**Recommendations for Minimising the Risk of Transmission of COVID-19 in UK Adult Haemodialysis Units**

**KQuIP COVID-19 HD Ensuring Patient Safety Work Stream**

Version 3, 1st November 2020

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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.

The guidance on PPE is largely in line with Public Health England (PHE) guidance17 apart from the recommendation for use of FFP2/3 masks. This falls outside PHE guidance but is the opinion of a large number of renal multi-professional clinicians following data on the high proportion of dialysis unit staff who developed COVID-19 infection during the first wave of the pandemic.

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](mailto: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 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**](#Checklist) – see pages 4-5.
2. [**Enhanced PPE**](#PPE) – long sleeved surgical gowns are recommended PHE guidance; FFP2/3 masks are recommended to minimise risks to staff and patients but remain outside PHE guidance (section 6).
3. [**Testing of asymptomatic patients**](#Surveillance) **-** Dialysis units in local COVID-19 alert levels “high” and “very high” should perform COVID-19 nasopharyngeal swab tests on all patients once a week to identify and isolate asymptomatic individuals (see section 9).
4. [**Definition of “contacts”**](#Contacts) - Dialysis units which are able to reliably control and record the location and distancing of patients 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.

1. [**Outbreaks**](#Outbreak) **-** Root cause analysis should be performed if there are 2 or more COVID-19 positive cases on the same dialysis shift to identify risk areas for implement improvements.
2. [**Dialysis bubbles**](#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.
3. **Recommendation to expand provision of home dialysis therapies -** Renal centres should try to facilitate expansion of home dialysis provision to provide COVID-19 safer therapies and improve social distancing for patients who have to remain on hospital haemodialysis.

**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, so dialysis units should ensure scrupulous cleaning and disinfection practices in all areas.
* Social distancing measures should be fully implemented wherever possible, including during transport, in waiting areas and throughout dialysis.
* Patients should wear fluid resistant surgical masks during, dialysis, for travel and in waiting areas.
* A high proportion of staff working in the haemodialysis environment developed proven COVID-19 infection so recommendations on PPE remain:
  + Staff caring for patients with confirmed or suspected COVID-19 infection should use enhanced PPE (visor, FFP2 / FFP3 mask, a long sleeved fluid-repellent surgical gown and gloves. FFP3 mask should be used during an aerosol generating procedure)
  + Staff caring for patients without COVID-19 infection should use standard PPE (visor, fluid resistant surgical mask, plastic apron and gloves).
  + Staff should use enhanced PPE including FFP3 mask during cardiopulmonary resuscitation.
* Dialysis units should have defined processes for symptoms screening, testing of symptomatic patients, testing of asymptomatic patients and follow-up of results.
* Dialysis units should keep a central 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 COVID-19 swab, 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 COVID-19 swabs should be performed weekly for all patients attending dialysis units in local COVID-19 alert levels “high” and “very high”, to identify asymptomatic individuals.
* For dialysis units in local COVID-19 alert level “medium”, screening swabs may still be helpful at a frequency determined locally according to incidence and rate of rise of COVID-19 infection.
* The safest protocol for de-isolation of patients receiving haemodialysis is not yet known. Many patients remain COVID-19 swab positive for several weeks after resolution of symptoms but at present it is not known whether this poses a significant risk to others.
* De-isolation decisions for patients with a history of immunosuppression should be based on COVID-19 test results and may need discussion with a virologist.
* For patients with no history of immunosuppression, dialysis units should decide which of the two protocols listed in section 12 is most appropriate for use, taking into account local requirements for isolation and cohorting.

**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? | 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 caring for COVID positive patients use enhanced PPE (visor, long sleeved gown, FFP2/3 mask, gloves)? | Yes all elements | 1 element missing or intermittent supply | 2 or more 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 “high” and “very high” local COVID-19 risk areas | 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? |
|  | **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)** | | |

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**Introduction**

People receiving haemodialysis for end stage kidney disease are classified as extremely vulnerable to infection with COVID-19. [Renal registry COVID-19 surveillance reports](https://renal.org/audit-research/publications-presentations/report/covid-19-surveillance-reports-renal-centres-uk) show that around 12% of adult patients receiving haemodialysis in the UK have had confirmed symptomatic COVID-19 and 22% of these have died1. 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 unit2. In addition, there have been high levels of proven COVID-19 infection amongst staff working on dialysis units3,4. Asymptomatic COVID-19 infection is common, adding to the challenges of infection prevention and control. The KQuIP COVID-19 HD Ensuring Patient Safety group has gathered information and advice from renal healthcare professionals, expert patients, public health medicine and published reports in compiling these recommendations.

