Recommendations for Minimising the Risk of Transmission of SARS-CoV-2 (COVID-19) in UK Adult Haemodialysis Units

KQuIP COVID-19 HD Ensuring Patient Safety Work Stream

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This document is the expert opinion of a team of multi-professional clinicians and patients, based on the reported experiences and views of various renal units across the UK as well as published studies and guidance where possible.

This document has been endorsed by the Renal Clinical Reference Group.

KQuIP welcomes feedback on the content of this recommendation. If you wish to provide feedback or contribute to the next version of this document, please email rosie.donne@nhs.net

Please refer to the most recent version on the RA/BRS website. For current government guidance on COVID-19, visit https://www.gov.uk/coronavirus. The devolved nations should consult their nation's public health website as advice may be different.

Recommendations for Minimising the Risk of Transmission of SARS-CoV-2 (COVID-19) in UK Adult Haemodialysis Units

Aim - to provide practical advice to minimise the risk of COVID-19 transmission within both in-centre and satellite adult haemodialysis units according to current knowledge and experience.

What is new in version 3

1. **Checklist to identify areas for improvement**

2. **PPE** – staff should follow PHE guidance COVID-19: Guidance for the Remobilisation of Services Infection Prevention and Control (IPC),[1] which defines high, medium and low risk pathways. This includes the use of a long-sleeved surgical gown where there is a risk of splashing of blood or bodily fluids. Where there is concern about high rates of infection in patients or staff, dialysis units may wish to perform a local risk assessment with their IPC team to identify how this risk may be mitigated, including the use of additional PPE if indicated (see section 6).

3. **Testing of asymptomatic patients -** Dialysis units in areas of high or very high COVID-19 infection may choose to discuss with local IPC teams, aiming to perform SARS-CoV2 (COVID-19) tests weekly to fortnightly to identify and isolate asymptomatic individuals.

4. **Testing of asymptomatic staff** – Dialysis units should work with their local IPC teams to prioritise staff for regular testing when it is available.

5. **Definition of "contacts"** - Dialysis units which are able to control and record the location and distancing of patients reliably throughout the dialysis process do not need to define the whole shift as "contacts". For these units, a "contact" is any individual within 2m distance for more than 15 minutes or face-to-face within 1 metre for at least 1 minute, including during transport, waiting areas or dialysis from 48 hours before onset of symptoms or positive swab.

6. **Outbreaks -** Root cause analysis should be performed if there are 2 or more confirmed SARS-CoV-2 (COVID-19) positive individuals on the same dialysis shift, to identify risk areas and implement improvements.

7. **Step-down of transmission-based precautions (TBPs)** – for most patients after 14 days (no test needed); immunocompromised patients should have 2 negative swabs at least 24 hours apart before step-down of TBPs.

8. **Dialysis bubbles** - Patients who have to share transport or a waiting area which is not socially distanced are at increased risk of acquiring and transmitting COVID-19 infection. The overall risk of outbreak in the dialysis unit may be minimised by keeping patient groups in "bubbles" by dialysing in neighbouring stations and using a specific waiting area.

9. **Vaccination** – Dialysis units should explore the logistics of providing COVID-19 vaccination, so they are ready to deliver this as soon as it is available and authorised by NHS England.

10. **Recommendation to expand provision of home dialysis therapies -** Renal centres should try to facilitate expansion of home dialysis to provide therapies which reduce the risk of COVID-19 and facilitate improved distancing of dialysis stations.

Key Messages

- Patients receiving haemodialysis treatment are extremely vulnerable to severe COVID-19 infection and there is evidence that transmission has occurred in UK dialysis units.

- COVID-19 is highly infectious and asymptomatic carriage is common. To mitigate risk, cleaning in dialysis units should be increased to at least twice daily using 1000ppm available Chlorine (Av. Cl).

- Social distancing measures should be fully implemented wherever possible, including during transport, in waiting areas and throughout dialysis.

- Staff social distancing is also of crucial importance to prevent outbreaks, including during staff breaks, at computer workstations, in meetings and in all clinical areas.

- Staff should wear a mask throughout the working day within clinical and non-clinical areas.

- Patients should wear fluid resistant surgical masks during dialysis, for travel and in waiting areas where this does not compromise clinical outcomes.

- A high proportion of staff working in the haemodialysis environment developed COVID-19 infection during the first wave. Recommendations on staff PPE are:
    - Staff caring for patients with confirmed or symptomatic COVID-19 infection should follow the high risk pathway.
    - Staff caring for patients who are asymptomatic and do not have a positive SARS-CoV-2 test result should follow the medium risk pathway.
    - Where there is concern about high infection rates in patients or staff, dialysis units may wish to perform a local risk assessment with their IPC team to guide practice.
    - Staff should use enhanced PPE including FFP3 mask during cardiopulmonary resuscitation.

- Dialysis units should have documented processes for symptoms screening, testing of symptomatic patients, testing of asymptomatic patients and follow-up of results.

- Dialysis units should keep a central documented record of where and when each patient dialysed, whether they used a shared waiting room or shared transport, as this information will be needed for identification of close contacts.

- If a patient has a positive SARS-CoV-2 test, then all patients who may have been within less than 2m distance during dialysis or while in a waiting area or who shared transport are defined as “contacts”. They should be dialysed in isolation or cohorted.

- If a unit is unable to identify which patients were within less than 2m distance, then the whole shift should be defined as “contacts” and “locked down” for 14 days with no patient changing shift or dialysis unit except for necessary moves because of COVID-19 symptoms or positive status.

- Dialysis units should have a defined protocol for isolating or cohorting patients who are a “contact” or have COVID-19 symptoms or a positive test.

- Screening SARS-CoV-2 tests should be performed weekly or fortnightly for all patients attending dialysis units in areas of high or very high incidence or prevalence, to identify asymptomatic individuals. They should not be performed in asymptomatic patients who are in the first 90 days following recovery from COVID-19 infection as they are likely to be misleading.

- Step-down of TBPs for most patients can occur at 14 days after the first positive SARS-CoV test with no need for further testing, unless the patient is immunosuppressed.

- For immunosuppressed patients, step-down of TBPs may occur following two negative COVID-19 swabs performed at least 24 hours apart. Discussion with a virologist may be required if the patient's results or clinical course are difficult to interpret.

- If a patient is on the active kidney transplant waiting list and has a positive SARS-CoV-2 test, NHS Blood and Transplant should be informed (see link in section 9.4) and the patient should be suspended for at least 28 days and have a medical review before re-activation.

