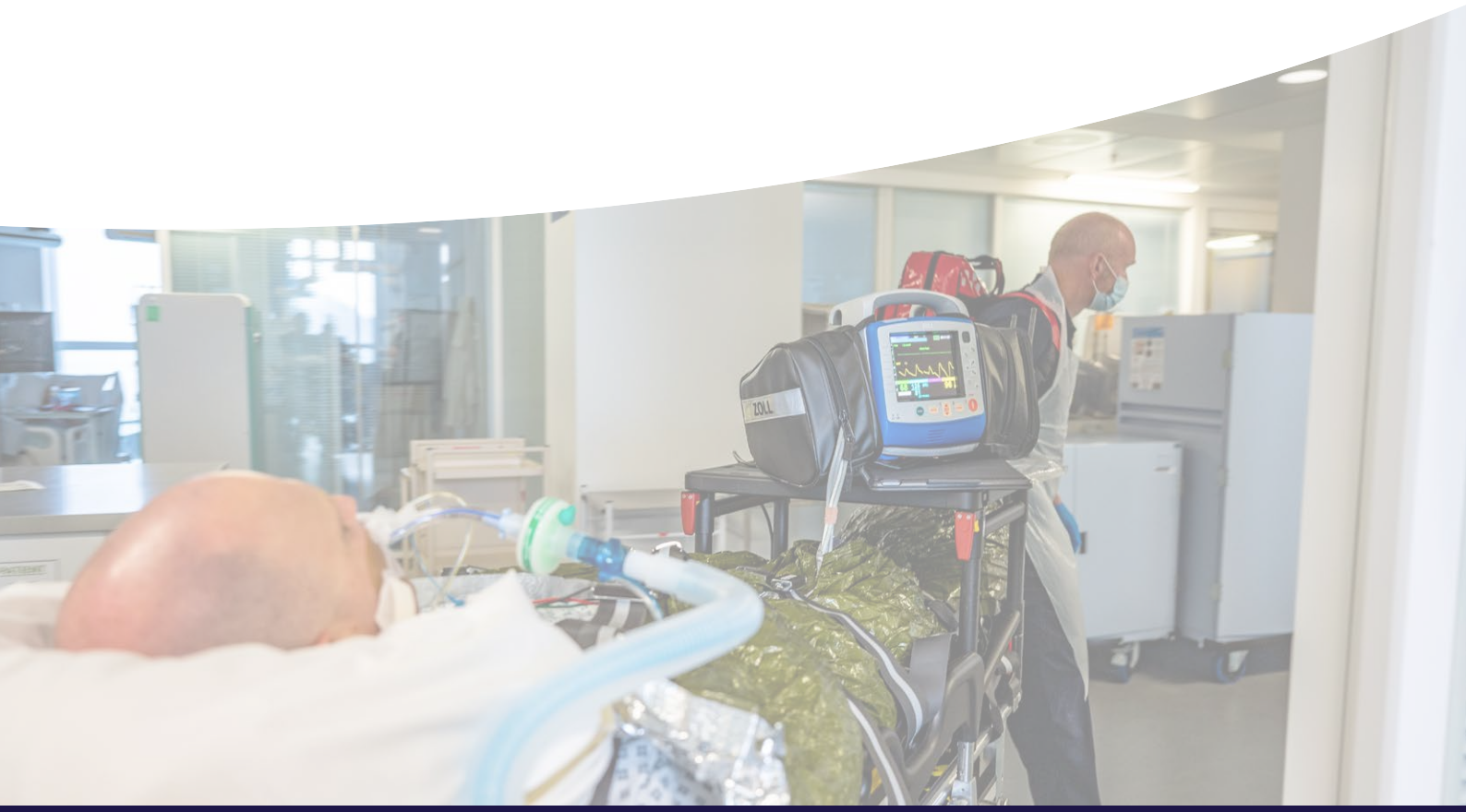
Intensive Care Society

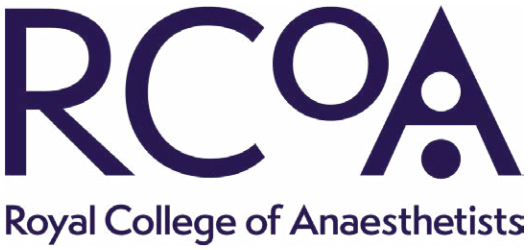
Guidance On:

The Transfer Of The Critically Ill Adult

5th Edition



Endorsing organisations



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Executive Summary

This 5th edition of the guideline on the Transfer of the Critically Ill Adult represents a major revision and expansion of the guideline to reflect the changes in critical care transfer following the COVID-19 pandemic. As such, this guideline includes greater detail in almost every area as well as brand new chapters covering special patient groups and circumstances as well as more detailed descriptions of minimum equipment, medications, paperwork requirements and checklists. It is acknowledged that across the healthcare landscape in the four nations there is variability in the applicability of certain individual standards as well as the challenges to their implementation.

The intention with this 5th edition is to continually evolve and add to this guideline over time. As work is undertaken on additional special patient groups and pathways, these will be added as additional supplementary resources. Each pathway is complex and requires input from an extensive group of stakeholders to ensure all aspects are accounted for. The newly developed maternal transfers guidance is the first of these pathways and should be used in conjunction with this 5th edition.

The Intensive Care Society has collaborated with key stakeholders in the development of this guidance to ensure that it represents the needs of critically ill and injured patients requiring transfer within and between hospitals. This collaboration has led to the production of a definitive set of guidelines that we believe clearly and ambitiously set out the expectations and standards of care for this important group of patients wherever they are in the United Kingdom.

Note on Terminology

Throughout this document, consistent terminology has been adopted to aid readability:

AASF – Additional Advanced Skills Frameworks. Additional modules developed by the Faculty of Intensive Care Medicine (FICM) that a fully qualified ACCP can undertake based upon local service need, outlining the competencies required and governance arrangements that should be in place

Acute hospital – includes any healthcare facility (NHS or independent) from where transfer of a critically ill adult may occur

Adult – an individual aged 16 and over

ACCP – Advanced Critical Care Practitioner

ACCTS – Adult Critical Care Transfer Services (note there are dedicated critical care transfer services for neonatal, paediatric and ECMO patients)

CEN – European Committee for Standardisation; develops and sets European standards and produces technical documents in relation to products, materials, services and processes. Relevant to ambulance and critical care transfer trolley design, manufacture and use

Critically ill – includes critically ill and injured patients as well as those at high risk of deterioration

Critical Care Network – regional formal or informal networks of critical care units. There is variability in the organisation of these across the four nations of the United Kingdom; where they do not exist, standards should be reasonably applied locally or across groups of acute hospitals working together

FICM Membership – When an ACCP applies on completion of training to have their training formally recognised by the Faculty of Intensive Care Medicine, ensuring a consistent standard is met

Maternity patient – used to denote pregnant and recently pregnant patients

National – applicable to the four nations of the United Kingdom

Next of kin – an inclusive term widely adopted in the NHS and recommended by The Patients Association that encompasses family, friends and others close to the patient

Transfer – the process of moving a patient from point A to point B

Transport – the platform used to undertake a transfer (e.g. ambulance, fixed wing aircraft, etc)

Trust – includes acute provider NHS Trusts and Health Boards across England, Northern Ireland, Scotland and Wales. Also includes Independent Sector organisations which provide similar services to acute hospitals

Summary of Recommendations

3. Definitions and Scope of guidelines

1. Critically ill and injured patients undergoing transfer should be managed as critical care patients and receive the same standards of care regardless of where they are being transferred from and to.
2. Identical standards are applicable to intra (within) and inter (between) hospital transfers.

4. Organisation and planning

3. Regions, Critical Care Networks, Trusts, acute hospitals and ACCTS should collaborate to develop clear processes around the oversight, coordination and delivery of capacity transfers within their geographical remit.
4. Each Critical Care Network should have a nominated lead for transfer whose responsibilities include working collaboratively with the regional ACCTS, development of transfer guidelines, regional standardised training and education for transfer and quality assurance.
5. Each Critical Care Network should have a regional transfer guideline that ensures consistent standards regardless of who transfers the patient. It should recommend the use of ACCTS, where possible, for inter-hospital transfers. It should provide guidance on the standards of care, clinical escorts, documentation and governance of both intra- and inter-hospital transfers performed by local teams.
6. Each Critical Care Network must have a dedicated method for the documentation of each inter-hospital transfer performed by a local hospital team. These must include the minimum mandatory dataset for adult critical care transfer to facilitate UK wide data collection and should include additional operational details to enable the tracking of activity within the Network (Appendix 4).
7. Trusts, Critical Care Networks and ACCTS must collaborate on data collection to ensure that the minimum mandatory dataset is collected and submitted for all adult critical care transfers, regardless of who undertakes the transfer.

5. Organisation within trusts

8. All acute hospitals should nominate a lead consultant for critical care transfers with responsibility for guidelines, staff training, competencies, and equipment provision. This individual should report to the trust critical care delivery group/governance meeting and Critical Care Network Transfer Forums or equivalent.
9. All acute hospitals must have systems and resources in place to resuscitate, stabilise and transfer critically ill patients 24 hours a day, 7 days a week, when required. These systems should align with ACCTS and NHS Ambulance Service provision of inter-facility transfer[1, 20].
10. Plans must encompass all areas where critically ill and injured patients are treated including critical care and enhanced care areas, wards, emergency departments, theatres and diagnostic/interventional suites.
11. All Trusts must have arrangements in place to ensure that transfers for capacity reasons occur only as a last resort and following regionally agreed principles and processes.

6. Role of dedicated Adult Critical Care Transfer Services (ACCTS)

12. Regions and Critical Care Networks should continue to work collaboratively with ACCTS, where available, to deliver 24/7/365 services that are equitable, efficient and appropriately meet geographical and patient pathway requirements.
13. Acute hospitals must plan for and continue to provide critical care transfer of patients in the event that the ACCTS is committed or unavailable.

7. Standards for ambulances

14. All acute hospitals responsible for transferring critically ill patients must have access to a CEN-compliant transfer trolley which is configured to securely carry dedicated transfer equipment.
15. Critical care transfer trolleys must be regularly serviced.
16. Clinical escorts should liaise with ambulance crews prior to departure, depending on requirements, to ensure there is sufficient oxygen and a functioning inverter.
17. Clinical escorts and NHS ambulance crew must work together to ensure all items of equipment are safely secured in the ambulance prior to departure.
18. ACCTS must have formal agreements with NHS Ambulance Services. ACCTS and Critical Care Networks should seek additional formal agreement to ensure the availability of suitable and compatible vehicles, provision of processes and systems to secure transfer equipment when critical care trolleys are not being used and ensure the repatriation of team, trolley and equipment after the transfer is complete.

8. Prioritisation of transfers

19. Regions, Critical Care Networks and ACCTS should work collaboratively with NHS Ambulance Service(s) to develop a regional approach to the triage and prioritisation of adult critical care transfers to ensure consistency of approach regardless of who undertakes the transfer.
20. Repatriation and capacity transfers should be undertaken by dedicated ACCTS or, where not available, acute hospital clinical teams with Trust-contracted third party ambulances.
21. Repatriation and capacity transfers should usually occur in normal working hours (07:00-22:00) and not overnight.

9. Training and competencies

22. A standardised transfer training course, or core curriculum requirements for locally delivered courses, should be developed, aligned with curricula and competency documents from Faculty of Intensive Care Medicine (FICM), Royal College of Anestheticians (RCoA), UK Critical Care Nursing Association (UKCCNA) and The Critical Care National Network Nurse Leads Forum (CC3N).
23. Critical Care Networks should adopt a standardised transfer training course or core curriculum requirements, when these exist, or develop a standardised course within the Network to ensure that trusts can train staff appropriately.
24. Clinical staff undertaking intra- and inter-hospital critical care transfer must have received specific training in transfer, gain experience in a supernumerary capacity and be able to demonstrate the range of competencies commensurate with their role.
25. Clinical staff must not undertake unsupervised critical care transfer until they have met the above requirements. Supervision must be direct and from a trained, competent and experienced clinician.
26. Critical Care Networks and ACCTS should collaborate with regional partners responsible for the training and education of medical, Advanced Critical Care Practitioners (ACCP), and nursing staff to support the delivery of supernumerary training opportunities.