**Dialysis units should adjust their working practices to support the following 12 key elements to protect patients and staff from COVID-19 infection:**

1. **Shielding**

The official shielding period for extremely vulnerable patients ended on 1st August 2020. Infection rates are rising rapidly again and further advice is being issued to patients. Many patients have been unable to shield because of their job or other commitments. Others prefer not to shield in order 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](https://renal.org/health-professionals/covid-19/ra-resources/covid-19-risk-stratification-%E2%80%93-resources-clinicians).

**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](https://renal.org/health-professionals/covid-19/ra-resources/covid-19-risk-stratification-%E2%80%93-resources-clinicians) including [infographics](https://renal.org/health-professionals/covid-19/ra-resources/covid-19-risk-stratification-%E2%80%93-resources-clinicians-0) to inform discussion with patients about the risks associated with various activities.
* Patients should use the [Kidney Care UK website](https://www.kidneycareuk.org/news-and-campaigns/coronavirus-advice/) for the latest advice on shielding.

1. **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 this Nursing Times poster [“When to Clean Your Hands”](https://cdn.ps.emap.com/wp-content/uploads/sites/3/2019/08/POSTER-When-to-clean-your-hands.pdf)
* The importance of social distancing to reduce the risk of COVID-19 infection.
* Safe use of surgical/fluid repellent face masks.
* Self-reporting of symptoms of COVID-19 before attending for dialysis – range of symptoms and action to be taken.
* The need to inform the dialysis unit if they are a “contact” of someone with COVID-19, or have been contacted 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.](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/906663/20203007_Easy_read_household_isolation_v3.1.pdf)
* [RA COVID-19 risk infographics](https://renal.org/covid-19/ra-resources-renal-professionals/covid-19-risk-stratification-resources-clinicians/infographics-help-patients-understand-covid-19-risk/) are a helpful resource for patient education.
* Current patient information on Coronavirus can be found on the [Kidney Care UK website](https://www.kidneycareuk.org/news-and-campaigns/coronavirus-advice/).

1. **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:

* [Follow government guidelines on the need for self-isolation](https://www.gov.uk/government/publications/covid-19-stay-at-home-guidance/stay-at-home-guidance-for-households-with-possible-coronavirus-covid-19-infection) if they or a household contact have symptoms of COVID-196.
* How to self-report to their line manager if they have symptoms of COVID-19.
* How to arrange a COVID-19 swab test.
* If the COVID-19 swab result is positive, they should self-isolate according to current NHS guidance.
  + In Wales, follow advice [here.](https://gov.wales/self-isolation-stay-home-guidance-households-possible-coronavirus)
  + In Scotland, follow advice [here](https://www.nhsinform.scot/illnesses-and-conditions/infections-and-poisoning/coronavirus-covid-19/test-and-protect/coronavirus-covid-19-guidance-for-households-with-possible-coronavirus-infection).
  + In Northern Ireland, follow advice [here](https://www.publichealth.hscni.net/covid-19-coronavirus/covid-19-information-public#what-should-i-do-if-i-think-i-have-covid-19)
* [What to do if staff are informed by NHS Test and Trace that they are a “close contact” of a case of COVID-19.](https://www.nhs.uk/conditions/coronavirus-covid-19/testing-and-tracing/nhs-test-and-trace-if-youve-been-in-contact-with-a-person-who-has-coronavirus/)
  + In Wales, follow advice [here.](https://gov.wales/test-trace-protect-your-questions#section-42186)
  + In Scotland, follow advice [here.](https://www.gov.scot/publications/coronavirus-covid-19-test-and-protect/)
  + In Northern Ireland, follow advice [here.](https://www.publichealth.hscni.net/covid-19-coronavirus/testing-and-tracing-covid-19/contact-tracing)
* The benefits of home dialysis therapies to facilitate discussion of alternatives to receiving hospital haemodialysis

1. **Hand hygiene**

Dialysis unit staff should follow established hand hygiene practices 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
* 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](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/886217/Best_practice_hand_wash.pdf).