CHECKLIST FOR DIALYSIS UNITS TO IDENTIFY AREAS FOR IMPROVEMENT TO MINIMISE THE RISK OF TRANSMISSION OF COVID-19

DATE:

Circle the box which applies for each question, allocate risk points and identify areas to focus on to reduce risks

No.	Question	Ideal	Medium risk	Higher risk
		0 risk points	**1 risk point for each box**	**2 risk points for each box**
1	Have all patients received written information **within the last 3 months** on actions they should take to keep safe from COVID-19, including new patients starting dialysis?	Yes – all new patients and others within last 3 months	Only some patients	No
2	Have all staff been trained / refreshed **within the last 3 months** on their individual role in protecting staff and patients from COVID-19?	Yes	All staff trained but some more than 3 months ago	Never been trained
3	Are hand hygiene facilities in place before entry to the waiting area/dialysis unit?	Yes		No
4	Do you regularly audit patient compliance with hand hygiene?	Yes		No
5	Do you regularly audit staff compliance with hand hygiene?	Yes regularly		No
6	Do staff screen patients for symptoms and temperature before entry to waiting area?	Yes always	Sometimes but not always	No
7	Waiting area - do you have visual prompts for social distancing?	Yes		No
8	Waiting area - are all the chairs at least 2 metres apart?	Yes all	Some but not all	None are >2m separation
9	Waiting area - do you regularly audit compliance with social distancing?	Yes		No
10	Waiting area – how often are chairs cleaned?	After each patient	Between shifts but not after each patient	Once a day or less
11	Do you perform regular audits of cleaning practices in dialysis unit and waiting area?	Yes		No
11	Dialysis stations/chairs – are they separated by at least 2 metres or if not, are screens in place between?	Yes all	Some but not all	All are less than 2m apart
12	Do you audit staff social distancing including in staff rooms & workstations?	Yes regularly	Yes, but not regularly	No
13	Do all patients wear fluid repellent/surgical face masks throughout the dialysis process?	Yes all	Some patients refuse / unable to wear	No access to masks
14	Do staff use visor, long sleeved gown and gloves according to PHE guidance and FFP3 masks available for resuscitation?	Yes, all elements	1 element missing or intermittent supply	2 elements missing

No.	**Question**	**Ideal**	**Medium risk**	**Higher risk**
		0 risk points	**1 risk point for each box**	**2 risk points for each box**
15	Do you have capacity to do regular screening swabs on all asymptomatic patients attending for dialysis when rates of infection are high or very high?	Yes		No
16	Do you keep prospective central records of dialysis date, time, station and transport for each patient, usable for contact tracing?	Yes, all patients	Some records but incomplete	No
17	Do COVID-19 positive and suspected patients dialyse in a dedicated area separated by doors / wall staffed by a separate nursing team?	Yes		No
18	Are you able to isolate or cohort these patient groups separately (positive / suspected / asymptomatic contacts)?	Always	Usually, but occasional mixing of groups	These groups are usually mixed together
19	Are inpatients dialysed in the same area as outpatients?	No	Very occasionally	Routinely
20	Are you able to expand your peritoneal dialysis programme to reduce number of patients receiving in-centre / satellite haemodialysis?	Yes currently expanding	Small capacity for expansion but barriers remain. What are they?	Significant barriers to expansion What are they?
21	Are you able to expand your home HD programme?	Yes currently expanding	Small capacity for expansion but barriers remain. What are they?	Significant barriers to expansion What are they?
22	Do you have the skills necessary to provide the COVID-19 vaccination to patients?	Yes	No, but actively exploring how we may provide this in our unit	No
	Total risk points for each column	0		
	Add up all risk points and plan changes to reduce your risk score	**Total score:**		**(low score is good)**

Recommendations for minimising the risk of transmission of COVID-19 in UK adult haemodialysis units

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Introduction

People receiving haemodialysis for end stage kidney disease are classified as clinically extremely vulnerable to infection with COVID-19. Renal registry COVID-19 surveillance reports show that around 12% of adult patients receiving haemodialysis in the UK have had confirmed symptomatic COVID-19 and 22% of these have died [2]. Some dialysis units have experienced significant outbreaks within groups of patients who received dialysis at the same time, suggesting that transmission may have occurred within the dialysis unit [3]. In addition, there have been high levels of SARS-CoV-2 (COVID-19) infection amongst staff working on dialysis units [4,5]. Asymptomatic infection is common, adding to the challenges of infection prevention and control (IPC). The KQuIP COVID-19 HD Ensuring Patient Safety group has gathered information and advice from renal healthcare professionals, IPC teams, expert patients, public health medicine and published reports in compiling these recommendations.

The PHE document COVID-19: Guidance for the remobilisation of services within health and care settings[1] classifies care settings as high, medium or low risk pathways. This defines the following patient groups in a dialysis unit:

Pathway	COVID-19 status	Clinical picture
High risk	Positive	Consistent with COVID-19 infection or contact with known positive case or asymptomatic
Medium risk	Unknown	Asymptomatic
Low risk	Negative and regular testing in place (frequency not specified)	Asymptomatic

Dialysis units should adjust their working practices to support the following key elements to protect patients and staff from COVID-19 infection:

1. Shielding

Shielding remains an important form of protection against COVID-19 infection, especially when infection rates in the community are high or rising. The government has issued further advice on shielding. Many patients have been unable to shield because of their job or other commitments. Others prefer not to shield to preserve their mental and physical wellbeing. Irrespective of official advice in relation to shielding, it is important that dialysis staff ensure that their patients understand how they can reduce their risk of acquiring COVID-19. The latest Renal Association / British Renal Society resources on risk stratification and how to discuss this with patients can be found here.

Recommendation

- Patients should continue to use a face mask and maintain scrupulous hand hygiene for the long term to minimise the risks to themselves and others.

- Patients should remain socially distanced as much as possible, weighing up the various individual competing factors, to minimise their risk of COVID-19 infection.
- Staff should use the RA COVID-19 risk stratification resources including infographics to inform discussion with patients about the risks associated with various activities.
- Patients should use the Kidney Care UK website for the latest advice on shielding.

2. Patient Education

Patients should have access to information in a variety of forms and language, focusing on the following areas:

- Mechanism of spread of COVID-19.
- The lower risk of COVID-19 for patients on home dialysis therapies.
- Hygiene practices – hand hygiene, respiratory hygiene, cough etiquette, avoiding unnecessary contact with surfaces
- Display a poster to illustrate when to wash hands or use hand gel (infographic coming soon to this document)
- The importance of social distancing to reduce the risk of COVID-19 infection.
- Safe use of surgical/fluid repellent face masks.
- Self-reporting before attending for dialysis if any of the following applies to the patient or a close/household contact within the last 14 days:
  - symptoms of COVID-19
  - positive COVID-19 test
  - advised to have a COVID-19 test or result awaited (except routine screening)
- The need to inform the dialysis unit if they are a "contact" of someone with COVID-19, or have been advised to self-isolate by NHS Test and Trace (or equivalent in the devolved nations).
- Indications for COVID-19 swab testing.
- Actions to be taken if swab result is positive – self isolation (but patients should still attend for dialysis).
- An easy-read PHE patient information document on symptoms and what to do can be found here.
- RA COVID-19 risk infographics are a helpful resource for patient education.
- Current patient information on Coronavirus can be found on the Kidney Care UK website.