10. Equipment

27. All monitoring and equipment must be suitable for use in the transfer environment and securely mounted on the transfer trolley in such a way as to be CEN-compliant.
28. Equipment must be serviced annually and checked daily/weekly as appropriate in such a way as to reduce the risks of failure during transfer with a written record maintained.
29. Transfer bags must be checked regularly and trusts must have a process in place to provide assurance that all consumables are present and not past their expiry date.
30. Critical Care Networks and acute hospitals should work with ACCTS to standardise transfer equipment (transfer trolley, equipment lists, transfer bags, medication bags), where possible, providing practical and safety benefits
31. Acute hospitals must provide adequate PPE for clinical escorts undertaking transfer.

11. Medication

32. Dedicated medication bags must be available for all transfers.
33. Medication bags should be sealed, stored securely and checked weekly.
34. Critical Care Networks should have or ensure acute trusts have a specific transfer medicines policy that covers end to end medicines management.
35. Trusts must ensure that there is adequate documentation (prescription and administration) of medications used during transfer. Separate processes may exist for intra- and inter-hospital transfer with the latter utilising the Critical Care Network transfer documentation.
36. Trusts must have a policy for the management of controlled drugs during transfer. Controlled drugs cannot be supplied as spares in prepared syringes or ampoules unless these are part of a dedicated medications bag.
37. Medication infusions, including controlled drugs, must be accounted for at the end of a transfer and either handed over to the receiving hospital team or appropriately disposed of.

12. Governance arrangements

38. Critical Care Networks should ensure that adequate governance arrangements for critical care transfer are in place across the Network and that all patient transfers are subject to audit, critical incident reporting and review, including analysis of feedback from patients and next of kin.
39. All acute hospitals should ensure that the transfer of critically ill patients within hospitals (intra-hospital transfers) are subject to similar governance arrangements.
40. The minimum mandatory data set for adult critical care transfer should be captured for all inter-hospital transfers and submitted in a timely way by Trusts, Critical Care Networks and/or ACCTS.
41. All incidents occurring during critical care transfer should be reported on Trust and/or Network incident reporting systems. Reports should include ‘critical care transfer’ as an identifier to enable future data searching and analysis.

13. Transfer decisions and ethics

42. The decision to transfer and to accept a patient should be made by appropriate consultants in both the referring and receiving hospitals.
43. Time-critical transfer for immediate lifesaving interventions must not be delayed by lack of availability of a critical care bed in the specialist centre.
44. Repatriation policies for patients who no longer require specialist care should be agreed across networks. Patients who require repatriation should be transferred within 48 hours of being identified as suitable for repatriation.
45. Capacity transfers should only be considered in exceptional circumstances and only in order to enable the provision of emergency medical and surgical care.
46. Operational and governance safeguards should be established by Trusts, Critical Care Networks and regions with regards to capacity transfer and should include clear escalation processes.
47. Critical Care Networks/regions should have policies in place to minimise the routine use of capacity transfer.

14. Communication with patients and next of kin

48. Patients and their next of kin should be kept informed at all stages of the transfer process and should be provided with appropriate written information.
49. Where patients themselves are able to remain in contact with their next of kin, they should be supported in doing so.

15. Selection of transport mode

50. Long distance transfers should be carefully considered and undertaken by ACCTS, where available.
51. Patient care should be planned when a road journey exceeds three-four hours to minimise risk to the patient.
52. Aeromedical transfer should only be carried out by specifically trained, competent and experienced individuals working within an appropriate governance system.

16. Accompanying personnel and risk assessment

53. Prior to the transfer of a critically ill patient, a risk assessment [Appendix 5] should be undertaken and documented by a senior clinician (e.g. consultant, senior Resident Doctor or equivalent, ACCP or senior nurse) to determine the level of anticipated risk during transfer.
54. The outcome of the risk assessment should be used to determine the competencies of the clinical escorts required to accompany the patient during transfer.
55. Higher risk patients must have two appropriately trained, competent and experienced clinical escorts capable of continuing the delivery of critical care and independently managing unexpected events in transfer with remote telephone support.
56. Acute hospitals must have a plan to provide two suitably trained and experienced clinicians to escort a critically ill patient requiring inter-hospital transfer 24 hours a day.
57. NHS Ambulance Service crew must not be used as the second clinical escort in a critical care transfer.

17. Resuscitation, stabilisation and patient preparation for transfer

58. Patients should be appropriately resuscitated and stabilised prior to transfer to reduce the physiological disturbance associated with movement and reduce the risk of deterioration during the transfer.
59. Patients with actual or anticipated airway, ventilatory or neurological compromise should be intubated and ventilated prior to transfer.
60. In patients with tracheostomies, appropriate spares in line with the National Tracheostomy Safety Project must be taken.
61. Patients should have a minimum of two peripheral venous or one multi-lumen central venous access.
62. Blood must be provided in a suitable, sealed, blood transport box and acute hospital blood prescription, administration and documentation requirements must be followed.
63. Neurological status should be assessed and documented regularly (15 minutes for neurosciences patients, 30-60 minutes for all others).
64. Patient notes must be copied or electronically transmitted and an appropriate transfer letter or handover document must be used to convey key information.
65. Sufficient bolus and infusion medications should be available for at least twice the duration of the planned transfer.
66. Patient privacy, dignity and temperature should be maintained.
67. A clinical handover must occur between referring and receiving teams.
68. The transferring clinical team must be provided with a clear plan to repatriate them and their equipment following transfer.

18. Use of checklists

69. Checklists should be used to help to ensure that all necessary preparations have been completed, prior to each stage of the transfer [Appendices 6 and 7].
70. Acute hospitals should have a checklist for intra-hospital transfers that is standardised across the organisation and utilised for all critical care transfers.
71. Critical Care Networks should adopt and adapt for their region a standardised inter-hospital transfer checklist that covers the stages of transfer (preparation, departure, post-transfer).
72. Specialty-specific checklist additions should be used when individual patients have particular requirements (e.g. for maternal critical care transfers).

19. Monitoring during transfer

73. Minimum standards of continuous monitoring must be applied in every intra- and inter-hospital transfer.
74. All monitors, ventilator displays and syringe drivers should be visible to accompanying staff.
75. Monitoring cables should be tied together to form an umbilicus to improve safety.
76. A documented record of observations and events must be maintained for every intra- and inter-hospital transfer.

20. Safety during transfer

77. Patients must be secured to the critical care transfer trolley or ambulance trolley using an appropriate harness or belt system.
78. Escorting clinicians must remain seated and belted whilst the ambulance is in motion and the driver requested to safely stop the vehicle if any intervention needs to be provided.
79. All portable equipment including consumable and medication bags must be securely stowed to reduce the risk of injury in the event of an accident.
80. Emergency driving (blue lights, sirens and use of exemptions) is not always necessary in critical care transfer. The decision must be documented on transfer paperwork and must be justifiable against the criteria provided in this guideline.

21. Documentation and handover

81. Records of all intra- and inter-hospital transfers must be kept.
82. Intra-hospital transfers should be completed in the patient's notes.
83. Inter-hospital transfers performed outside dedicated ACCTS must be documented using the relevant Critical Care Network transfer form.
84. On arrival at the receiving hospital, formal handover between the transfer team and receiving hospital multidisciplinary team must occur.
85. Multidisciplinary handover should occur rather than separate medical and nursing conversations.
86. Inter-hospital documentation should include the ACCTS minimum mandatory dataset and processes should exist for the capture and submission of this data by the Critical Care Network or ACCTS.

22. Insurance and indemnity

87. All clinicians undertaking critical care transfer should consider additional personal injury cover.
88. The NHS should prioritise developing clear guidance for acute hospitals and individual clinicians on insurance cover when undertaking critical care transfer.

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1. Introduction, standards of care, and scope of guidelines

1.1. Critically ill and injured patients often require transfer following initial resuscitation and stabilisation. There are four reasons for transfer that are defined below[1].

Category	Definition	Clinical examples
Escalation of care	Transfer to access specialist intervention and/or care that cannot be provided in the referring hospital.	
	Time Critical	
	Transfer to a specialist centre for immediate life, limb or sight-saving intervention to reduce the risk of imminent death or severe or long-lasting morbidity.	· Any intracranial pathology requiring immediate craniotomy/craniectomy, burr hole or therapeutic External Ventricular Drain on arrival (e.g. Extradural Haematoma, Subarachnoid Haemorrhage with hydrocephalus, blocked VP shunt) · Mechanical thrombectomy for ischaemic stroke · Immediate surgery for aortic dissection · Interventional radiology (IR) for life-threatening haemorrhage which has not been arrested by damage control surgery or is not amenable to non-IR treatment.
	Urgent	
	Patients requiring transfer for ongoing time-sensitive management (that does not fall into the time critical definition) to reduce the risk of death or significant morbidity.	· A ventilated patient with intracranial pathology not requiring immediate surgical intervention on arrival · Major trauma patients requiring Major Trauma Centre care but not time critical intervention · Acute cauda equina, spinal abscess/ haematoma requiring decompression · Burns patients requiring burns centre care.
	Planned	
	Patients requiring transfer for elective intervention or ongoing management that is not time-sensitive.	· Transfer to long-term respiratory weaning centre · Transfer to spinal injury unit · Transfer for a surgical intervention on an elective list not available in the referring hospital (e.g. thoracic surgery for empyema management).
Continuation of care	Transfer of patients to a facility or location that is better suited to provide their ongoing care but is not an escalation. This is usually a step down in the overall acuity of care.	· Step down from critical care to a renal unit for ongoing intermittent haemodialysis · Step down from critical care unit to ward in another hospital · Transfer of long-term ventilation patient to home · Transfer of a critical care patient to hospice or home for palliative care.

Repatriation	Transfer closer to home, family, friends or carers having completed specialist care or when stable to transfer after admission to a distant hospital.	· Major Trauma Centre (MTC) to Trauma Unit following completion of MTC care · Ongoing tracheostomy weaning following neurosurgical intervention · Transfer to local hospital when patient has become critically ill far from home (e.g. whilst on holiday).
Capacity	Transfer when the referring hospital is experiencing a surge in operational pressure and is unable to provide a critical care bed, within a reasonable time frame, due to a lack of physical beds, staffing or equipment.	· A patient in the Emergency Department or on the ward who requires critical care admission; critical care has no dischargeable patients and/or is already nursing outside usual staffing ratios · Transfer of a patient following time critical intervention when there is no critical care capacity (e.g., neurosurgery, mechanical thrombectomy).

1.2. In 1997, it was estimated that over 11,000 critically ill patients were transferred between hospitals in the UK each year[1]. Owing to limited data collection and a lack of national reporting system, pre- COVID-19 pandemic estimates of adult critical care transfer activity were based on this data as well as that gathered for the previous iteration of these guidelines.

1.3. In 2020, a data analysis was performed to inform the development of Adult Critical Care Transfer Services (ACCTS) in England[2].

1.4. Using Hospital Episode Statistics and Secondary Uses Service data[3], it was calculated that there are between 20,000 and 25,000 adult critical care transfers each year in England.

1.5. Currently it is estimated that across the UK there are 30,000 to 35,000 adult critical care transfers per annum. Following the development of dedicated transfer services and anticipated prospective national data collection systems across the UK, more accurate and detailed data will be available in the future.

1.6. The 2019 version of these guidelines[2] included Intensive Care National Audit and Research (ICNARC) Case Mix Programme and Scottish Intensive Care Society Audit Group data[4] which remains relevant. Unpublished operational data from Adult Critical Care Transfer Services (ACCTS) in England, Northern Ireland and Wales demonstrates that 70-80% of transfers are for escalation of care, 20-30% for repatriation and continuation of care and, depending on region and time of year, 0-10% for capacity reasons.

1.7. Whilst it will take several years to build a complete picture of adult critical care transfer activity across the UK, it is clear there are many more transfers than previously estimated. It is anticipated that transfer numbers will continue to increase as specialist pathways continue to develop and it is increasingly recognised that some of these patients require critical care transfer. In addition, the continued centralisation of specialist services and development of 'hot and cold' sites for planned and unplanned activity will further drive demand.

