of an ESA virtual clinic. Managing HIV medication during the Covid19 pandemic Moving Inflammatory bowel disease (IBD) patients to self-administered subcutaneous (SC) infliximab injections from IV infusions Self-monitoring of anticoagulation (INR)

	Substitute prescribing clinics	BHSCT Initiation and implementation of a new treatment option for Opioid Substitution Programs: subcutaneous buprenorphine long acting injection. Re-configuration of Supply and Supervision of Opioid Substitution Treatment (OST)
	Prison supply	Issuing of In-Possession medication, Prison Healthcare
Care homes	Provision of urgent pandemic packs to care homes	Provision of Urgent Pandemic Packs to Nursing Homes Victoria Pharmaceuticals: BHSCT. Assembly and distribution of emergency palliative care kits to Northern Ireland Nursing Homes. A VP and HSC Board Collaborative
	Use of unused medicines	Policy for Assessment of Un-used prescribed Medicines for the potential to re-use in Care Homes (Nursing and Residential Care Homes) and Hospices.
	Enhanced pharmacy support for care homes	GPP support to Care Homes Medicines Optimisation Older People (MOOP) Pharmacy Care Home - Covid 19 Response NI Consultant Pharmacists (Older People) and MOOP Care Home leads: Shared-approach response in supporting Care Homes with Covid19:
Other critical supplies	Oxygen capacity and oxygen and ventilator consumables	Regional oxygen capacity Management of oxygen use within South Eastern Trust during the Covid-19 pandemic Ventilator consumables Supply of community oxygen

	Personal Protective Equipment (PPE)	Regional validation model for PPE
Staff wellbeing	Working from home	Home working from a pharmacist perspective GPPs Working from Home Home working
Cross sector training issues	Pre-registration trainees	Support for pre-registration trainees and continuity of training during Covid-19
	Guidance development	Palliative Care – Development of WHSCT Anticipatory End of Life prescribing guidance Rapid virtual review, update and sharing Antimicrobial Guidelines during COVID pandemic in WHSCT Lopinavir/ritonavir drug interaction summary for clinicians
	Training videos	Educational training videos in Aseptic services