3. Staff Education

Staff should be educated on their individual role in protecting themselves and others from COVID-19 as per local Trust guidelines, including the following information:

- Safe use of face masks always when in the hospital including in offices and in during breaks, apart from when eating and drinking.
- Follow government guidelines on the need for self-isolation if they or a household contact are symptomatic and awaiting a test result or have a positive SARS-CoV-2 test.
- Follow Trust / NHS organisational guidance on regular asymptomatic staff testing.
- How to self-report to their line manager if they have symptoms of COVID-19.
- How to arrange a SARS-CoV-2 (COVID-19) test.

- If the COVID-19 swab result is positive, they should self-isolate according to current NHS guidance.
    - In Wales, follow advice here.
    - In Scotland, follow advice here.
    - In Northern Ireland, follow advice here

- What to do if staff are informed by NHS Test and Trace that they are a "close contact" of a case of COVID-19.
    - In Wales, follow advice here.
    - In Scotland, follow advice here.
    - In Northern Ireland, follow advice here.
- The benefits of home dialysis therapies to facilitate discussion of alternatives to receiving hospital haemodialysis

4. Hand hygiene

Dialysis unit staff should follow established hand hygiene practices including not wearing jewellery and bare below the elbows policy, with audit of compliance and prompt intervention to address any deficiencies.

Patients should perform hand hygiene (either with soap and water or hand gel) at key stages during the dialysis process, supported by appropriate facilities and encouragement:

- Before travelling to the dialysis unit
- Before entering the dialysis waiting area
- On entry to the dialysis unit
- At their dialysis station
- Before and after eating
- Before and after using the toilet
- On leaving their dialysis station
- Before travelling home
- On arrival home

A Public Health England hand washing best practice pictorial guide can be found here.

5. Social and physical distancing

Dialysis units should adjust their service to minimise close contact between individuals, given the crucial role of social distancing in preventing the spread of infection. Distancing may be achieved by altering time, physical distance or both.

Dialysis units should facilitate the following social and physical distancing measures:

5.1. Stagger appointment times to ensure prompt and safe patient flow

5.2. Transport - shared decision making with each patient to identify the best solution, which may vary between cities and individual renal units:

- Use own car
- Driven by family member
- Driven by trusted taxi drivers who commit to cleaning the vehicle between patients and may use protective screens.
- NHS transport:
    - at least one empty seat between patients in the same row, and at least one empty row between rows of patients.
    - Patients who have symptoms of COVID-19 should travel alone.
    - Patients with confirmed COVID-19 may share transport with each other but not with other patient groups (see section 11 - isolation and cohorting).
- Public transport with maximal social distancing and wearing a facemask.

5.3. Waiting areas

For high risk pathway patients (COVID-19 positive or symptomatic patients):

- Patients should not share a waiting area with “contacts” or medium risk pathway patients.
- Patients should use a different entry and exit point from other groups of patients, signed appropriately.

For COVID-19 “contacts” who are in their 14-day isolation period:

- Patients should not share a waiting area with any other patient group.

For low and medium risk pathway patients (asymptomatic and no positive SARS-CoV-2 test), the following strategies may be considered where possible:

- Avoid use of waiting areas before dialysis – patients stay in transport until called in by staff
- Avoid use of waiting areas after dialysis – patients stay at dialysis station until transport arrives
- If above not possible, use separate “arrival” and “departure” waiting areas, to prevent spread of COVID-19 between shifts of patients (see contact tracing).
- Remove chairs to maintain a minimum distance of 2 metres.
- Signage to indicate seating separation by 2 metres and indicate “non-use” spaces.
- Use additional areas to ensure a minimum distance of 2 metres.
- If waiting areas cannot be fully socially distanced, patient “bubbles” using defined seating areas may be useful to reduce the risk of outbreaks. Patients who have to share transport should be in the same “bubble”.

5.4. Patient flow

Staff should optimise efficient patient flow to ensure social distancing is maintained. The following measures should be considered where possible:

- Floor stickers to direct social distancing and flow
- Separate doors for arrival and departure
- One-way systems for patients and staff to prevent “hot spots” for close contact.

5.5. Dialysis chairs / beds should be separated by 2 metres.

Where this is not possible, the following options could be considered:

- Transparent screens between stations to minimise potential droplet spread
- Removal of dialysis stations to ensure a minimum distance of 2 metres between stations and chairs – an additional dialysis shift may therefore be needed to ensure there is adequate dialysis capacity.

5.6. Staff social distancing

Staff should maintain social distancing wherever possible throughout working practices, during handovers and break times and wear face masks at all times except when eating or drinking. Chairs and computer workstations should be placed at least 2m distance apart in all areas.

A risk assessment should be carried out to identify areas and working practices where social distancing is compromised and practical solutions should be explored with the Trust's IPC and management teams.

6. Personal Protective Equipment (PPE)

6.1. All staff should wear a face mask throughout the working day, including during break times, meetings and in non-clinical areas.

The PHE document COVID-19: Guidance for the remobilisation of services within health and care settings identifies renal dialysis units as a high risk COVID-19 pathway[1] classifies care settings as low, medium or high risk pathways[7]. This defines the following patient groups in a dialysis unit:

Pathway	COVID-19 status	Clinical picture
High risk	Positive	Consistent with COVID-19 infection or contact with known positive case or asymptomatic
Medium risk	Unknown	Asymptomatic
Low risk	Negative and regular testing in place	Asymptomatic

The PHE document states the following regarding PPE:

6.2. PPE for staff within 2 metres distance of a patient

- Staff should use a visor, fluid resistant surgical mask (FRSM), apron and gloves always unless an additional form of PPE is required (see below).

- **Long sleeved gowns - for patients on all pathways, a long-sleeved gown is required if there is a risk of spraying or splashing of blood or bodily fluids.**
  - this may apply to the process of connection and disconnection from the haemodialysis machine and has been discussed with the IPC team at NHS England.
  - **the gown and gloves should be changed immediately on completing the procedure.**

- **FFP3 mask – should be worn If an aerosol-generating procedure (AGP)** is likely to be performed during dialysis, for example use of Continuous Positive Airways Pressure (CPAP).

It is important that PPE is donned and doffed safely to protect staff effectively.

- Guidance on donning of PPE is available here.
- Guidance on doffing of PPE is available here.