2. Standards of care

2.1 In preparing these guidelines a literature review was carried out in February 2024 to identify articles published since 2018 relating to critical care transfer. Completed by a Trust Library Knowledge Specialist using Medline, Embase and CINAHL. A total of 7,822 references were identified that referenced critical care, intensive care and transfer or transport and 17 articles were selected for review and relevant references included below.

2.2 Whilst there are no major changes in the available evidence, studies have highlighted the variability in how transfers are executed and how this is significantly influenced by the resources available at the referring hospital[2].

2.3 Critical care transfers commonly involve patients receiving ongoing multi-organ support and mechanical ventilation[5, 6]. The studies looking at outcomes of patients who have been transferred are mixed. Despite the challenges involved, many studies have reported that there is no increase in morbidity or mortality, suggesting that when these transfers are performed to a high standard, they do not worsen patient outcome[5, 7]. One study reported a higher unadjusted 30-day mortality for patients who underwent capacity transfers and suggested Critical Care Units should have local strategies to manage capacity constraints and transfers could potentially worsen patient outcomes[8].

2.4 Articles published during and after the COVID-19 pandemic highlight the importance of increasing critical care bed numbers and staff to reduce the frequency and need for capacity transfers internationally[8].

2.5 Common issues identified included inadequate training and communication failures leading the compromised patient care. These issues often compounded logistical challenges and changes to patient physiology such as hypotension[9]. The need for standardised practice, use of checklists, and training to reduce critical incidents was emphasised [10].

2.6 The importance of timely transfers for patients needing specialist interventions was highlighted with delays to such transfers associated with longer length of hospital stay and increased mortality[11].

2.7 Communication with patients' next of kin during the transfer process was identified as an area for improvement across many services with the use of technology to provide real-time updates cited as a method to keep families up to date during the "communication blackout"[12].

2.8 Many studies emphasised the importance of having established hubs, dedicated to the transfer of critically ill patients, with protocols for managing the associated logistical challenges. This was found to be crucial during the COVID-19 pandemic where the rapid scaling of critical care capacity and the requirement to co-ordinate a significant number of capacity transfers nationally were key to maintaining a responsive and efficient healthcare system[13]. Even before the pandemic, some authors were recommending the establishment of dedicated critical care transfer services[10].

2.9 New literature since 2018 has advocated for structured protocols and checklists and standardised training for all personnel involved in the transfer of critically ill patients. Strategies to improve communication with next of kin during the transfer process, and a transfer service model integrating ACCPs was explored.

2.10 The COVID-19 pandemic has changed the face of critical care forever. As demand for adult critical care rose significantly during each pandemic wave, demand for and focus upon transfer of critically ill patients increased dramatically. This has led to the development of dedicated ACCTS in England and Wales, joining the already established services in Northern Ireland and

Scotland. As a result of the increased activity, there has been an increased interest globally on critical care transfer and this has led to additional publications. Recent operational experience suggests that dedicated transfer services can safely undertake adult critical care transfers. With prospective data collection and a minimum mandatory data set, the performance and quality of such services will become clearer with time. It is anticipated that the evidence base will grow significantly in the coming years.

2.11 The majority of the published articles identified relate to small observational studies, single centre case series, audits and reviews. There remain no published randomised controlled trials and meta-analysis is precluded by the heterogeneity of the various studies. Whilst this may reflect the difficulty of performing high quality research in this area, the quality of the evidence available to inform the guidelines is rated as low or very low. Therefore, all recommendations are made based on a combination of the available published evidence, expert clinical opinion and advice from patient representatives.

3. Definitions and scope of guidelines

3.1 For the purpose of these guidelines “critically ill” is defined as requiring a level of care greater than that normally provided on a standard hospital ward, i.e. Intensive Care Society Levels of Care 1 (Enhanced Care), 2 and 3 (Critical Care)[14].

3.2 In the context of critical care transfer, it is recognised that transfers may originate and/or terminate outside a critical care unit (e.g. Emergency Department, theatre, diagnostic suite, ward, etc.).

3.3 Regardless of location or destination, these patients require specialist clinical escort, monitoring, organ support and/or specialist treatment and should thus be managed as critical care patients.

3.4 The same standards of care apply regardless of whether the patient is being transferred within a hospital (intra-hospital, including separate buildings on the same site) or between hospitals (inter-hospital, including separate sites within the same Trust) since similar levels of preparation, supervision and care are required for each.

3.5 The standards of care described in this guideline apply to all types of hospital or facility across the United Kingdom, including those within the NHS and Independent Sector.

3.6 These guidelines are intended to provide colleagues with up to date, evidence-based guidance in order to ensure the continued delivery of high-quality critical care throughout the patient journey.

3.7 **Recommendations**

- Critically ill and injured patients undergoing transfer should be managed as critical care patients and receive the same standards of care regardless of where they are being transferred from and to.
- Identical standards are applicable to intra (within) and inter (between) hospital transfers.

4. Organisation and planning

4.1 The Department of Health and Social Care publication Comprehensive Critical Care[15], made planning for inter-hospital transfer of the critically ill patient mandatory at local, regional and national (except Scotland whose healthcare was devolved in 1999) level, with transfer services organising and coordinating safe, efficient, and timely inter-hospital transfer of all critically ill and injured patients.

4.2 To facilitate this, managed clinical networks were established with responsibility for the coordination and development of transfer services within defined geographical areas. Changes to commissioning arrangements following the Health and Social Care Act 2012, led to a review of these clinical networks. The NHS Commissioning Board (NHS CB) concluded that clinical networks had been responsible for significant and sustained improvements in quality of patient care and outcomes[16].

4.3 A framework for the continued provision of clinical networks as Operational Delivery Networks (ODNs) was published, with a focus on the co-ordination of patient pathways between providers over a wide area to ensure access to specialist resources and expertise[17]. 20 Critical Care Networks were established in England, Wales and Northern Ireland, with responsibility for the oversight of effective referral pathways and safe and effective transfer processes. In 2024, a new specification for adult critical care clinical networks was published by NHS England[18].

4.4 In 2021, NHS England published the service specification for Adult Critical Care Transfer Services[1] and these have been commissioned in all areas of England so there is increased parity with the devolved nations whose services largely preceded the pandemic. The service specification requires ACCTS and critical care ODNs to have a close strategic relationship and work together to ensure that all patients requiring transfer receive high quality care. This guideline adds detail and recommendations to aid this, and the Guidelines for the Provision of Intensive Care Services (GPICS) version 3 details the standards.

4.5 The COVID-19 pandemic necessitated a significant number of capacity (previously 'non-clinical') transfers to ensure equitable access to critical care. The Intensive Care Society and Faculty of Intensive Care Medicine published a position statement[19] addressing this. Capacity transfers should not be routinely performed and should be carefully considered as they may have no direct benefit to the patient being transferred.

4.6 **Recommendations**

- Regions, Critical Care Networks, Trusts, acute hospitals and ACCTS should collaborate to develop clear processes around the oversight, coordination and delivery of capacity transfers within their geographical remit.
- Each Critical Care Network should have a nominated lead for transfer whose responsibilities include working collaboratively with the regional ACCTS, development of transfer guidelines, regional standardised training and education for transfer and quality assurance.
- Each Critical Care Network should have a regional transfer guideline that ensures consistent standards regardless of who transfers the patient. It should recommend the use of ACCTS, where possible, for inter-hospital transfers. It should provide guidance on the standards of care, clinical escorts, documentation and governance of both intra- and inter-hospital transfers performed by local teams.

- Each Critical Care Network must have a dedicated method for the documentation of each inter-hospital transfer performed by a local hospital team. These must include the minimum mandatory dataset for adult critical care transfer to facilitate UK wide data collection and should include additional operational details to enable the tracking of activity within the Network (Appendix 4).
- Trusts, Critical Care Networks and ACCTS must collaborate on data collection to ensure that the minimum mandatory dataset is collected and submitted for all adult critical care transfers, regardless of who undertakes the transfer.

5. Organisation within Trusts

5.1 All Trusts should have systems in place to ensure that their critical care bed state is regularly updated on the Directory of Services (DoS) or equivalent bed management system, to facilitate identification of available beds.

5.2 Acute hospitals are responsible for the governance and clinical delivery of transfer care within their organisation (intra-hospital) and any transfers they undertake between hospitals where they provide the clinical escorts. This includes ensuring that there are sufficient numbers of trained and suitable staff to provide clinical escort to critically ill patients requiring transfer 24 hours a day, 7 days a week.

5.3 **Recommendations**

- All acute hospitals should nominate a lead consultant for critical care transfers with responsibility for guidelines, staff training, competencies, and equipment provision. This individual should report to the trust critical care delivery group/governance meeting and Critical Care Network Transfer Forums or equivalent.
- All acute hospitals must have systems and resources in place to resuscitate, stabilise and transfer critically ill patients 24 hours a day, 7 days a week, when required. These systems should align with ACCTS and NHS Ambulance Service provision of inter-facility transfer[1, 20].
- Plans must encompass all areas where critically ill and injured patients are treated including critical care and enhanced care areas, wards, emergency departments, theatres and diagnostic/ interventional suites.
- All Trusts must have arrangements in place to ensure that transfers for capacity reasons occur only as a last resort and following regionally agreed principles and processes.

6. Role of dedicated Adult Critical Care Transfer Services (ACCTS)

6.1 There is some evidence in the literature that the use of dedicated transfer teams improves the outcome of critically ill patients transferred between hospitals. This has been strengthened by operational experience during the COVID-19 pandemic.

6.2 A prospective observational study in the Netherlands by Wiegersma *et al*. evaluated adverse events and patient stability during Mobile Intensive Care Unit (MICU) transfers, using a specialised retrieval team, compared to standard ambulance transfer[21]. There was a decline in adverse events in the MICU group from 34% to 12.5%, with all MICU incidents being related to technical / equipment failure. Patients transferred by MICU demonstrated significantly better arterial blood gas values (pH, PaO_2 and $PaCO_2$) despite significantly higher APACHE II scores than in the standard transfer group. More patients in the standard care group required emergency airway intervention on arrival in the receiving unit.

6.3 A large cohort study from Victoria, Australia, assessed the impact of the introduction of an adult retrieval service on major trauma outcomes[22]. Data relating to 3009 major trauma cases extracted from the Victoria State Trauma Registry, showed that the transfers by the Victoria Retrieval Service had a lower adjusted odds ratio for in-hospital mortality compared to those that were not.

6.4 In 2021, NHS England and NHS Wales joined NHS Northern Ireland in commissioning and recurrently funding dedicated land-based Adult Critical Care Transfer Services. These services are operationally similar and are all consultant-led with physician, ACCP and practitioner/nursing teams working in dedicated ambulance vehicles. The advent of ACCTS has driven focus within regions on critical care transfer. Acute hospitals must continue to plan for and provide critical care transfer when these services are committed or unavailable.

6.5 There is little published evidence relating to the potential disadvantages of specialised transfer teams, although these may include deskilling of hospital staff with perceived difficulty in carrying out time sensitive transfers. The opportunities for dedicated, supervised, transfer training will increase with ACCTS, and this may therefore be mitigated.

6.6 **Recommendations**

- Regions and Critical Care Networks should continue to work collaboratively with ACCTS, where available, to deliver 24/7/365 services that are equitable, efficient and appropriately meet geographical and patient pathway requirements.
- Acute hospitals must plan for and continue to provide critical care transfer of patients in the event that the ACCTS is committed or unavailable.

7. Standards for ambulances

7.1 Standards for road ambulances are stipulated in British and European Standards document 1789-2020 (commonly referred to as CEN regulations). Section 4.5.9. of these standards, requires that without exception, “all persons and items e.g. medical devices, equipment and objects normally carried on the road ambulance shall be restrained, installed or stowed to prevent them becoming a projectile when subjected to acceleration/decelaration forces of 10g in the forward, rearward left, right and vertical directions”[23].