1. **Social 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 time, physical distance or both.

**Dialysis units should facilitate the following social distancing measures:**

* 1. **Stagger appointment times to ensure prompt and safe patient flow**
  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 suspected 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.
  1. **Waiting areas**

**For COVID-19 positive or suspected patients:**

* Patients should not share a waiting area with “contacts” or other non-COVID patients.
* Patients should use a different entry and exit point from other groups of patients.

**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 COVID negative patients**, 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”.
  1. **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.
  1. **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.
  1. **Staff social distancing**

Staff should maintain social distancing wherever possible throughout working practices, during handovers and break times. Surgical face masks should be worn at all times including during breaks except when eating or drinking.

1. **Personal Protective Equipment (PPE)**

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](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/910885/COVID-19_Infection_prevention_and_control_guidance_FINAL_PDF_20082020.pdf) classifies care settings as low, medium or high risk pathways7. It classifies renal dialysis of COVID-19 positive or suspected patients as a high risk COVID-19 pathway and states the following regarding PPE:

* **If patient is suspected / confirmed COVID-19, a gown is required if risk of spraying or splashing of blood and bodily fluids** - this therefore applies to the care of patients receiving haemodialysis and was discussed with the SAGE Hospital Onset COVID-19 Infection (HOCI) subgroup in September 2020.
  1. **Enhanced PPE** (visor, FFP2 / FFP3 mask, long sleeved fluid-repellent surgical gown and gloves) **should be worn by all staff involved in the care of patients receiving haemodialysis who are in the following groups:**
* **Suspected COVID-19** – symptomatic patients awaiting a swab result
* **Confirmed COVID-19** – patients with a positive COVID-19 swab until they are de-isolated

If an aerosol-generating procedure (AGP) is likely to be performed during dialysis, for example use of Continuous Positive Airways Pressure (CPAP), an FFP3 mask should be worn (not FFP2).

The recommendation on masks is not in line with PHE guidance but represents the views expressed by the majority of renal clinicians given available experience and data both published 3,4,14 and anecdotal, until evidence shows that FFP2/3 masks confer no additional benefit in a haemodialysis setting. It is in line with European8 and US (CDC)9 guidance for dialysis facilities.

* 1. **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 be fit-tested for available FFP2 masks (these can be used apart from during aerosol-generating procedures).
* If a staff member fails the fit test for all available FFP2 / FFP3 masks, they should not care for patients with suspected of confirmed COVID-19 infection.
  1. **Staff caring for patients without symptoms or current COVID-19 infection (medium risk pathway) should follow current PHE guidance on use of PPE.**
* All clinical staff should use a visor, fluid resistant surgical face mask, plastic apron and gloves.
  1. **Staff should use enhanced PPE including fit-tested FFP3 mask during cardiopulmonary resuscitation 10,11**
* There should be a reliable supply of enhanced 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 infection3,4. 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 proven either by swab or antibody testing12. 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)13. In contrast, staff infection rates were reported to be very low in the Imperial College Healthcare NHS Trust London isolation unit, where staff used enhanced PPE throughout14.

Many dialysis units have reported significant concern about risks to staff and patients if enhanced PPE is not used for the care of COVID positive patients. High levels of staff sickness would threaten the continuity of dialysis provision during this second wave of infection, placing patients’ lives at risk. Given the current published UK dialysis studies and the known high risks to staff and patients, this working group believes that the safest approach is for the use of FFP2/3 masks as part of enhanced PPE unless evidence proves that it is of no additional value in a haemodialysis setting. The use of enhanced PPE should be part of a comprehensive programme of infection prevention and control measures including staff training and education.