6.3. Local risk assessment to guide PPE and other IPC measures

Where there is concern about high rates of infection in patients and / or staff, a local risk assessment may choose to be performed with the local IPC team to identify how risks can be mitigated. Risks may include outbreaks of infection, SARS-CoV-2 positive patients unable to wear face masks, lack of social distancing due to the physical layout of the building and poor ventilation.

Following the risk assessment, advice from IPC teams may include the use of additional PPE to control the risk.

6.4. All clinical staff should be fit-tested for available FFP3 masks.

- If a staff member fails the fit-test for all available FFP3 masks, they should not carry out patient care which requires an FFP3 mask.

6.5. Staff should use a fit-tested FFP3 mask during cardiopulmonary resuscitation [17,18]

- There should be a reliable supply of appropriate PPE (fluid resistant surgical gowns and fit-tested FFP3 masks) for use during cardiopulmonary resuscitation (CPR).

Rationale – published studies from dialysis units have shown that a high proportion of dialysis staff suffered COVID-19 symptoms or proven infection[4,5]. At the peak of the first wave of the pandemic, many London dialysis units struggled to continue safe dialysis provision due to extreme staff shortages. Many such units reported that more than 50% of their nursing staff suffered COVID-19 infection with positive SARS-CoV-2 test or antibodies[19]. This rate of infection is considerably higher than the IgG antibody prevalence reported in the REACT2 study (11% of healthcare workers with patient contact, 15% of client-facing care home workers and 13% for London residents)[20]. In contrast, staff infection rates were reported to be very low in the Imperial College Healthcare NHS Trust London isolation unit, where staff used AGP-level PPE throughout[21]. European[22] and US CDC[23] guidance

recommends the use of N95 / FFP2 / FFP3 masks for the care of symptomatic or SARS-CoV-2 positive patients, whereas PHE guidance recommends the use of FRSM apart from during AGPs.

Some dialysis units have successfully adopted AGP-level PPE for the care of SARS-CoV positive patients for several months because of concern about outbreaks of COVID-19 infection in patients and / or staff. Other dialysis units have not experienced high levels of staff sickness and the reasons for this disparity are not currently well understood. Many dialysis units have stated that a local risk assessment of the dialysis unit in collaboration with the local IPC team is likely to be a more useful way forward than standardised recommendations for all units. This will allow identification of local problems and implementation of bespoke solutions, which may include additional PPE and / or frequent testing of staff and patients.

6.6. PPE for patients

All patients should wear fluid resistant surgical face masks throughout the dialysis process from leaving the house until they arrive back home[24,25].

- Fluid resistant surgical face masks should be supplied by the dialysis unit with an adequate supply of at least 1 mask per dialysis session (patients may need more if the mask becomes contaminated and needs to be replaced).
- Masks may be removed to allow eating and drinking (only touching the outer side) but should be replaced immediately afterwards.
- If removing a face mask to eat or drink, patients should use hand sanitiser before taking a mask off and before putting it back on.
- Anyone taking their mask off must keep a 2-metre distance between them and all other people on the unit, including staff and other patients receiving dialysis.
- Advice on eating and drinking during haemodialysis can be found here.

7. Environmental cleaning and disinfection

COVID-19 is highly infectious - transmission may occur via respiratory droplet and aerosol spread, bodily fluids and contact with infected surfaces and equipment. Routine procedures for the cleaning and disinfection of dialysis stations and equipment are adequate to prevent transmission of COVID-19 providing they are rigorously followed, paying particular attention to frequently touched surfaces and shared areas [1,23].

7.1. The same cleaning and disinfection practices should occur in both COVID-19 negative and positive areas as asymptomatic carriage of COVID-19 is common.

7.2. Dialysis staff should pay particular attention after each dialysis session to the following:

- Cleaning should only commence once the patient has left the area.
- Disinfect or discard all surfaces, supplies or equipment located within 2 metres of the patient, including protective screens and remote controls.
- Choose an appropriate cleaning agent and concentration for the surface / equipment, according to manufacturer's instructions.
- Clean shared medical equipment after each patient use (e.g. blood pressure cuffs, oxygen saturation monitor, scales).

- For side rooms, allow adequate time for air change between patients. As this depends on the type of ventilation used (negative or neutral pressure), local guidance may need to be sought from infection control.
- In waiting areas, chairs should be cleaned after each patient has vacated their seat.
- Communal areas, e.g. toilets, wash basins and scales should be cleaned very frequently to minimise the risk of transmission via surfaces.

8. Symptom screening and reporting (see Appendix 1)

Routine practice in dialysis units should include screening/reporting of symptoms and any recent positive test results to check if they or a household contact have possible or confirmed COVID-19 infection.

- **On non-dialysis days** - Patients should self-report by phone so that appropriate action can be taken (see sections 9.1 and 9.2)
- **On dialysis days** - Patients should self-report by phone to the dialysis unit before they leave home.
- **On entry to dialysis unit**, screening by staff including measurement of body temperature.

The symptoms screening checklist in Appendix 1 can be used to ensure completeness and to use the opportunity to reinforce the "hands, face, space" message.

Rationale - Many patients with COVID-19 have a fever, persistent cough or loss of taste and smell. Other common symptoms in patients receiving haemodialysis include breathlessness, diarrhoea, fatigue, aches and pains[27]. Sometimes frequent clotting of the haemodialysis circuit is the first apparent sign of COVID-19[19]. Some patients develop symptoms for the first time during their dialysis treatment, sometimes associated with rapid deterioration, so early reporting of symptoms is essential. In contrast, some patients are asymptomatic but may still be infectious to others[23]. Some patients have a COVID-19 illness but remain swab negative and no other explanation is found for their illness. These patients are often assumed to have COVID-19 illness but have false negative swab tests. Understanding of this patient group is likely to grow with time as tests improve.

9. SARS-CoV-2 (COVID-19) testing and actions to be taken with results (see Appendix 2)

Each dialysis unit should have a clear process by which they are informed of positive swab results without delay to ensure further actions are taken.

9.1. SARS-CoV-2 (COVID-19) tests should be performed in the following situations in all cases:

- **New patients starting dialysis or moving to another unit or trust**
  - Perform swab within the 72 hours before planned start date to ensure they are isolated or cohorted appropriately if necessary.
- **Symptomatic patients**
  - Renal unit team should arrange for SARS-CoV-2 (COVID-19) test as soon as possible, with results available within 24 hours.

9.2. Actions to be taken for patients who inform the dialysis unit that they are a close contact of a household member or friend who has tested positive:

1. Arrange next dialysis in an isolation area separate from other patients (not with COVID-19 positive patients)
2. Perform SARS-CoV-2 (COVID-19) test at next dialysis session (see section 9.3).
3. Perform clinical review at next dialysis session

9.3. Actions to be taken for symptomatic patients before COVID-19 status is known:

1. **For symptomatic patients who are at home**
   - perform a telephone clinical review to decide if they need hospital assessment that day.
2. **For symptomatic patients who arrive at the dialysis unit**
   - move into an isolation room for clinical assessment to determine severity of illness and urgency of dialysis.
3. **Perform SARS-CoV-2 (COVID-19) test without delay**
   - If test is positive – dialyse in isolation or in a COVID-19 positive cohort
   - If test is negative and clinically unlikely to be COVID-19 illness – return to routine dialysis area
   - If test is negative but clinically likely to be COVID-19 illness – continue to dialyse in isolation and do further investigations as guided by the clinical picture.