7.2 Critical care transfer trolleys should be CEN-compliant and configured to securely carry monitors, syringe pumps, ventilators, oxygen cylinders, and other dedicated transfer equipment. They should have appropriate patient harnesses for adult (including bariatric) patients. Trolleys must be regularly serviced to maintain safety. Acute hospitals/Critical Care Networks/ACCTS should work collaboratively to share evidence of this with NHS Ambulance Services, when required, to provide assurance.

7.3 NHS Ambulance Service standards require that emergency ambulances carry a minimum of 2,000 litres of oxygen, although this depends on previous clinical commitments. Clinical escorts must ascertain the total amount of oxygen available to them by liaising with the ambulance crew prior to departure.

7.4 NHS Ambulance Service double crewed ambulance specifications[24] require vehicles to have at least a 2 gang 230 AC three-pin socket in the rear cabin. This, combined with an inverter, enables a critical care transfer trolley to be plugged in and draw power. A typical trolley which includes a ventilator, monitor, infusion pumps and suction unit can be safely used, and, within reason, additional electrical devices are typically able to be accommodated. There is no guarantee of serviceability and clinical escorts must ascertain the function of this prior to transfer by liaising with the ambulance crew.

7.5 Most regions have a variety of vehicle specifications within dedicated NHS Ambulance Services and private providers’ vehicles vary even more. It should be noted that not all of these are compatible with critical care transfer trolleys and care should be taken to request an appropriate vehicle when this is locally/regionally required.

7.6 When a vehicle that is incompatible with a critical care transfer trolley is provided, a standard ambulance trolley should be used. NHS Ambulance Services are responsible for ensuring the safety of the patient and clinical escorts, particularly when a standard trolley is used. In order to achieve this, clinical escorts and the ambulance crew must work together to ensure all items of equipment (electrical and non-electrical, such as transfer bags) are safely secured to prevent them becoming a missile in the event of a rapid deceleration or accident.

7.7 Recommendations

- All acute hospitals responsible for transferring critically ill patients must have access to a CEN-compliant transfer trolley which is configured to securely carry dedicated transfer equipment.
- Critical care transfer trolleys must be regularly serviced.
- Clinical escorts should liaise with ambulance crews prior to departure, depending on requirements, to ensure there is sufficient oxygen and a functioning inverter.
- Clinical escorts and NHS ambulance crew must work together to ensure all items of equipment are safely secured in the ambulance prior to departure.
- ACCTS must have formal agreements with NHS Ambulance Services. ACCTS and Critical Care Networks should seek additional formal agreement to ensure the availability of suitable and compatible vehicles, provision of processes and systems to secure transfer equipment when critical care trolleys are not being used and ensure the repatriation of team, trolley and equipment after the transfer is complete.

8. Prioritisation of transfers

8.1 Dedicated ACCTS have systems and processes to triage and coordinate referrals for adult critical care transfer and these cover all categories of transfer from time critical to planned.

8.2 In 2018, NHS England published a National Framework for Inter-Facility Transfer (IFT) which was developed with the Association of Ambulance Chief Executives[20]. This describes four levels of priority for inter-facility transfer based on clinical need and urgency, with IFT levels 2 and 3 relevant to critical care transfer.

8.3 IFT level 2 (mean target response time 18 minutes; 90% in 40 minutes) is for time-critical transfer of patients who require an immediate life, limb or sight saving procedure. When such a patient is being transferred, the patient and clinical escorts must be ready to depart as soon as the ambulance arrives to avoid unnecessary delay.

8.4 IFT level 3 (response time varies by region) is for urgent transfers for patients who do not need immediate time critical intervention but require transfer to provide a level of care not available in the current facility.

8.5 Acute hospital clinical teams must be ready to depart when an ambulance crew arrives. The delivery of inter-facility transfer places significant burden on NHS Ambulance Services and unnecessary delays caused by hospital teams are common.

8.6 Most NHS Ambulance Services are not commissioned to provide transport for repatriation, continuation of care or capacity reasons. These transfers should be undertaken by dedicated ACCTS or, where not available, acute hospital teams with Trust-contracted third-party ambulances.

8.7 Repatriation and capacity transfers are rarely urgent and should therefore be undertaken in normal working hours. Standards associated with the avoidance of discharge from critical care between 22:00 and 07:00[25] should be considered applicable to these patient groups and thus repatriation and capacity transfers should not usually commence after 22:00.

8.8 **Recommendations**

- Regions, Critical Care Networks and ACCTS should work collaboratively with NHS Ambulance Service(s) to develop a regional approach to the triage and prioritisation of adult critical care transfers to ensure consistency of approach regardless of who undertakes the transfer.
- Repatriation and capacity transfers should be undertaken by dedicated ACCTS or, where not available, acute provider clinical teams with Trust-contracted third party ambulances[20].
- Repatriation and capacity transfers should usually occur in normal working hours (07:00-22:00) and not overnight.

9. Training and competencies

9.1 The role of NHS ambulance staff during transfer is to ensure the safety of the vehicle and its occupants. The role of the accompanying clinical escorts is to provide any required medical/ nursing care and to ensure the safety of the patient.

9.2 Evidence suggests that significant numbers of transfers are still being undertaken outside ACCTS by inexperienced and inadequately trained staff and this is likely to be responsible for the continuing high rate of avoidable critical incidents.

9.3 A survey in 2014 of Anaesthesia and Emergency Medicine trainees in Scotland found 20% of respondents had received no training prior to their first solo inter-hospital transfer. Few (9%) had previously conducted a transfer with a senior colleague or attended a transfer course (4%), 61% rated their transfer training as deficient or absent and 94% felt there was a place for more formal tuition in transfer medicine[26]. There is no evidence to suggest this baseline has changed significantly in recent years.

9.4 A number of studies have highlighted that technical and equipment problems are common during transfer and that the ability to resolve these is an important patient safety factor[10].

9.5 Transfer competencies for medical staff are included in the Intensive Care Medicine curriculum produced by the Faculty of Intensive Care Medicine[27], and the Anaesthesia curriculum produced by The Royal College of Anaesthetists[28].

9.6 The Faculty of Intensive Care Medicine has produced an Additional Advanced Skills Framework for Inter-Hospital Transfer for Advanced Critical Care Practitioners[29] which sets out the recommendations for training, competency and governance requirements for ACCPs to independently undertake inter-hospital transfers (mostly within ACCTS).

9.7 Competencies for nursing staff are included in the National Competency Framework for Adult Critical Care (Step Competencies) produced by the Critical Care Networks - National Nurse Leads (CC3N)[30]. Whilst acute hospitals may choose to develop additional competencies, the core elements of the Step Competencies should be included.

9.8 In addition to the above, there is a Transfer Practitioner Competency Framework for critical care nurses working within ACCTS. ACCTS have their own induction, competency and training processes for team members.

9.9 There is currently no standardised national transfer training course and regions have adopted a variety of packages that are variably delivered. Some Critical Care Networks have adopted regional training programmes to good effect.

A standardised transfer training course, or core curriculum requirements for locally delivered courses, should be developed for multidisciplinary team members who may be clinical escorts in critical care transfers.

Such a course, or courses, should address intra- and inter-hospital transfer and emphasise the same standards of care apply to each. Course(s) should align with curricula and competency documents produced by the Faculty of Intensive Care Medicine, Royal College of Anaesthetists, UK Critical Care Nursing Alliance (UKCCNA), Critical Care Network National Nurse Leads (CC3N)[27-30] and must reflect the current provision of critical care transfer, including interfacing with ACCTS.

9.10 Clinical staff (medical, nursing, allied healthcare professional) undertaking critical care transfer must be trained, competent and experienced. Training should encompass a dedicated transfer training course, supernumerary experience and a sign off process prior to solo working. Competency should be regularly assessed to ensure ongoing training and personal development needs are met.

9.11 **Recommendations**

- A standardised transfer training course, or core curriculum requirements for locally delivered courses, should be developed, aligned with curricula and competency documents from FICM, RCoA, UKCCNA, CC3N and others.
- Critical Care Networks should adopt a standardised transfer training course or core curriculum requirements, when these exist, or develop a standardised course within the Network to ensure that trusts can train staff appropriately.
- Clinical staff undertaking intra- and inter-hospital critical care transfer must have received specific training in transfer, gain experience in a supernumerary capacity and be able to demonstrate the range of competencies commensurate with their role.
- Clinical staff must not undertake unsupervised critical care transfer until they have met the above requirements. Supervision must be direct and from a trained, competent and experienced clinician.
- Critical Care Networks and ACCTS should collaborate with regional partners responsible for the training and education of medical, ACCP and nursing/practitioner staff to support the delivery of supernumerary training opportunities.

10. Equipment

10.1 The literature consistently identifies equipment failure as the most common adverse event during transfer. Parmentier-Decruq *et al.* examined 262 mechanically ventilated patients undergoing inter-hospital transfer. Equipment-related incidents accounted for the largest subgroup of adverse events with incidents involving airway equipment accounting for 17.2%[31]. Similarly, Venkategowda et al reported on 254 patients undergoing transfer and found that 64% of adverse incidents related to equipment failure[32].

10.2 In the Survey of Critical Care Operational Delivery Networks undertaken in 2018[2], although there was no consistency in how networks recorded or reported adverse events, equipment related issues were again the predominant problem with battery failure a particular issue.

10.3 Dedicated transfer equipment must be available for all intra- and inter-hospital transfers. This should be designed for patient transfer and serviced regularly with a record maintained of this service schedule.

10.4 All clinicians involved in transfer should be trained in the use of dedicated transfer equipment. Appendix 2 includes a list of recommended equipment for acute hospitals undertaking intra- and inter-hospital transfers. A separate list is available for ACCTS[1].

10.5 For intra-hospital transfer, equipment should be safely transported around the hospital and must not be placed on top of the patient. Several commercially available dedicated systems are available to manage this.

10.6 Care must be taken with oxygen cylinders in line with national guidance[33]. Cylinders must always be carried in a dedicated holder or bed bracket and not on the patient's bed. The cylinder(s) should be set up in an upright position and away from patient/clinician and the valve opened slowly prior to use.

10.7 For inter-hospital transfers, every acute hospital must have access to a dedicated critical care transfer trolley. This should be CEN-compliant and all transfer equipment (ventilator, monitor, infusion pumps, suction, etc.) must be securely attached. Trolleys must be checked regularly (at least weekly) and serviced annually. A record of checking and servicing must be maintained and should be shared with regional NHS Ambulance Services, if required by local policies.

10.8 When a dedicated critical care transfer trolley is unavailable or the NHS Ambulance Service cannot provide a compatible vehicle, a standard ambulance trolley should be used. Care must be taken to ensure that equipment is adequately secured to prevent it from becoming a missile in the event of a road traffic collision. This includes transfer consumable bags and medication bags.

10.9 Equipment and consumables for managing common events in transfer must be available for every transfer. This should allow clinicians to manage airway, ventilatory, circulatory, access and other common emergencies. A suggested list of consumables is included in Appendix 2.

10.10 Medical devices used in transfer must demonstrate conformity to the Medical Devices Regulations 2002 (SI 2002 No 618, as amended) (UK MDR 2002) and have a UKCA, CE UKNI, or CE mark, and must be registered with the Medicines and Healthcare products Regulatory Agency (MHRA).

10.11 Equipment bags must be checked regularly (at least weekly) to ensure all items are in date and present. Acute hospitals should consider adopting a single-use seal approach to pouches and bag compartments to improve this process. All clinicians undertaking transfers must be familiar with the equipment and this should form part of their induction.

10.12 The provision of standardised equipment across acute hospitals and within Critical Care Networks provides familiarity for staff and quicker access in an emergency[34]. Critical Care Networks should work with ACCTS and acute hospitals to standardise transfer equipment and medication bags across their operating area.

10.13 Clinical escorts should be provided with adequate personal protective equipment (PPE) to maintain their safety. This should include appropriate footwear as critical care transfer trolleys are very heavy and the movement/loading/unloading of these poses manual handling risks. High visibility jackets or vests should be available to maximise visibility in the event of having to leave the ambulance vehicle at the roadside.