* 1. **PPE for patients**

**All patients should wear fluid resistant surgical face masks throughout the dialysis process from leaving the house until they arrive back home15,16.**

* 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 but should be replaced immediately afterwards.
* If removing a face mask to eat or drink, patients should use hand sanitizer 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.](https://britishrenal.org/news/statement-on-eating-or-drinking-during-hospital-or-satellite-unit-based-haemodialysis-and-covid-19/)

1. **Environmental cleaning and disinfection**

COVID-19 is highly infectious - transmission may occur via respiratory droplet 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 9,17.

* 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**
  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.

1. **Symptom screening and reporting**

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.

**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 pains18. Sometimes frequent clotting of the haemodialysis circuit is the first apparent sign of COVID-1912. 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 others9. 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.

1. **COVID-19 Swab (PCR) testing and actions to be taken with results**

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.

* 1. **COVID-19 swabs 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 swab test as soon as possible, with results available within 24 hours.
* **Asymptomatic patients in local COVID-19 alert levels “high” and “very high” should have weekly COVID-19 swabs** to detect and isolate positive cases and minimise the risk of transmission to others.
  1. **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 known COVID-19 patients)
2. Perform COVID-19 swab at next dialysis session (see section 9.3).
3. Perform clinical review at next dialysis session
   1. **Actions to be taken for symptomatic patients before COVID-19 status is known:**
4. **For symptomatic patients who are at home**

* perform a telephone clinical review to decide whether or not they need hospital assessment that day.

1. **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.

1. **Perform COVID-19 swab test without delay**

* If swab positive – dialyse in isolation or in a COVID-19 positive cohort
* If swab negative and clinically unlikely to be COVID-19 illness – return to routine dialysis area
* If swab negative but clinically likely to be COVID-19 illness – continue to dialyse in isolation and do further investigations as guided by the clinical picture.
  1. **Further action to be taken for COVID-19 swab 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. Commence contact tracing for “close contacts” in the dialysis unit (see section 10).
   1. **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 swab result on the same shift during a 14 day period.

1. Perform COVID-19 nasopharyngeal swab 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.
   1. **Surveillance testing of asymptomatic patients in haemodialysis units**

* Dialysis units in local COVID alert levels “high” and “very high” should perform weekly surveillance COVID-19 swabs to identify asymptomatic positive cases early and isolate appropriately, thus minimising the risk of transmission to others.
* Dialysis units in local COVID alert level “medium” may wish to perform surveillance COVID-19 swabs if the local incidence of COVID-19 infection is rising rapidly. Local and national coronavirus incidence data can be found [here.](https://coronavirus.data.gov.uk/cases)
* 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 –** 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 transport19. 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. As infection levels are rising sharply across the UK, surveillance testing is likely to be beneficial in dialysis units where community infection levels are high or rising rapidly.

* 1. **Surveillance testing of asymptomatic staff**

Regular surveillance testing of staff for COVID-19 by nasopharyngeal swab has not been implemented across the UK due to lack of capacity. It is likely to be beneficial in dialysis units where community infection is high and may become routine practice in the future. Alternatives to nasopharyngeal swab are being evaluated in several areas in the UK.

* 1. **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. There are several ongoing research studies which include patients receiving haemodialysis, so further evidence is likely to emerge over the coming months.

1. **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.

* 1. **Definition of a “contact” on a dialysis unit**

[**A “contact” is defined by Public Health England**](https://www.gov.uk/government/publications/guidance-for-contacts-of-people-with-possible-or-confirmed-coronavirus-covid-19-infection-who-do-not-live-with-the-person/guidance-for-contacts-of-people-with-possible-or-confirmed-coronavirus-covid-19-infection-who-do-not-live-with-the-person) **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 symptoms20.**

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 unit20

|  |  |
| --- | --- |
| **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 |

* 1. **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

* 1. **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).
  1. **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
   1. note location of that dialysis
2. Identify the date which is 48 hrs before symptoms developed = Day -2
   1. 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):
   1. within 2 metres distance for >15 minutes during dialysis or waiting room
   2. face to face contact within 1 metre
   3. 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 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
   1. **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.
  1. **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.](https://www.gov.uk/guidance/nhs-test-and-trace-how-it-works)

In Wales, see [here](https://gov.wales/test-trace-protect-your-questions#section-42186); in Scotland, see [here](https://www.gov.scot/publications/coronavirus-covid-19-test-and-protect/); in Northern Ireland, see [here](https://www.publichealth.hscni.net/covid-19-coronavirus/testing-and-tracing-covid-19/contact-tracing).