9.4. Further action to be taken for SARS-CoV-2 (COVID-19) positive cases:

1. Inform the patient and advise that household contacts should self-isolate for 14 days
2. Inform the patient that they will be contacted by the NHS Test and Trace service (or equivalent if in Wales, Northern Ireland or Scotland)
3. If the patient lives in a care home or similar, contact the manager without delay
4. Arrange frequent medical assessment to monitor clinical progress and arrange admission where needed
5. For patients on the transplant waiting list:
   a. Report to NHS Blood and Transplant using the downloadable forms.
   b. Place in the suspended category of the transplant list for at least 28 days and follow NICE guidance before reactivating.
6. Commence contact tracing for “close contacts” in the dialysis unit (see section 10).

9.5. Actions to be taken if there is an outbreak of COVID-19 infection on a dialysis unit:

An outbreak is defined as 2 or more patients with a positive SARS-CoV-2 (COVID-19) test on the same shift during a 14-day period.

1. Perform SARS-CoV-2 (COVID-19) test on all patients on the same shift and repeat after 7 and 14 days.
2. Perform root cause analysis to identify modifiable risk factors which may have contributed to transmission.
3. Seek advice from local infection control and public health teams.
4. Depending on the extent of the outbreak, consider whether patients on other shifts and staff should also be tested.
5. Use the checklist at the front of this document to highlight modifiable risk areas.
6. Implement changes to practice to reduce future risk of outbreaks.

9.6. Surveillance testing of asymptomatic patients in haemodialysis units

- Dialysis units in areas with high or very high local incidence or prevalence of COVID-19 should perform weekly to fortnightly surveillance SARS-CoV-2 tests to identify asymptomatic positive cases early and isolate appropriately, thus minimising the risk of transmission to others. This should be planned in collaboration with local COVID-19 laboratory services to ensure there is adequate capacity to provide results within 24-48 hours.
- Dialysis units in areas with lower levels of infection may also wish to perform surveillance COVID-19 swabs following a local risk assessment providing there is sufficient laboratory capacity to provide results within 24-48 hours.
- Local and national coronavirus incidence data can be found here.
- Local infrastructure is needed to obtain timely results and act on them before the patient's next dialysis is due (see above) - without this, the benefits of surveillance may be limited.
- Asymptomatic patients who have a positive COVID-19 swab should be managed in the same way as symptomatic patients (see sections 9.2 - 9.5)

Rationale for surveillance testing of patients – detection and isolation of asymptomatic COVID-19 positive patients is likely to be beneficial in preventing outbreaks of infection in a haemodialysis unit. A study from a haemodialysis unit in Spain during March 2020 found an 8% asymptomatic positive rate for nasopharyngeal swabs. Independent risk factors for a positive test were nursing home residents, hospital admission within the preceding 2 weeks and sharing hospital transport[19]. Surveillance testing has been carried out in a variety of units in the UK since May 2020 and found to be both feasible and helpful in preventing outbreaks.

9.7. Surveillance testing of asymptomatic staff

Dialysis units should work closely with local IPC teams to ensure they are prioritised for early implementation of regular staff surveillance testing for COVID-19 to detect asymptomatic individuals, utilising new rapid tests where available and approved for use.

Rationale

Regular surveillance testing of staff for COVID-19 is likely to be beneficial in dialysis units where community infection is high [31,32]. The exact frequency of testing required depends on the local R0 number and is yet to be decided by the UK government. It is likely to become routine practice in many areas until the impact of the vaccination programme is known. Rapid testing kits are being evaluated in several areas in the UK.

9.8. Antibody testing for patients

Testing for COVID-19 antibodies at day 12-14 may provide additional information for patients who remain swab (PCR) test positive, but its role is currently unclear, and decisions should not be based on the results of antibody tests alone. Dialysis units may wish to monitor antibodies on a regular basis for their patients as this information may prove useful in the future, but there is no evidence of clinical benefit at present.

10. Contact tracing

In previous versions of these recommendations, “contacts” were defined as any patient who shared the same dialysis shift or waiting room, which proved impractical. Since then, dialysis units have implemented infection prevention and control (IPC) measures to reduce the risk of transmission. Contact definitions are now well established and can be applied in UK dialysis units providing other IPC measures are rigorously followed, especially frequent cleaning of waiting areas and frequently touched surfaces.

10.1. Definition of a “contact” on a dialysis unit

A “contact” is defined by Public Health England as a person who has been in close proximity with someone who has tested positive for COVID-19 from 2 days before the person was symptomatic until 10 days from onset of symptoms[33].

In a dialysis setting it may apply in a variety of circumstances including during transport, in a waiting area or during dialysis. This applies even if the patient was wearing a fluid resistant surgical mask.

Table 1 – Examples of a “contact” in a haemodialysis unit[33]

PHE defined “contact”	Example in a dialysis setting
A person who was been within 2 metres of someone for more than 15 minutes	• Patient within 2 metres distance during dialysis • Patient within 2 metres distance in a waiting room for >15 minutes (includes patients on a different shift) • Patient who shared hospital transport
A person who has had face-to-face contact within 1 metre	• Driver who had physical contact with a patient but was not wearing PPE • Nurse who had physical contact and was not wearing PPE • Patients having a conversation without social distancing

10.2. Practical steps to reduce the number of patients who are “contacts”

Social distancing is the key to reducing the number of patients who are “contacts” and therefore at risk of transmission of COVID-19.

In dialysis units which can maintain effective social distancing of at least 2 metres distance between patients throughout the dialysis process, a patient who tests positive for COVID-19 will have very few “contacts” requiring tracing and self-isolation.

In dialysis units where effective social distancing cannot be maintained in all areas, some of the following steps may be helpful:

- Patients use the same dialysis station for each dialysis wherever possible
- Minimise patient movement between shifts
- If waiting area is not socially distanced - allocation of patient "bubbles" to defined zones of the waiting area
- If dialysis stations are too close - allocation of patient "bubbles" to defined zones of the dialysis unit
- Shared transport - group patients who share transport in "bubbles" and allocate to neighbouring dialysis stations

10.3. Preparedness for contact tracing

Dialysis units should take the following steps to support the identification of "contacts" of a positive case of COVID-19 infection:

- **Identify which areas are separated by less than 2 metres** as patients using these chairs / dialysis stations will potentially become "contacts" if a neighbouring patient tests positive for COVID-19 infection
  - dialysis stations
  - chairs in the waiting area(s)
- **Keep a central record** of the following details for each dialysis session to allow retrospective identification of "contacts":
  - name of dialysis unit
  - dialysis station number
  - date of dialysis
  - shift / dialysis time
  - transport
  - presence of COVID symptoms
  - waiting area used
- **Be able to identify "contacts" retrospectively** once a COVID-19 positive patient has been identified (see table 1).