10.14 Clinical escorts should wear suitable warm clothing and footwear. Theatre attire including scrubs and theatre shoes are not usually appropriate as they do not provide adequate protection.

10.15 Acute hospitals should have a policy covering the provision of PPE for clinical escorts, suitable attire for inter-hospital transfer and manual handling considerations when utilising dedicated transfer equipment.

10.16 Clinical escorts frequently need to contact referring and receiving hospital clinicians for advice or help with logistical issues (e.g. directions or access to a hospital). Staff must travel with a mobile phone and should have access to relevant telephone numbers. Critical Care Networks should consider providing commonly used telephone numbers on their transfer documentation or via an electronic solution such as a mobile application or secure website.

10.17 **Recommendations**

- All monitoring and equipment must be suitable for use in the transfer environment and securely mounted on the transfer trolley in such a way as to be CEN-compliant.
- Equipment must be serviced annually and checked daily/weekly as appropriate in such a way as to reduce the risks of failure during transfer with a written record maintained.
- Transfer bags must be checked regularly and trusts must have a process in place to provide assurance that all consumables are present and not past their expiry date.
- Critical Care Networks and acute hospitals should work with ACCTS to standardise transfer equipment (transfer trolley, equipment lists, transfer bags, medication bags), where possible, providing practical and safety benefits.
- Acute hospitals must provide adequate PPE for clinical escorts undertaking transfer.

11. Medication

11.1 A comprehensive medicines management policy for intra- and inter-hospital transfers should be in place which describes the safe storage, transfer and use of medicines. In clinical use, the policy should cover end to end medicines management from handover in the referring hospital, during transfer and handover at the receiving hospital including prescription and administration.

11.2 Dedicated transfer medication stocks must be available for all intra- and inter-hospital transfers and should be stored in a dedicated medication bag.

11.3 Medication bags must have a tamper-evident seal and be stored securely in a location dedicated to medication storage with temperature monitoring. There must be a process in place to ensure the medication bag is immediately available for use again, either by immediately replacing any components used, or by replacing the entire bag from a stock of reserve bags prepared for the purpose. A process for ensuring expiries are not exceeded needs to also be in place.

11.4 Medications carried must include a sufficient range and quantity to manage common events and emergencies in transfer. Appendix 3 includes a list of recommended medications for acute hospitals undertaking intra- and inter-hospital transfers. A separate list is available for ACCTS[1]. Patients may require medications not included in the recommended medication bag list (e.g. for anticipated metabolic acidosis, hyperkalaemia, etc). These should be considered on a case-by-case basis and follow local/regional guidelines and policy.

11.5 Medication prescription and documentation of administration must follow the transfer medicines management policy or, where unavailable, the referring hospital medicines management policy.

11.6 Acute hospitals must have a policy for the management of controlled drugs. These must describe the appropriate supply, transfer and use; and be agreed by the Controlled Drug Accountable Officer of the acute hospital and in line with their relevant Home Office license. Controlled drugs that are used in continuous infusion may be continued if prescribed, prepared and connected prior to transfer. Additional supplies must only be made against a discharge prescription.

11.7 Medication infusions should follow the Intensive Care Society Standard Medication Concentration list[35]. Where variation exists in regions, Critical Care Networks should work with acute hospitals to adopt the ICS list in its entirety as this reduces risk and eliminates the requirement for medications to be re-drawn on arrival in the receiving hospital.

11.8 Medication infusions and syringes must be labelled according to the referring hospital medicines management policy. The receiving hospital may, where permitted by local medicines policy, choose to continue administering the referring hospital's preparations. Alternatively, the receiving hospital may prepare new infusions and syringes in line with its own medicines governance framework.

11.9 Recommendations

- Dedicated medication bags must be available for all transfers.
- Medication bags must be re-stocked after use, sealed with tamper evident closure, stored securely and checked weekly, including expiry dates.
- Acute hospitals must have a specific transfer medicines management policy that covers end-to-end medicines use.
- Trusts must ensure that there is adequate documentation (prescription and administration) of medications used during transfer. Separate processes may exist for intra- and inter-hospital transfers.
- Trusts must have a policy for the management of controlled drugs during transfers. Controlled drugs must not be supplied as spares in prepared syringes or ampoules.

12. Governance arrangements

12.1 The principles of good clinical governance are well established. Critical Care Networks and acute hospitals must have governance arrangements in place to ensure that standards for the transfer of critically ill patients are maintained. These should include the use of audit, critical incident reporting, and feedback from patients/next of kin regarding their experiences.

12.2 Critical Care Network transfer documentation must include at least the minimum mandatory data set for ACCTS which will be published in 2026. A suggested Network dataset which includes this ACCTS MMDS is included in Appendix 4. Networks and ACCTS should develop a system of data collection that enables the submission of the MMDS, regardless of the provider, as well as a routine review of transfers conducted.

12.3 Critical Care Network Transfer Leads should monitor themes that are identified in routine review and share these with the Network. When specific concerns are identified these should be shared with specific Trust Transfer Leads.

12.4 Incidents occurring during intra- and inter-hospital transfers should be reported using the Trust incident reporting system. Trust Transfer Leads should share these incidents with the Critical Care Network. ACCTS have incident reporting systems in place within their host Trusts.

12.5 Some Critical Care Networks have adopted Network-wide incident reporting systems[36] which enables thematic review and effective sharing of learning across the entire patient pathway. This should be considered by all Networks.

12.6 **Recommendations**

- Critical Care Networks should ensure that adequate governance arrangements for critical care transfers are in place across the Network and that all patient transfers are subject to audit, critical incident reporting and review, including analysis of feedback from patients and next of kin.
- All acute hospitals should ensure that the transfer of critically ill patients within hospitals (intra-hospital transfers) are subject to similar governance arrangements.
- The minimum mandatory dataset for adult critical care transfer should be captured for all inter-hospital transfers and submitted in a timely way by Trusts, Critical Care Networks and/or ACCTS.
- All incidents occurring during critical care transfers should be reported on Trust and/or Network incident reporting systems. Reports should include ‘critical care transfer’ as an identifier to enable future data searching and analysis.

13. Transfer decisions and ethics

13.1 The decision to transfer a patient is always the joint responsibility of the referring and receiving acute hospital consultants. The medical staff at the receiving unit and ACCTS may offer specialist advice on patient management, however primary responsibility for the patient always lies with the clinical escorts and responsible consultant.

13.3 When transfer to a specialist centre for a time-critical life-, limb-, or sight-saving intervention is required (e.g. neurosurgery for an extra-dural haematoma), this must not be delayed by the lack of availability of a critical care bed in the specialist centre. Transfer must occur to enable the required intervention, whilst arrangements are made to provide the subsequent on-going care in line with a Regulation 28 Report by a Coroner to prevent future deaths[37]. Acute hospitals that are specialist centres and regions must have a policy covering this eventuality.

13.4 This requirement clearly creates challenges for specialist centres in ensuring capacity and equity of access to specialist services. Repatriation of patients from specialist centres back to their local hospital once they no longer require specialist care is essential in maintaining this whilst also ensuring patients are closer to their family and support network. Repatriations should normally occur within 48 hours of being accepted by the receiving hospital specialty team. Regions should have agreed escalation processes to support critical care capacity and bed management when this timeline is not met.

13.5 Once a patient has been accepted by a receiving unit, the bed must be kept available until the patient arrives or until the transfer is stood down. This is particularly relevant for repatriations (including those from overseas) when the patient may be travelling long distances and there may be logistical delays in the transfer process.

13.6 Capacity transfers should only be considered to enable the provision of emergency medical and surgical care (e.g. priority 1a procedure to be performed within 24 hours). There should be clear operational and governance safeguards in place.

13.7 Capacity transfers to enable planned surgery are only supported in exceptional circumstances requiring a national, regional or Health Board ‘command and control’ level response e.g. during the COVID-19 pandemic, where there is serious risk of increased morbidity or reduced survival if surgery were to be delayed, where there are clear operational and governance safeguards in place[19,38].

13.8 Operational and governance safeguards should be established by Trusts, Critical Care Networks and regions and should include clear escalation processes. Senior clinical, operational and executive oversight must ensure that all reasonable mitigations have been implemented prior to requesting a capacity transfer. There should be consensus that patient safety can only be maintained in the short term by undertaking capacity transfer. Mitigations include:

- Ensuring all commissioned physical beds are open and staffed.
- Ensuring discharges from critical care to the ward are prioritised and wardable patients have departed.

13.9 Capacity transfers are a temporary measure, attempting to ensure equitable access across the wide range of conditions that require critical care. They are not a substitute for adequately funded and staffed critical care (Level 2 and 3) and enhanced (Level 1) beds[14].

13.10 A contentious issue which sometimes arises when a transfer is necessary because of lack of availability of critical care beds, is whether to transfer the new and potentially unstable patient, or an existing more stable patient. No patient should be subjected to an intervention that is not in their best interest, and it could be considered unethical to transfer one patient out of a critical care unit for the sole purpose of making room for another. It is acknowledged, however, that rarely this may be the most pragmatic approach where the transfer is required to generate emergency critical care capacity.

13.11 **Recommendations**

- The decision to transfer and to accept a patient should be made by appropriate consultants in both the referring and receiving hospitals.
- Time critical transfer for immediate lifesaving interventions must not be delayed by lack of availability of a critical care bed in the specialist centre.
- Repatriation policies for patients who no longer require specialist care should be agreed across networks. Patients who require repatriation should be transferred within 48 hours of being accepted by the receiving hospital specialty team. Regional escalation policies should be followed when delays exceed this time.
- Capacity transfers should only be considered in exceptional circumstances and only in order to enable the provision of emergency medical and surgical care.
- Operational and governance safeguards should be established by Trusts, Critical Care Networks and regions with regards to capacity transfer and should include clear escalation processes.
- Critical Care Networks/regions should have agreed principles and policies in place to ensure that transfers for capacity reasons occur only as a last resort.

14. Communication with patients and next of kin

14.1 Whilst many critically ill patients will be unconscious or lack capacity, every effort should be made to communicate with them about transfer arrangements. Patients and their next of kin should be kept informed at all stages of the transfer process and provided with appropriate written information. ACCTS are required to have written 'Patient and Relative Information', and it is recommended that Critical Care Networks and ACCTS collaborate to adapt this for transfers undertaken by local hospital teams.

14.2 In most cases, next of kin will be unable to travel with the patient and are responsible for arranging their onward travel and accommodation. Very occasionally, it may be in the best interests of the patient for a next of kin to accompany them (e.g. a patient with specific communication needs or with a Learning Disability); in these cases, this must be risk assessed and the next of kin must not be intoxicated or under the influence of drugs and must be medically well. The next of kin must follow the instructions of the escorting clinician team and ambulance crew.

14.3 In circumstances where patients are able to remain in contact with their next of kin (e.g. by telephone or messaging service), this should be supported where it is safe and practical to do so.

14.4 It is good practice for the transferring team to contact next of kin immediately prior to departure and on safe completion of the transfer. The latter contact should be used to share contact details of the receiving unit along with visiting times.

14.5 **Recommendations**

- Patients and their next of kin should be kept informed at all stages of the transfer process and should be provided with appropriate written information.
- Where patients themselves are able to remain in contact with next of kin they should be supported in doing so.

15. Selection of transport mode

15.1 In the United Kingdom, the overwhelming majority of adult critical care transfers are undertaken by land. The choice of transport mode is influenced by the geography, availability of transport, availability of suitably trained and experienced team members to work in the particular mode as well as other factors.

15.2 Road transport has the advantage of low overall cost, rapid mobilisation time, less limitation by adverse weather conditions, less potential for physiological disturbance and easier patient monitoring. Staff are most familiar with this environment.

15.3 Aeromedical transport by fixed or rotary wing aircraft is rarely quicker over road journeys of 2-3 hours by the time mobilisation, loading, unloading and other operational factors are considered.

15.4 Long distance (>3-4 hours by road) transfers pose particular risks to patients and escorting clinicians. They should be undertaken by ACCTS, where available, and carefully considered in all cases so that risks are minimised. ACCTS should be involved in arrangements for long distance transfer, including aeromedical provision, so that the logistical burden is not placed solely on the referring clinician.

