

Haemodialysis Ensuring Patient Safety Workstream (Chair: Dr Rosie Donne)

The purpose of this workstream is to collate the experience and practice patterns of renal dialysis units during the current pandemic relating to outpatient transmission of COVID-19 and develop guidelines to ensure the safety of patients. Data collection is on-going and will be reported via KQuIP and the UK Renal Association / British Renal Society.

The following document summarises the learning so far which may help to guide practice in preventing nosocomial transmission of COVID-19 in a variety of outpatient settings.

Learning from the renal community on risk and prevention of transmission of COVID-19 in outpatient dialysis units

Haemodialysis patients are classified as extremely vulnerable to COVID-19 infection but are usually required to attend hospital three times a week for dialysis for 4 hours of treatment each time. Various measures were implemented early on in the pandemic to minimise the risk of transmission, although there were considerable logistical problems in the initial stages of implementation.

1. Measures implemented during late March / early April 2020 in UK dialysis units

- Patients were screened for fever and cough symptoms before entering the dialysis unit.
- Patients with symptoms were tested, dialysed in isolation or cohorted with other suspected COVID patients pending test results.
- Reduction in shared transport to improve social distancing – maximum of 2 patients per van, sitting as far apart as possible.
- Social distancing in waiting areas.
- From 5/4/20, patients were advised to wear surgical masks for transport and the duration of dialysis.
- Staff followed current PHE guidance on use of Personal Protective Equipment in all patient areas.
- Enhanced cleaning of communal areas.

Despite trying to implement these measures, in April over 2700 haemodialysis patients presented with symptoms of COVID-19 and 20% died ¹. London, the West Midlands and the North West had the highest incidence. Many dialysis staff were symptomatic but testing was unavailable, contributing to significant staff shortages in London. Cases clustered around particular units, dialysis stations and/or machines, raising the possibility of nosocomial transmission. Patients with COVID-19 symptoms were isolated or cohorted away from asymptomatic patients. Some dialysis units were used only for suspected or confirmed COVID-19 patients whilst attempting to keep other units “cold” sites for non-COVID patients. This was not possible for all dialysis centres. Following clusters, many dialysis units tested all patients on the same shift / renal unit to identify additional cases. Further preventative measures were implemented and have now become established practice, although this still varies across the UK.

1.1. Atypical presentation of COVID-19 in dialysis patients

- Many patients presented with a rapid onset of symptoms which occurred for the first time during their dialysis treatment, placing other patients and staff at risk. Many died within hours of symptom onset despite being in a hospital setting.
- Atypical symptoms were common, including diarrhoea, abdominal pain, confusion, headache, asymptomatic hypoxia.

1.2. Factors thought to contribute to nosocomial transmission of COVID-19 in dialysis units

Some renal units have completed detailed root cause analysis of case clusters in their site. The following factors related to dialysis were likely to be contributory at the time:

- Shared patient transport.
- Symptoms detected on arrival to dialysis unit but after sharing transport with other patients.
- Lack of hand hygiene facilities for patients on arrival at the dialysis unit.
- Lack of social distancing in waiting areas.
- Close proximity of dialysis chairs/stations.
- Narrow, single entry and exit points which were close to dialysis stations.
- Cleaning inadequate to remove COVID-19 from surfaces including dialysis machines / BP cuff / TV remotes and other equipment between patients.
- Environmental decontamination inadequate between patients.
- Nursing home residents and hospital inpatients at high risk of acquisition of COVID-19 attending dialysis unit with other outpatients.

2. Further measures implemented since mid-April in UK dialysis units

- **Personal Protective Equipment**
 - All clinical staff wear fluid resistant surgical masks, plastic aprons, visors and gloves for all patients.
 - Patients wear masks on transport and throughout their dialysis session, removing only for eating and drinking.
 - Drivers wear masks
- **Hand hygiene**
 - handwashing and alcohol gel application on entry and exit to the unit for all patients and staff.
- **Social distancing**
 - Waiting areas have been reconfigured to allow social distancing of at least 2 metres.
 - Transport drop off and collection times have been staggered by 30 mins on the afternoon and evening shifts to reduce contact.
 - Patients are transported alone where possible by families or taxi, but otherwise a maximum of 2 patients per van.

- Taxi drivers are required to carry out a deep clean between each patient.
- Plexi-glass screens in place between dialysis stations if too close, to support social distancing
- **Symptoms screening**
 - Drivers screen all patients before entry to the transport. Symptomatic patients are advised to remain at home pending transfer for clinical assessment.
 - Nurses carry out a second symptoms screen and temperature check for all patients on arrival.
- **Decontamination**
 - Extra staff deployed to clean common waiting areas more frequently.
 - Dialysis machines, chairs and TVs decontaminated in between patient use
 - Full deep clean carried out weekly when unit is empty
 - All nursing stations decluttered

3. Problems with COVID-19 Antigen testing and interpretation

- False negatives - Some patients had symptoms and clinical features highly suggestive of COVID-19, but several negative swabs. They were dialysed in isolation but it remains uncertain when they are safe to leave isolation. De-isolation guidelines currently vary across the UK.
- Variable swab results for the same patient- some patients have tested positive, then had at least 2 negative swabs, then had worsening symptoms 2-3 weeks later, testing positive again. This suggests difficulty in clearing the virus and ongoing risk of transmission to others.
- Asymptomatic positives – in units which tested all patients, the rate of asymptomatic positives was 1-15%. This suggests that dialysis units remain a high risk area for nosocomial transmission. A surveillance testing strategy may be useful in reducing risk of transmission but there is currently no established evidence for its benefit. There is currently not adequate testing capacity to facilitate surveillance testing on all renal units across the UK.

4. Trends in COVID-19 since late April 2020

UK Renal Registry data and anecdotal reports from a number of dialysis units suggest that the number of new cases and clusters has reduced dramatically since mid-April in most areas. This is likely to be due to a combination of a falling virus R0 number and the combination of preventative measures taken. It is not possible to conclude which of the above measures are the most important.

5. Recommendations to reduce the risk of COVID-19 outbreak on haemodialysis units

1. Education of patients and staff about social distancing, hand hygiene and atypical COVID-19 symptoms to allow rapid diagnosis and isolation of suspected cases.
2. Education of staff on appropriate decontamination of surfaces and all equipment in contact with patients, eg. blood pressure cuffs, dialysis chair controls, TV remote controls.

3. Rigorous implementation of social distancing across all areas including transport, waiting area and separation of dialysis chairs/beds.
4. Consideration of patient-specific reusable equipment if difficult to decontaminate between patients, eg. blood pressure cuffs.
5. Analysis by ward managers of frequently touched areas and surfaces in their dialysis unit to ensure they are targeted by cleaning.
6. Assessment of potential high risk areas for transmission in the dialysis unit and consideration of additional measures, eg. additional screens, disposable curtains, removing dialysis stations, use of one-way systems and additional exits.
7. Review of ventilation guidelines of side-rooms to minimise droplet spread, ensuring adequate time is allowed between patients.
8. Increase in environmental decontamination between shifts using an appropriate virucidal disinfectant at recommended concentration, including all communal areas, toilets and frequently touched surfaces.
9. Patient movement between units should be minimised unless required because of COVID-19 status.
10. Staff movement between units should be minimised.

6. Future research

Research is much needed to identify optimal strategies to prevent nosocomial transmission of COVID-19 in haemodialysis units. This includes the roles of surveillance antigen PCR testing to identify asymptomatic positives as well as serial antibody testing to understand the development and duration of immunity.

References

1. https://renal.org/wp-content/uploads/2020/05/ALL_REGIONS_CENTRES_covid_report.pdf