10.4. Identification of "contacts" of a patient with a positive COVID-19 swab

Dialysis units should take the following steps to identify all dialysis unit contacts of the index patient and facilitate early alert for contacts in high risk community settings:

1. Identify the date when symptoms started = Day 0
   a. note location of that dialysis
2. Identify the date which is 48 hrs before symptoms developed = Day -2
   a. note location of that dialysis (may be different from day 0)
3. Identify all patients who were "contacts" from Day -2 onwards (see section 10.1):
   a. within 2 metres distance for >15 minutes during dialysis or waiting room
   b. face to face contact within 1 metre
   c. shared transport
4. Ask the index patient whether they had any contact with other patients, which was not socially distanced, e.g. face-to-face conversation before entry to the dialysis unit.

5. Identify any staff and driver “contacts” who were not wearing appropriate PPE (see table 1).
6. Discuss with the index patient their home circumstances to clarify household contacts.
7. Identify whether the index patient or any “contact” resides in a high-risk setting, e.g. residential care, prison.

10.5. Actions to be taken for “contacts” in a dialysis unit

Inform all dialysis unit “contacts” as soon as possible, advising them:

- To self-isolate for 14 days from date of contact
- Patients should still attend for dialysis – confirm any change of arrangements
- Their household members do not need to self-isolate unless the “contact” develops COVID-19 symptoms or has a positive test.
- For patients or “contacts” in a high-risk setting, their care manager should be informed.

For asymptomatic dialysis patients who are “contacts”

- arrange COVID-19 swab at next dialysis, then at days 7 and 14
- isolate COVID-19 swab positive cases according to local protocol (see section 9).
- re-swab any patient who initially tests negative but subsequently develops symptoms.
- Patients who are on the transplant waiting list should be placed in the suspended category until the 14-day self-isolation period is complete.
- elective surgery should be postponed until at least the end of self-isolation or according to local trust policies.

10.6. Test and trace

Most dialysis patients requiring a COVID-19 test will have it performed in an NHS hospital setting (pillar 1) and the result is available via the pathology system.

If a patient or a member of their household has a COVID-19 test performed in a community setting (pillar 2), they receive their test result via text, email or phone. If they have a positive test result, they are then contacted by the NHS Test and Trace service (or equivalent in Wales, Northern Ireland, or Scotland). They will receive a unique code which they can input into the NHS COVID tracing app. This may then identify “contacts” on a dialysis unit who have not yet been identified by dialysis unit staff – these individuals will be contacted by Test and Trace.

Further information on the Test and Trace in England can be found here.

In Wales, see here; in Scotland, see here; in Northern Ireland, see here.

11. Isolation and cohorting

Dialysis centres should work collaboratively with others in the region to decide the best way to provide safe dialysis care to different groups considering their infection control requirements. The options for isolating / cohorting patients with suspected or confirmed COVID-19 include:

1. Patients are dialysed in a separate dialysis unit from patients without COVID-19.
2. Patients are dialysed in a separate shift - ideally this would be the last shift of the day to maximise opportunities for cleaning and disinfection.
3. Patients are dialysed in isolation rooms which are as far away from other patients as possible (use separate entrance and exit for COVID-19 positive patients).
4. Patients are cohorted, including the use of temporary screens to separate from other cohorts (use separate entrance and exit for COVID-19 positive patients).

- Inpatients should not be dialysed in the same area as outpatients as this has been linked to clusters of COVID-19 in dialysis units.
- Where possible, staff teams should be designed to minimise movement of staff between patient cohorts during the same day. Additional staff may be used as "runners" to assist trained staff and prevent staff from moving between patient cohorts.
- Transmission based precautions for blood borne viruses should be maintained throughout.

The following separate patient groups will be required (see Appendix 3 flow chart):

A. Asymptomatic "contacts" of a known positive case
- Should be dialysed in isolation (not cohorted) until COVID-19 status is known
- Where a whole shift has become asymptomatic "contacts", they may remain in their existing shift, with the shift placed on "lockdown" (see section 10.4).

B. Suspected COVID-19 - symptomatic patients awaiting swab result
- Should be dialysed in isolation (not cohorted) if facilities allow until COVID-19 status is known.
- If patient numbers in this group are high, they may need to be cohorted.

C. Confirmed COVID-19 – patients with a positive SARS-CoV-2 test
- For patients on days 0-14 since symptom onset (or positive swab if asymptomatic)
- May be cohorted if inadequate isolation rooms.
- Ideally dialysed by dedicated staff team who are not in contact with groups A and B.
- Staff dialysing these patients should not also care for patients in group D.

D. Patients who are not in the above groups
- These patients should be dialysed as far from the above groups as possible, by staff who are not involved in the care of COVID-19 positive patients.

12. Step-down of Transmission Based Precautions (TBPs) - see Appendix 3 flow chart

Patients whose fever has resolved for at least 3 days and there is clinical improvement in symptoms may be considered for de-isolation with the following criteria:

- **Patients who are immunocompetent - after 14 days without the need for a negative SARS-CoV-2 (COVID-19) test.**

- **Patients who are immunocompromised - after 2 negative tests at least 24 hours apart, including patients in the following groups:**

    1. currently receiving immunosuppressant medicines
    2. monoclonal antibody treatment within last 12 months
    3. other immunosuppressants within the last 6 months
    4. bone marrow disorder
    5. HIV with low CD4 count

If in doubt, decisions about step-down of TBPs should be discussed with a virologist.

Rationale

There are various protocols for step down of TBPs [37-40], but none specifically for haemodialysis patients. Published case series have also reported a variety of protocols, some based on time since symptom onset and some based on negative COVID-19 swabs taken from day 9 onwards[41,42]. Many patients exhibit prolonged viral shedding of uncertain significance, but this is more likely to be an infection risk in immunocompromised patients. The latest ECDC guidance recommends step down of TBPs after 2 negative swabs for immunocompromised patients[39]. The above approach has been compiled after discussion with specialists in Public Health Medicine in the context of renal disease[43].

13. COVID-19 vaccination for patients and staff

Patients receiving dialysis should be prioritised to receive a COVID-19 vaccine, considering their individual factors including age, comorbidities and immune status. Many dialysis units will be well placed to administer the vaccine, with a proven track record of vaccination for hepatitis B and influenza. Further information on the NHS COVID-19 vaccination deployment strategy can be found here.