15.5 When long distance road journeys are undertaken, patient care should be planned to maximise patient comfort, ensure personal care is appropriate and reduce the risk of pressure injury. This often requires stops every 90-120 minutes and this time should be included when planning such journeys.

15.6 Plans should be made in the event of an unexpected patient deterioration including decision-making around hospitals suitable to divert to.

15.7 Aeromedical transfer by fixed or rotary wing (including air ambulance and HM Coastguard) aircraft should only be carried out by individuals who are specifically trained, competent and experienced and working within an appropriate governance system such as an ACCTS or private aeromedical provider. Further information is given in the specialist chapter.

15.8 **Recommendations**

- Long distance transfers should be carefully considered and undertaken by ACCTS, where available.
- Patient care should be planned when a road journey exceeds 3-4 hours to minimise risk to the patient.
- Aeromedical transfer should only be carried out by specifically trained, competent and experienced individuals working within an appropriate governance system.

16. Accompanying personnel and risk assessment

16.1 Critically ill patients requiring transfer are often complex and at risk of deterioration or unexpected change in condition. They should normally be accompanied by two suitably trained, competent and experienced clinical escorts during any intra- or inter-hospital transfer.

16.2 The formation of the escorting team and required competencies will depend on the nature of the underlying pathology, co-morbidities, level of dependency and risk of deterioration during transfer.

16.3 Whilst the Intensive Care Society Levels of Care consensus statement[14] provides an indication of dependency, they do not correspond directly to the level of risk during transfer for any individual patient. Determining the level of risk requires a risk assessment to be undertaken by an experienced clinician (e.g. consultant, senior Resident Doctor AAHP or equivalent, senior nurse) prior to the transfer. The risk assessment should take in to account the following:

a. The patient's current clinical condition (assessed using a physiological track and trigger score and other physiological parameters relevant to the patient's condition)

b. Specific risks related to the patient's condition

c. Risks related to transfer

d. Likelihood of deterioration during transfer

e. Potential for requiring additional intervention during transfer

f. Mode of transport and anticipated duration of transfer.

In addition to the patient risk assessment, the experienced clinician may need to consider factors such as acute hospital operational pressures, other patients requiring transfer and other interventions. Careful consideration should be given to balancing these global risks with those posed by and to the patient being transferred.

16.4 Based on the risk assessment, the competencies of clinical escorts required to accompany the patient can be determined. Appendix 5 includes a pre-transfer risk assessment suitable for use in both intra- and inter-hospital transfer.

16.5 In certain circumstances, low risk patients may be accompanied by one clinical escort such as a nurse or other registered practitioner. However, their ability to safely deal with unexpected emergencies must be considered as management of these situations almost always requires at least two clinicians.

16.6 Higher risk patients always require two clinical escorts with resuscitation and critical care competencies including advanced airway skills. These escorts may be physicians, ACCPs, nurses and other registered practitioners experienced in the management of critically ill patients and critical care transfer equipment in hospital. Commonly, the two escorts are a physician plus nurse or ACCP with FICM membership and completion of the Advanced Airway Management AASF and Inter-hospital Transfer AASF, plus nurse

16.7 NHS Ambulance Service ambulance crew are not suitable as the second clinical escort as they are not experienced in the use of critical care transfer equipment or management of critically ill patients in hospital. The usual scope of practice of a paramedic[39] does not include the management of ventilated patients, drug infusions and fluids unless they have undertaken specific enhanced and advanced training and are working within specialised areas.

16.8 Recommendations

- Prior to the transfer of a critically ill patient, a risk assessment should be undertaken and documented by a senior clinician (e.g. consultant, senior Resident Doctor or equivalent, ACCP or senior nurse) to determine the level of anticipated risk during transfer.
- The outcome of the risk assessment should be used to determine the competencies of the clinical escorts required to accompany the patient during transfer.
- Higher risk patients must have two appropriately trained, competent and experienced clinical escorts capable of continuing the delivery of critical care and independently managing unexpected events in transfer with remote telephone support.
- Acute hospitals must have a plan to provide two suitably trained and experienced clinicians to escort a critically ill patient requiring inter-hospital transfer 24 hours a day.
- NHS Ambulance Service crew must not be used as the second clinical escort in a critical care transfer.

17. Resuscitation, stabilisation and patient preparation for transfer

17.1 Critically ill and injured patients should usually be adequately resuscitated and stabilised prior to transfer. There is a balance between the degree of stability and the need for emergency transfer for time critical intervention. Care should be taken by senior clinicians to ensure a focus on stability does not compromise patient outcome by increasing the time to definitive care.

17.2 In line with usual adult critical care practice, meticulous attention to detail in the initial resuscitation and ongoing stabilisation phases of patient care are key to avoiding many of the complications seen during transfer.

17.3 Often, there are many clinicians involved in these initial phases of care. The clinical escorts for transfer must familiarise themselves with the patient history, treatment and results and perform an appropriate clinical assessment before assuming responsibility for the patient. Care should be taken to ensure patient allergy status, infection control and safeguarding issues are understood.

17.4 The patient should have two patient identification bands applied prior to transfer. In situations where a computer-generated phonetic alphabet name has been used, this should continue to be used by the transferring team until positive identification is confirmed, and records merged.

17.5 The airway should be assessed and, if necessary, secured and protected. Consideration should be given to the likelihood of deterioration and clinical trajectory of the patient. Intubation and ventilation should be performed prior to transfer when airway, ventilatory or neurological compromise is present or anticipated.

17.6 Patients receiving high flow nasal oxygen or non-invasive ventilation require significant volumes of oxygen for transfer. Routine inter-hospital transfer of patients requiring these treatments should be avoided. The decision to transfer a patient receiving these treatments should be made by a consultant and carefully considered to assess the risk and whether sufficient oxygen can be safely carried. A number of factors must be considered when accurately calculating oxygen requirements (see Appendix 1).

17.7 Intubated patients should normally be sedated, have muscle relaxants administered and be mechanically ventilated using lung protective strategies. Appropriate tracheostomy spares must be taken when a patient with a tracheostomy is transferred. These should be in line with the National Tracheostomy Safety[40] and include, at a minimum, spare tracheostomy tubes (one same size, one size smaller), inner cannula, cleaning brushes, suction catheters, scissors, stitch cutter (if required), lubricating jelly and tracheostomy tapes.

17.8 Patients with a tracheostomy should be assessed and consideration given to method of ventilation during transfer. Most patients will manage well on a supported ventilatory mode and do not require additional sedation or muscle relaxation. Transfer on a tracheostomy mask during short periods of weaning is not recommended.

17.9 Inspired gases should be humidified using a disposable heat and moisture exchanging filter (HMEF). Patients with a tracheostomy who have completed weaning should have humidification via traditional HMEF or ‘Swedish nose’ type humidification devices.

17.10 Inspired oxygen should be guided by oxygen saturation (SpO_2) or portable arterial blood gas analysis, where available. In line with usual critical care practice, appropriate physiological targets should be set according to patient- and pathology-specific factors.

17.11 An oxygen calculation must be performed for every transfer to ensure there is sufficient for the journey, including delays and unanticipated changes in patient requirements. Several calculations are available depending upon whether the patient is receiving supplemental oxygen via face mask/nasal cannula, non-invasive ventilation or invasive ventilation. Examples of these calculations are provided in Appendix 1. In some regions and ACCTS, custom calculators have been built using simple web-based tools to aid this requirement.

17.12 Waveform capnography (end-tidal CO_2) must be used for all ventilated patients. Appropriate physiological targets should be chosen based on patient and pathology factors (e.g., neuroprotective management[41]).

17.13 Patients should usually be established on a transport ventilator 20-30 minutes prior to departure. After 10-15 minutes, an arterial blood gas should usually be performed to ensure adequate gas exchange and optimisation of ventilation. This is particularly relevant where portable blood gas analysis is not available.

17.14 If a pneumothorax is present, consideration should be given to the insertion of a chest drain prior to departure. Careful consideration of the likelihood of deterioration should guide this decision and specialist advice can be sought from the ACCTS, specialist centre Trauma Team Leader or relevant specialty. Left sided pneumothoraces are significantly more difficult to access in most ambulances due to the stretcher configuration and this should be taken into account. Underwater seal drains may be used provided they are kept upright (usually by hanging from the transfer trolley) and below the level of the patient. Chest drains should not be clamped during transfer.

17.15 Secure venous access is mandatory and a minimum of two peripheral intravenous cannula or a multi-lumen central line should be present. Lines should be visible, where possible.

17.16 Whilst it is often not possible to choose, right sided peripheral access is preferable as it is accessible by clinical escorts whilst remaining seated in the ambulance. Patients should have a patient ‘flush line’ with three-way tap or clinical escorts should have easy access to IV flushes to enable easy administration of bolus medication whilst remaining seated.

17.17 Secure arterial access is usually required for blood pressure monitoring in the ventilated patient and in those receiving vasoactive infusions. Insertion of an arterial line must not delay time critical transfer as it is rarely essential and regularly cycled non-invasive blood pressure monitoring can be sufficient in these cases.

17.18 Hypovolaemic patients tolerate movement poorly. Ongoing sources of blood loss should be identified and controlled, if possible. In the absence of contraindications (e.g. penetrating trauma, ruptured aortic aneurysm or active bleeding), efforts should be made to restore the circulating volume to near normal prior to transfer.

17.19 If blood transfusion is anticipated to be required during transfer, blood products should be requested from the transfusion lab sufficiently early to avoid delay. Blood must be provided in a suitable, sealed, blood transport box and acute hospital blood prescription, administration and documentation requirements must be followed. Ideally, transfusion should be commenced prior to departure to reduce the complexity of interventions required during transfer. Unused units must be sent to the receiving hospital transfusion lab as soon as possible following arrival to avoid unnecessary waste.

17.20 If vasoactive agents are required to optimise haemodynamic status, patients should usually be stabilised on these before leaving the referring hospital.

17.21 Baseline neurological status (pre-intubation Glasgow Coma Score (GCS) and pupil response) must be recorded in neurosciences patients. Neurological status (GCS and pupil response) should be assessed and documented regularly (15 minutes for neurosciences patients, 30-60 minutes for all others).

17.22 A nasogastric/orogastric tube should be considered and free drainage allowed, if indicated. Consideration of the benefits and any potential risks of prophylactic anti-emetic treatment should be made for all awake patients with administration 15-30 minutes prior to transfer.

17.23 A urinary catheter should be inserted in all ventilated patients. Insertion must not delay departure for time critical patients, although experience has shown that catheterisation can be performed rapidly by members of the wider multi-disciplinary team whilst other transfer preparations are ongoing.

17.24 Certain patient groups require immobilisation of injuries (e.g., spinal injury, long bone fractures). Care must be taken to ensure this is documented and planned for. Patients requiring spinal immobilsation should be transferred using a vacuum mattress or head blocks and tape; orthopaedic 'scoop' stretchers should not be used for transfers unless the total duration of time the patient will be on them is less than 45 minutes as there is significant risk of pressure injury beyond this.

17.25 Patient notes must be copied or electronically transmitted and an appropriate transfer letter or handover document used to convey key information; Critical Care Networks should consider a standardised document to support this. At a minimum, this must include the patient history, past medical history, major events of admission, treatments, line/tube/drain insertion dates, prescription chart including planned duration of medications such as antibiotics, and any outstanding issues. Key ongoing management points (e.g., stage of tracheostomy weaning, suture removal dates, etc) and treatment escalation/resuscitation decisions must be clearly documented. Next of kin information should be easily accessible to the transferring clinicians and receiving hospital so that they can be contacted to inform them of safe arrival.

17.26 Relevant imaging should be electronically transferred to the receiving hospital if regional imaging networks do not allow automatic access.

17.27 Patient notes, transfer letter and imaging preparation can take time and is a common cause of delays. It should be anticipated and actioned early to avoid unnecessary delay to patient departure.

17.28 Relevant patient medications should be administered prior to departure (e.g., anti-platelet medications in cardiology patients, nimodipine for subarachnoid haemorrhage, antibiotics for sepsis, etc). Administration must be documented on the referring hospital prescription chart to ensure dosing regimens are maintained and accidental second dosing prevented on arrival at the receiving hospital.