1. **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 taking into account 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 an outpatient dialysis unit as this has been linked to clusters of COVID-19 in dialysis units – transfer to a hospital with inpatient dialysis facilities is preferable.
* Where possible, staff teams should be designed to avoid staff moving 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.
* Infection control precautions for blood borne viruses should be maintained throughout.

**The following separate patient groups will be required (see Appendix 1 flow chart):**

* 1. **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).
  1. **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.
  1. **Confirmed COVID-19 – patients with a positive COVID-19 swab**
* For patients on days 0-10+ 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 E.
  1. **Recovering COVID-19 – patients with a positive COVID-19 swab**
* For patients who are 10+ days but have not yet been de-isolated (see de-isolation section).
  1. **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.

1. **De-isolation protocols**

There are various de-isolation protocols available21-24, 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 onwards25,26. There are advantages and disadvantages of each approach – a time-based strategy allows simple planning to maximise flow of patients during peak pandemic activity but a test-based strategy could allow more rapid de-isolation. Dialysis units should choose which protocol to follow, depending on the patient’s clinical history and local resources.

So far in the UK there have not been any published reports of outbreaks caused by a patient returning to a dialysis unit after recovering from COVID-19. It is known that some dialysis patients continue to have positive COVID-19 swabs long past day 14, but it is not yet known whether this poses any infection risk to others. Detecting viral RNA by PCR test does not necessarily mean that infectious virus is present25,26.

* **Symptomatic patients with COVID-19 who have no history of immunosuppression should remain in isolation or COVID-19 positive cohort until they meet criteria for either strategy (see below and appendix 2).**
* **For patients with a history of immunosuppression use within the last 6 months or monoclonal antibody therapy within the last 12 months, or HIV/AIDS or bone marrow disorder, the test-based strategy should be adopted21.**
* **If in doubt, decisions about de-isolation should be discussed with a virologist.**

1. ***Symptom-based strategy*** 
   * At least 3 days (72 hours) have passed *since recovery* defined as resolution of fever without the use of fever-reducing medications **and** improvement in respiratory symptoms (e.g. cough, shortness of breath); **and**
   * At least 10 days have passed *since symptoms first appeared*
   * Note - a dry cough may persist for several weeks and this alone should not prevent de-isolation

**OR**

1. ***Test-based strategy*** 
   * Resolution of fever without the use of fever-reducing medications **and**
   * Improvement in respiratory symptoms (e.g. cough, shortness of breath), **and**
   * Negative results of a COVID-19 swab (PCR test) from at least two consecutive respiratory specimens collected ≥24 hours apart (total of two negative specimens)

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# Appendix 1 – COVID-19 patient isolation flow chart

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

# Appendix 2 – COVID-19 patient de-isolation flow chart

* **There are 2 possible protocols based on CDC guidelines** 
  + For non-immunosuppressed patients, de-isolation may occur by following either protocol.
  + For patients with a history of bone marrow disorder or immunosuppression within the last 12 months, a test-based strategy should be followed.

**Symptom-based strategy**

**(do not use for immunosuppressed patients)**

**De-isolation flow charts**

**OR use Test-based strategy below**

**(always use this for immunosuppressed patients)**

Note - a dry cough may persist for several weeks and this alone should not prevent de-isolation

If in doubt, decisions about de-isolation of an individual patient should be discussed with a virologist

**Appendix 3 – 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? | 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 caring for COVID positive patients use enhanced PPE (visor, long sleeved gown, FFP2/3 mask, gloves)? | Yes all elements | 1 element missing or intermittent supply | 2 or more 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 “high” and “very high” local COVID-19 risk areas | 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? |
|  | **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)** | | |
|  | **Planned date for next checklist**  (aim for monthly( | **/ /** | | |

**Appendix 4 – “When to clean your hands” poster**