Dialysis units should begin discussion with local teams including their nearest NHS Trust vaccination hub, IPC and pharmacy to discuss the logistics relating to vaccination within dialysis units. Private provider dialysis units should begin discussions with their corresponding NHS trusts to plan arrangements for vaccination of their patient groups. The Kidney Care UK website provides up to date information for patients about COVID-19 and vaccination, including links to a webinar.

Healthcare workers should be offered the COVID-19 vaccine according to UK government policy.

Appendix 1 - Symptoms screening for patients attending for dialysis

Ask the following questions to each patient every time:

1. **Do you have any of the following symptoms of COVID-19?**
   - Loss of taste or smell
   - A new persistent cough
   - A high temperature
   - Feeling hot and cold (new symptom)
   - More short of breath than usual

2. **For members of your household / social bubble, has / is anyone:**
   a. had any of the above symptoms within the last 14 days
   b. had a positive COVID-19 test within the last 14 days
   c. been advised to have a COVID-19 test
   d. still waiting for a test result within the last 14 days

3. **Have you had a COVID-19 swab test at another place during the last 14 days?**
   - If yes, what was the result?
   - Why was it done?
     e.g. before surgery / symptoms / household contact / routine screening

4. **Have you been told to self-isolate or have a COVID-19 test during the last 14 days?**

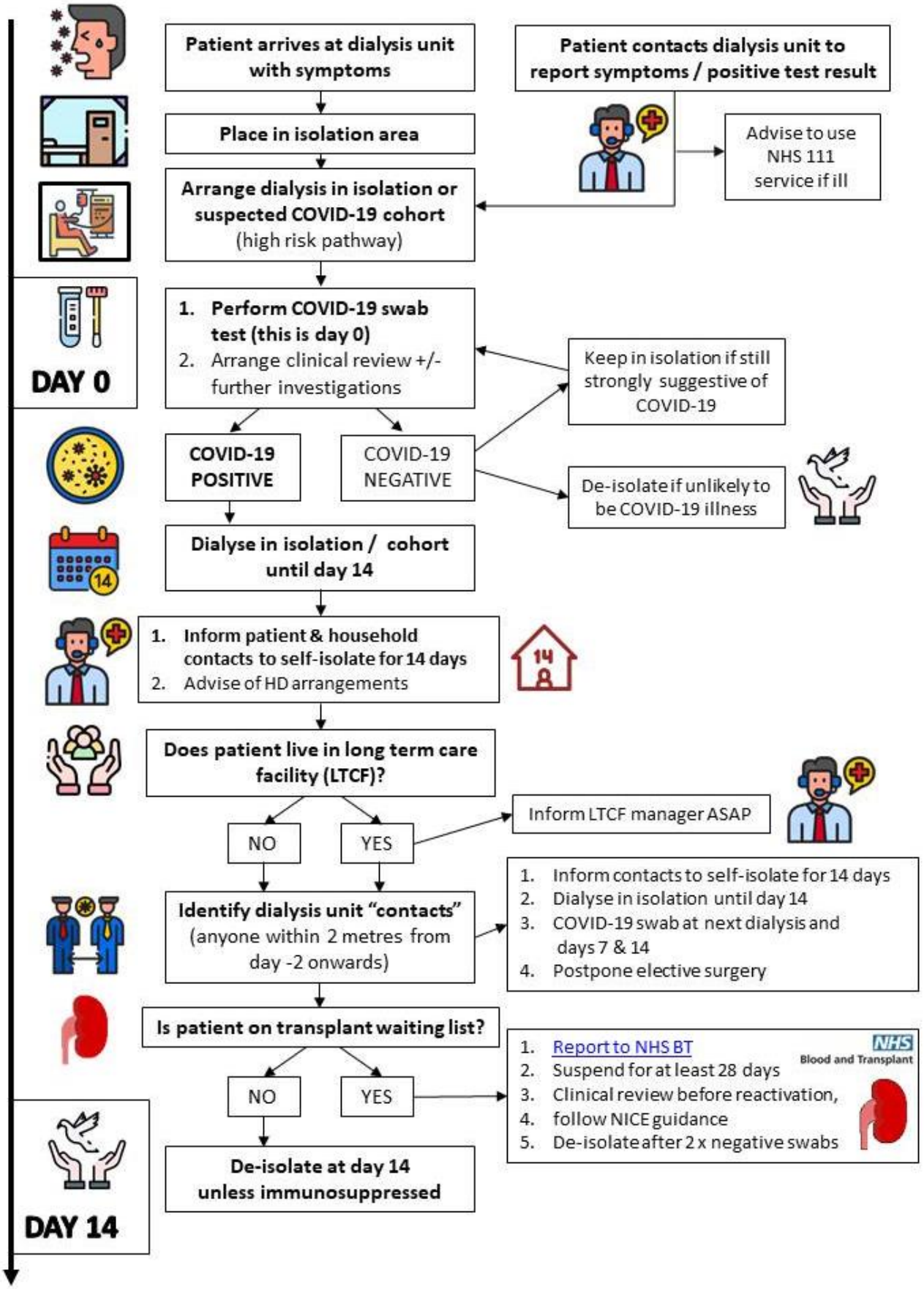
5. **Please help to keep us all safe when you attend for dialysis today**

Wash your hands with soap and water when you enter and leave the dialysis unit.

Wear your mask covering your nose and mouth from when you arrive until you get home.