17.29 Adequate infusions and bolus medications should be prepared for the journey. At a minimum, twice the duration of the transfer should be available in each infusion.

17.30 Careful attention must be given to maintaining patient temperature, privacy and dignity. Whilst simple, this is often overlooked. It can be achieved using simple hospital linen or more complex, bespoke thermal blanket solutions. Adequate packaging of the patient reduces the risk of accidental removal of medical devices, snagging of monitor cables and injury to the patient.

17.31 A clinical handover must occur between the referring and receiving teams. Ideally this should be multi-disciplinary and should occur once (rather than separate medical and nursing communication). Typically this should occur prior to departure, although some Network agreements allow a 'treat and send' approach for time critical patients, necessitating handover after the patient has departed.

17.32 Immediately prior to departure, the transferring team should contact the receiving hospital and confirm the exact destination within that hospital, that the bed remains available and provide an estimated time of arrival.

17.33 The transferring clinical team must be provided with a clear plan to repatriate them and their equipment following transfer. An NHS Ambulance Service vehicle and crew should not be expected to perform this function unless a critical care transfer trolley is used. NHS Ambulance Services, Critical Care Networks and ACCTS should formally agree what happens in this scenario, particularly with respect to allocation of that 999 ambulance to life-threatening calls. Whilst this is operationally important to the ambulance service, this poses significant physical and professional risk to the clinical team who may feel pressured to operate outside their usual environment and scope of practice.

17.34 **Recommendations**

- Patients should be appropriately resuscitated and stabilised prior to transfer to reduce the physiological disturbance associated with movement and reduce the risk of deterioration during the transfer.
- Patients with actual or anticipated airway, ventilatory or neurological compromise should be intubated and ventilated prior to transfer.
- In patients with tracheostomies, appropriate spares in line with the National Tracheostomy Safety Project must be taken.
- Patients should have a minimum of two peripheral venous or one multi-lumen central venous access.
- Blood must be provided in a suitable, sealed, blood transport box and acute hospital blood prescription, administration and documentation requirements must be followed.
- Neurological status should be assessed and documented regularly (15 minutely for neurosciences patients, 30-60 minutes for all others).
- Patient notes must be copied or electronically transmitted and an appropriate transfer letter or handover document used to convey key information.
- Sufficient bolus and infusion medications should be available for at least twice the duration of the planned transfer.
- Patient privacy, dignity and temperature should be maintained.
- A clinical handover must occur between referring and receiving teams.
- The transferring clinical team should be provided with a clear plan to repatriate them and their equipment following transfer.

18. Use of checklists

18.1 Checklists are now widely adopted in healthcare, particularly in high acuity areas and for mission-critical interventions.

18.2 Several studies have examined the contents and benefits of transfer checklists and demonstrated a reduction in adverse and serious adverse events with their implementation and correct use[42-45]. More generally, Atul Gawande's 'The Checklist Manifesto: How to get things right' describes the benefits and science behind their use[46].

18.3 There is a wealth of literature about what constitutes a good checklist and many suggested principles to adhere to when creating them. The checklists developed for this guideline follow the 'READ-DO' style and it is recommended that any adaptations maintain the following key principles: single page, clear simple and familiar language, no requirement for sign off at completion.

18.4 It is acknowledged that no checklist can cover all eventualities. The checklists in Appendix 6 and 7 are designed to ensure important steps are not omitted when clinical escorts are distracted or task focused when working in an unfamiliar environment or with a complex patient.

18.5 ACCTS have a series of checklists covering deployment, preparation for transfer, departure and post-transfer events. Some services provide preparation checklists for referring hospitals ahead of the team arriving[47] and these help inform the content of non-ACCTS transfer checklists.

18.6 Many Critical Care Networks have developed checklists for transfer that are included with their transfer documentation[48]. Whilst some regional variation may be required, the adoption of standardised checklists for intra- and inter-hospital transfers within Critical Care Networks and regions should be considered and would have significant safety benefits.

18.7 Checklists must be familiar and utilised by transferring clinicians during training as well as for each transfer to maximise their utility.

18.8 **Recommendations**

- Checklists should be used to help to ensure that all necessary preparations have been completed, prior to each stage of the transfer. [Appendix 4]
- Acute hospitals should have a checklist for intra-hospital transfers that is standardised across the organisation and utilised for all critical care transfers.
- Critical Care Networks should adapt and adopt for their region a standardised inter-hospital transfer checklist that covers the stages of transfer (preparation, departure, post-transfer).
- Specialty-specific checklist additions should be used when individual patients have particular requirements (e.g., for maternal critical care transfers).

19. Monitoring during transfer

19.1 The standard of monitoring during transfer must match that expected for a similar level of critically ill patient being cared for in an in-hospital environment.

19.2 The minimum monitoring for an Intensive Care Society Level 1-2 patient is:

a. Cardiac rhythm (ECG)

b. Non-invasive blood pressure

c. Oxygen saturation (SpO_2)

d. Temperature (intermittent tympanic or adhesive skin probe).

19.3 The minimum monitoring for a Level 3 patient is:

a. Cardiac rhythm (ECG)

b. Invasive or non-invasive blood pressure

c. Oxygen saturation (SpO_2)

d. Waveform capnography ($ETCO_2$)

e. Temperature (intermittent tympanic or oesophageal).

19.4 Intermittent non-invasive blood pressure measurement is sensitive to motion artefact and can be unreliable in a moving vehicle although most dedicated transport monitors provide highly reliable monitoring. Invasive monitoring should be considered where clinically appropriate but must not delay the departure of a time-critical patient.

19.5 Inspired oxygen concentration, flow rate and oxygen supply should be monitored in all patients receiving supplemental oxygen and titrated using SpO_2/arterial blood gas analysis according to patient and pathology.

19.6 In those receiving ventilatory support (non-invasive or invasive ventilation) ventilator settings, airway pressures and waveform capnography must be monitored.

19.7 Monitoring cables should be tied together (with gloves, Coban™ tape or other proprietary solution) to form an ‘umbilicus’ that avoids tangling, inadvertent removal of medical devices and cable damage.

19.8 Continuous clinical observation is imperative during transfer of critically ill patients. At a minimum, observations including monitoring parameters and conscious level should be recorded 15-minutes for the stable Level 2 patient. For Level 3 patients, five minute observations (in line with standards of anaesthesia monitoring) are more appropriate and must include 15 minute recording of conscious level, pupillary response, ventilatory parameters and temperature.

19.9 Recommendations

- Minimum standards of continuous monitoring must be applied in every intra- and inter-hospital transfer.
- All monitors, ventilator displays and syringe drivers should be visible to accompanying staff.
- Monitoring cables should be tied together to form an umbilicus to improve safety.
- A documented record of observations and events must be maintained for every intra- and inter-hospital transfer.

20. Safety during transfer

20.1 Department for Transport statistics reveal that between 2008 and 2016, 2,979 people were injured in road traffic collisions involving ambulances[49]. Whilst more recent years' data has not been published, the Association of Ambulance Chief Executives (AACE) launched the 'SafeInTheBack' campaign in 2023[50] to promote the safety and legal aspects of seat belt wearing in an ambulance stating that 'at least one road traffic collision involving an ambulance occurs each day'.

20.2 The safety of all those in an ambulance is paramount during critical care transfer, together with that of other road users and pedestrians.

20.3 Patients must be secured to the critical care transfer trolley (or ambulance trolley, if used) by means of an appropriate restraint (e.g., 5-point harness/straps that are compatible with the critical care transfer trolley and suitable for the patient being transferred). Occasionally, this may be uncomfortable or distressing for conscious patients and careful reassurance combined with appropriate analgesia should be provided, as required. Sedation to manage this particular situation should not be routinely used given the increased risks posed to the patient and requirements for appropriate monitoring.

20.4 Pressure areas (including neurovascular bundles) should be appropriately protected. Particular care should be taken for patients with spinal precautions and/or limb splints. It is not appropriate to transfer a patient on a 'scoop stretcher' unless the total transfer time (including loading and unloading) is under 45 minutes due to the risk of pressure injury. When long (>2 hour) transfers are undertaken, careful consideration should be given to personal care and pressure area relief which necessitate regular stops every 90-120 minutes.

20.5 All equipment (including transfer equipment and medication bags) must be securely stowed, either by fastening to the critical care transfer trolley or stored in appropriate lockers in the ambulance. When this is not possible, equipment should be placed on the floor against the bulkhead wall (i.e., between front and rear cabins). Acute hospitals, Critical Care Networks, NHS Ambulance Services and ACCTS should collaborate in developing cost-effective mitigations for this area to ensure the safety of the patient, escorting clinicians and ambulance crew.

20.6 Equipment (e.g., infusion pumps) must not be placed on top of the patient or critical care transfer trolley. This can cause pressure injury to the patient and may become a dangerous projectile in the event of a sudden deceleration.

20.7 Oxygen cylinders must be held in secure housings at all times. Ambulance oxygen supplies should be utilised once aboard to preserve portable cylinder stores.

20.8 Critical care transfer trolleys should be plugged into the ambulance power supply to preserve battery power for periods when it is required.

20.9 Legislation stipulates that anybody travelling in the back of an ambulance must remain seated and wear a seatbelt whilst the vehicle is in motion. The only exception being specific times when the patient requires clinical care, after which the staff member must then re-secure themselves. Clinical escorts must ask permission of the driver (or rear crew member) prior to unbuckling as the driver is primarily (and legally) responsible for ensuring all seatbelts are fastened.

20.10 Adequately resuscitated and stabilised patients should not normally require any significant changes to their treatment during transport. If, however, unforeseen clinical emergencies arise and the patient requires urgent intervention, this should not usually be attempted in a moving ambulance. The crew should be advised and the vehicle stopped appropriately in a safe place before administering treatment. The hard shoulder of a motorway is a very dangerous place, and clinical teams should be guided by the driver on the safest location to stop.

20.11 The Road Traffic Act 1988 and upcoming Section 19 amendments permit emergency driving (the use of blue lights and sirens, and/or claiming exemptions from certain elements of Legislation) of ambulance vehicles.

20.12 Many journeys should be completed without the use of emergency driving (e.g. most repatriation, continuation of care and capacity transfers). The use of emergency driving may not achieve a significant time benefit and a time critical transfer does not automatically mean the driver has a right to claim an exemption.

20.13 Emergency driving is usually appropriate:

- During the transfer of a time critical patient
- When unnecessary delay will lead to risk of harm to the patient (e.g. liver failure patient who requires minimal time away from renal replacement therapy)
- To expedite a transfer when a patient's condition has acutely deteriorated and unnecessary delay will lead to risk of harm to the patient.

20.14 Clinicians must inform the driver of the patient's condition and acuity of transfer using the above criteria. The driver is ultimately responsible for vehicle and crew safety and will determine the most appropriate response based on the information provided as well as considering external factors such as time of day, weather and road conditions. Clinicians cannot and must not demand an emergency driving response and must not attempt to influence decisions based on the timing of the transfer or desire to return to the referring hospital sooner.

20.15 The emergency driving response must be documented on the Critical Care Network transfer documentation accompanied by a brief narrative (1-2 lines) of the reason. In the event of a change, the timing, decision and reason must be documented. Clinicians have been asked to justify decisions in court following adverse events and accidents. Section 19 amendments in 2026 are intended to tighten the rules to reduce the misuse of emergency driving.

20.16. **Recommendations**

- During the transfer of a time critical patient.
- Patients must be secured to the critical care transfer trolley or ambulance trolley using an appropriate harness or belt system.
- Escorting clinicians must remain seated and belted whilst the ambulance is in motion and the driver requested to safely stop the vehicle if any intervention needs to be provided.
- All portable equipment including consumable and medication bags must be securely stowed to reduce the risk of injury in the event of an accident.
- Emergency driving (blue lights, sirens, and use of exemptions) is not always necessary in critical care transfer. The decision must be documented on transfer paperwork and must be justifiable against the criteria provided in this guideline.