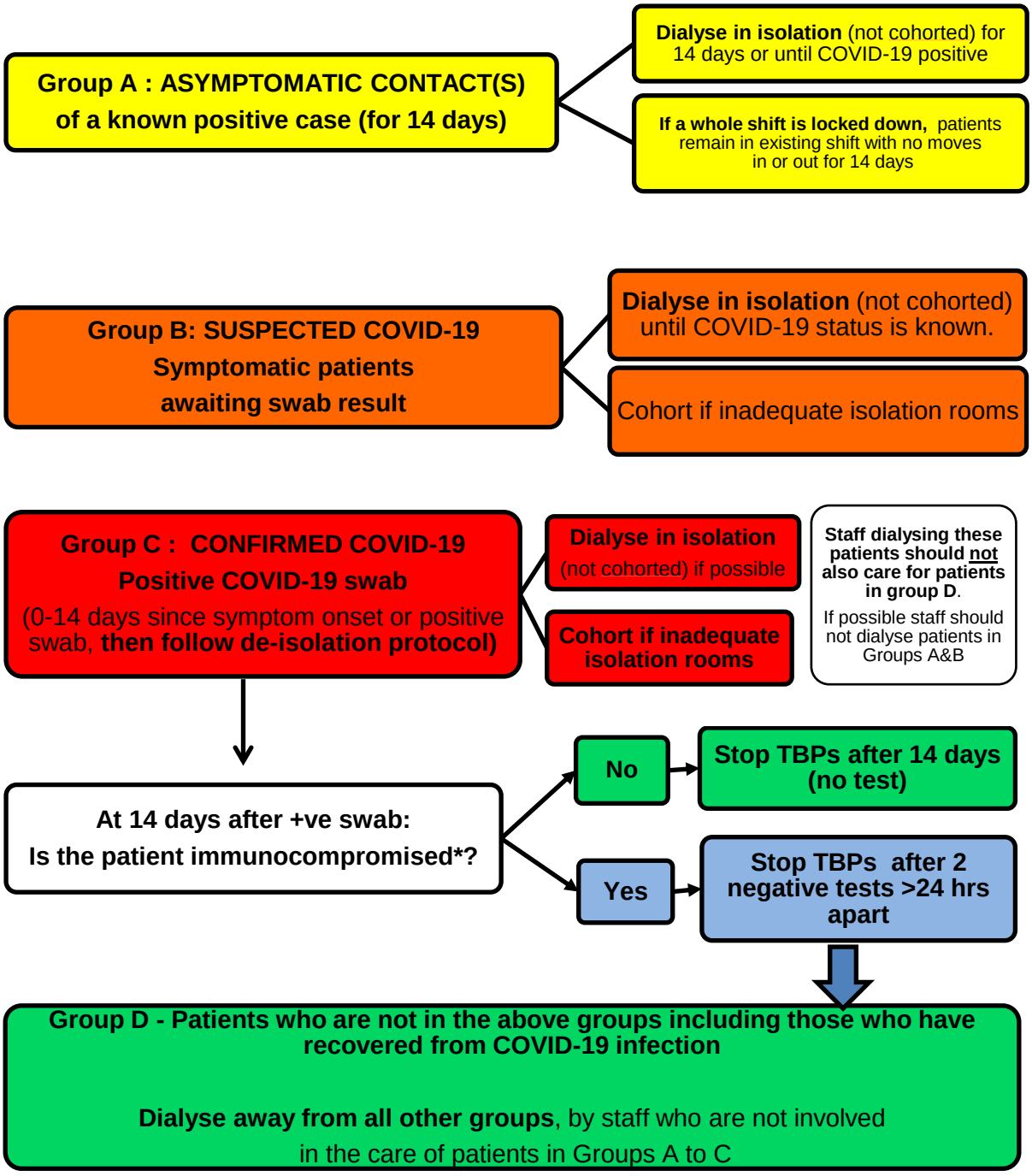
Keep at least 2 metres distance from people wherever possible.

Appendix 2 – Flowchart for symptomatic and COVID-19 positive patients



Appendix 3 – Flow chart for COVID-19 patient isolation and step down of transmission-based precautions (TBPs)

Patients should be isolated from each other in one of the following groups A-D:



*History of current immunosuppression or within last 12 months / bone marrow disorder / HIV with low CD4 count / other immunodeficiency. If in doubt, decisions about de-isolation of an individual patient should be discussed with a virologist.

Appendix 4 – Checklist to identify areas for improvement

DATE:

Circle the box which applies for each question, allocate risk points and identify areas to focus on to reduce risks

No.	Question	Ideal	Medium risk	Higher risk
		0 risk points	**1 risk point for each box**	**2 risk points for each box**
1	Have all patients received written information **within the last 3 months** on actions they should take to keep safe from COVID-19, including new patients starting dialysis?	Yes – all new patients and others within last 3 months	Only some patients	No
2	Have all staff been trained / refreshed **within the last 3 months** on their individual role in protecting staff and patients from COVID-19?	Yes	All staff trained but some more than 3 months ago	Never been trained
3	Are hand hygiene facilities in place before entry to the waiting area/dialysis unit?	Yes		No
4	Do you regularly audit patient compliance with hand hygiene?	Yes		No
5	Do you regularly audit staff compliance with hand hygiene?	Yes regularly		No
6	Do staff screen patients for symptoms and temperature before entry to waiting area?	Yes always	Sometimes but not always	No
7	Waiting area - do you have visual prompts for social distancing?	Yes		No
8	Waiting area - are all the chairs at least 2 metres apart?	Yes all	Some but not all	None are >2m separation
9	Waiting area - do you regularly audit compliance with social distancing?	Yes		No
10	Waiting area – how often are chairs cleaned?	After each patient	Between shifts but not after each patient	Once a day or less
11	Do you perform regular audits of cleaning practices in dialysis unit and waiting area?	Yes		No
11	Dialysis stations/chairs – are they separated by at least 2 metres or if not, are screens in place between?	Yes all	Some but not all	All are less than 2m apart
12	Do you audit staff social distancing including in staff rooms & workstations?	Yes regularly	Yes, but not regularly	No
13	Do all patients wear fluid repellent/surgical face masks throughout the dialysis process?	Yes all	Some patients refuse / unable to wear	No access to masks
14	Do staff use visor, long sleeved gown, and gloves according to PHE guidance and FFP3 masks available for resuscitation?	Yes, all elements	1 element missing or intermittent supply	2 elements missing

No.	**Question**	**Ideal**	**Medium risk**	**Higher risk**
		0 risk points	**1 risk point for each box**	**2 risk points for each box**
15	Do you have capacity to do regular screening swabs on all asymptomatic patients attending for dialysis (now recommended for dialysis units in local COVID-19 Tiers 2 and 3?	Yes weekly	Yes, every 2 weeks	No
16	Do you keep prospective central records of dialysis date, time, station and transport for each patient, usable for contact tracing?	Yes, all patients	Some records but incomplete	No
17	Do COVID-19 positive and suspected patients dialyse in a dedicated area separated by doors / wall staffed by a separate nursing team?	Yes		No
18	Are you able to isolate or cohort these patient groups separately (positive / suspected / asymptomatic contacts)?	Always	Usually, but occasional mixing of groups	These groups are usually mixed together
19	Are inpatients dialysed in the same area as outpatients?	No	Very occasionally	Routinely
20	Are you able to expand your peritoneal dialysis programme to reduce number of patients receiving in-centre / satellite haemodialysis?	Yes currently expanding	Small capacity for expansion but barriers remain. What are they?	Significant barriers to expansion What are they?
21	Are you able to expand your home HD programme?	Yes currently expanding	Small capacity for expansion but barriers remain. What are they?	Significant barriers to expansion What are they?
22	Do you have the skills necessary to provide the COVID-19 vaccination to patients?	Yes	No, but actively exploring how we may provide this in our unit	No
	Total risk points for each column	0		
	Add up all risk points and plan changes to reduce your risk score	**Total score:**		**(low score is good)**

Appendix 5 – “When to clean your hands” poster

Watch this space for poster coming shortly

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