21. Documentation and handover

21.1 The poor quality documentation and handover are consistently identified as a factor in adverse events with multiple studies suggesting that improved communication is a key to reducing errors[51, 52]. Ong et al. reviewed 24 studies relating to handover practices during inter-hospital transfer[53]. Although there was a lack of evidence on best handover practices, the review found consistent evidence of the need for improved communication and information transfer.

21.2 Clear records must be kept at all stages of transfer including referral, acceptance, preparation, transfer and handover. These should include details of the patient's condition, reason for transfer, names of referring and accepting consultants, clinical status prior to transfer and details of vital signs, clinical events and treatments given before, during and after transfer.

21.3 Documentation of intra-hospital transfers should be completed in acute hospital notes and take the form of a routine entry in the notes or utilise a dedicated form. At a minimum, the reason for transfer, escorting clinician names and roles, patient preparation, events during transfer and pertinent times (e.g., time departed, time of intervention and time returned) should be documented.

21.4 Critical Care Network transfer forms must be utilised for all inter-hospital transfers performed outside ACCTS. These must include at least the minimum mandatory data set for ACCTS (Appendix 4).

21.5 On arrival at the receiving hospital a formal handover between the transfer team and the receiving multidisciplinary team must occur. Handover should occur with all clinicians 'hands off' the patient to ensure the attention of all staff.

21.6 Following handover, the receiving team assume responsibility for the care of the patient and their next of kin.

21.7 A single multidisciplinary handover should occur rather than separate medical and nursing conversations as key pieces of information are often missed in the latter.

21.8 Handover should include, at a minimum, patient history, major events and treatments in admission, reason(s) for transfer, key ongoing management requirements, treatment escalation decisions and any safety points (e.g. allergy status, safeguarding, etc).

21.9 Following handover, the transferring clinical team should usually contact the patient's next of kin to inform them of safe completion of the transfer. The conversation should be documented and contact information for the receiving hospital conveyed. If this is not possible, the task should be formally handed over to the receiving hospital team.

21.10 Recommendations

- Records of all intra- and inter-hospital transfers must be kept.
- Intra-hospital transfers should be completed in the patient's notes.
- Inter-hospital transfers performed outside dedicated ACCTS must be documented using the relevant Critical Care Network transfer form.
- On arrival at the receiving hospital, formal handover between the transfer team and receiving hospital multidisciplinary team must occur.
- Multidisciplinary handover should occur rather than separate medical and nursing conversations.
- Inter-hospital documentation should include the ACCTS minimum mandatory dataset and processes should exist for the capture and submission of this data by the Critical Care Network or ACCTS.

22. Debriefing, incident reporting and shared learning

22.1 Clinical escorts and relevant supervising colleagues should debrief critical care transfers, when required. This has the benefit of capturing learning that can be shared within acute hospitals and across Critical Care Networks as well as supporting the continued professional development of the individual clinicians.

22.2 When a clinical, logistical, equipment, staff or other incident occurs during transfer, it should be reported by the referring hospital clinicians using their hospital incident reporting system.

22.3 When clinical or other issues are identified by a receiving hospital, these should be reported using their hospital incident reporting system and then fed back through established Trust-to-Trust processes.

22.4 Learning from excellence is equally important and should be encouraged by Critical Care Networks and implemented by acute hospitals.

23. Emergencies, deterioration and death during transfer

23.1 Critically ill patients are more likely to be unstable, deteriorate or die during the transfer than those on hospital wards. Whilst every step should be taken through resuscitation and stabilisation, decision-making and ongoing care to mitigate the risk of deterioration, there remains a small risk of death during transfer.

23.2 In many cases, it is possible to identify the patients who are at highest risk of acute deterioration and death. It is good practice to consider the following and discuss them with the clinical teams involved (including those from the receiving hospital) and, where possible, the patient and their next of kin:

a) Are all interventions, including escalation of existing organ support, appropriate in the event of deterioration?

b) In the event of cardiac arrest are there any patient- or pathology-specific interventions which may be appropriate and lead to successful resuscitation in the event of cardiac arrest?

c) Is resuscitation appropriate?

d) Is transfer appropriate? Can/should it be delayed until the patient is more stable?

23.3 Acute deterioration and cardiac arrest during transfer are challenging. A series of Emergency Action Cards are provided with this guideline that have been developed and adopted by ACCTS and Critical Care Networks to help clinicians manage these high acuity, low occurrence, events. The Emergency Action Cards also cover non-clinical emergencies such as ambulance breakdown, gas and electrical failure and road traffic accident. Emergencies should be managed according to national guidelines and the Emergency Action Cards.

23.4 When an emergency occurs, the ambulance should stop in a safe location and the team should treat the patient. Senior advice should be sought, where appropriate. In the majority of cases, a resuscitation attempt should be continued to completion (return of spontaneous circulation or recognition of futility and termination of resuscitation).

23.5 The transferring team should consider the following options if an emergency occurs and cannot be resolved, or if the patient's condition changes significantly:

- Return to referring hospital
- Divert to the nearest Emergency Department
- Expedite remaining journey to receiving hospital
- The decision as to which is most appropriate is highly patient-specific and should involve senior advice.

23.6 Rarely (e.g., in the case of ST elevation myocardial infarction patient en-route to a cath lab for primary percutaneous angiography), it may be appropriate to continue resuscitation if the remaining transfer time is short. Resuscitation in a moving vehicle is dangerous and rarely effective unless mechanical CPR devices are used.

23.7 If resuscitation is terminated, verification of death should be performed by an appropriate clinical escort. There is legal complexity to what happens after death depending on devolved nation and where the death occurs:

- **In the referring or receiving hospital:** follow the usual Trust processes.
- **In an ambulance:** legally, the patient is the responsibility of the coroner in whose geographical area they die. Regional NHS Ambulance Services have well-established processes for access to Coroners' Officers (or the Police or Procurator Fiscal, depending on location) and an on-call mortuary into which the patient can be placed. Note that returning to the referring hospital is not legally an option in these circumstances.

23.8 Last offices should be performed to the best of the escorting clinicians' ability, recognising the limitations of the unfamiliar environment. Support should be sought from the ambulance crew.

23.9 The patient's next of kin must be informed as soon as practicable. The way in which they are informed will depend on their location and the duration of the transfer. It is imperative that next of kin details are accurately recorded in the referring hospital's patient records to facilitate this kind of event.

23.10 All documentation must be completed, and it should remain with the patient.

23.11 The referring hospital's Medical Examiner team (England and Wales) should be informed of the death, where applicable. A Patient Affairs team will facilitate the Medical Certificate of Cause of Death (MCCD).

23.12 Team wellbeing, psychological support and appropriate debriefing are essential after these types of events. Many Trusts have highly developed post-incident processes and these should be followed. Clinical team members must be supported and others involved (e.g. ambulance crew) must not be overlooked.

24. Insurance and indemnity

24.1 NHS staff undertaking patient transfers within their usual scope of practice and for their employing organisation are covered by the NHS Resolution indemnity arrangements.

24.2 All clinicians undertaking critical care transfer should inform their medical indemnity provider. There is not usually an additional premium for NHS-indemnified work.

24.3 Clinicians are protected under their employers personal injury cover in the event of serious injury or death. They are also covered by the ambulance provider's own insurance. Staff should be aware that these are often very limited and should not be depended upon.

24.4 The Intensive Care Society[54] and the Association of Anaesthetists[55] have negotiated insurance for all their members involved in the transfer of critically ill patients. Details are available from the Societies' websites.

24.5 All clinicians undertaking critical care transfers should consider additional personal injury cover.

24.6 It should be noted that there is a lack of clarity nationally on the exact cover provided by NHS Resolutions and how individual insurers would pay out in the event of serious injury or death. Work is ongoing to understand this, and this guideline will be updated when clarity is gained. This should be a priority area for the NHS across the devolved nations.

24.7 **Recommendations**

- All clinicians undertaking critical care transfer should consider additional personal injury cover.
- The Adult Critical Care Clinical Reference Group should prioritise developing clear guidance for acute hospitals and individual clinicians on insurance coverage when undertaking critical care transfers.

25. Research, audit and quality improvement

25.1 In spite of the major changes seen across the devolved nations in the provision of dedicated critical care transfer services, there remains limited high-quality data and research on the impact of transfer on patients and their next of kin.

25.2 A research prioritisation exercise should be conducted for ACCTS and adult critical care transfer across the UK to steer the direction of research over the coming years. At the time of publication, preliminary work in this area had commenced.

25.3 High-quality data underpins research, audit and quality improvement processes for critical care transfer. Critical Care Networks, ACCTS and acute hospitals must collaborate to ensure that transfer forms collect at least the ACCTS minimum mandatory data set. Processes should exist to ensure that a minimum mandatory dataset is submitted for every critical care transfer regardless of who undertakes it.

25.4 An audit and quality improvement recipe book should be developed for ACCTS, Critical Care Network Transfer Groups and acute hospitals to ensure that patient care across the different methods of delivery is of a high standard.

25.5 Critical Care Networks, ACCTS, acute hospitals and other providers of adult critical care transfer should collaborate, and not compete, to adopt best practice and effectively respond to future needs.

25.6 Particular focus should be placed on understanding the patient journey and also patient and next of kin experiences.

26. Critical care patients requiring MRI

26.1 Background

MRI transfers form a small proportion of the critical care transfers from Intensive Care Unit (ICU). They require specific preparation and conduct and are often the cause of concern for nursing and medical staff due to the perceived additional challenges they present.

The same standards of care apply to all intra- and inter-hospital transfers, as described in the main section of this document.

The overwhelming majority of MRI scans from ICU are planned and, as such, should be conducted in the shift/day.

Most Level 2 patients are suitable for awake imaging if they have no agitation and are compliant. In the event of them not being suitable, the Critical Care Consultant or senior responsible Consultant should determine whether the patient should be intubated and ventilated for imaging (preferred option), receive oral/IV sedation or have their imaging delayed until they are suitable.

Separate guidelines exist for the delivery of planned and urgent anaesthesia in MRI for elective/urgent patient[60].

26.2 Risk assessment and clinical escorts

A risk assessment is included in the general guidelines. For MRI, given the complexity and often remote location, the following approach is recommended:

- Level 1 and 2 patients who require awake imaging and no sedation are safe to be escorted by an appropriately trained ICU nurse.
- Level 2 patients requiring sedation and all Level 3 patients (including all tracheostomy patients from ICU) must be escorted by two appropriately trained, competent and experienced clinicians.
- All staff should have been to MRI before and should be appropriately supported and supervised if they have not as it is an unfamiliar and remote environment.
- Owing to its complexity, junior inexperienced staff must not be required to undertake MRI scanning of critical care patients.

26.3. Safety screening

National requirements around safety screening for MRI have evolved over recent years[61].

All patients and staff attending MRI must undergo safety screening in line with local policy.

Staff should complete a safety induction/familiarisation with local radiography colleagues and a record maintained of their safety screening.

If the patient is unable to complete the screening themselves, the MRI Radiography team should contact their next of kin to complete it. If no next of kin exist, the medical team must undertake screening on the patient's behalf (usually involving a review of notes, previous imaging and occasionally additional X-ray imaging), liaising with the local radiology team. Some Trusts have developed screening tools to support this process.

26.4 Patient preparation

The patient and/or next of kin should be aware of the transfer to MRI and indication for imaging.

It typically takes 30-45 minutes to adequately prepare a Level 3 patient for transfer to MRI. Preparation should therefore commence an hour before the scan time to avoid delays as scanning time is limited and demand high.

The patient should be (at a minimum) covered with a sheet to protect their privacy, dignity and temperature. As many MRI scans are 45-60 minutes, it may be necessary to take additional bedding to maintain the patient's temperature.

If the patient requires intravenous contrast, they should have a free site of access for administration. This can be the central line flush line (if approved and compatible with power-injection equipment) or a 20G+ cannula, ideally in the antecubital fossa.

Patients with intracranial pressure monitors require specific preparation to ensure monitor safety is maintained during MRI. This is device-specific so local and/or device manufacturer policy must be followed.

Infusions should be rationalised as much as possible. This means stopping non-essential infusions (electrolytes, antibiotics, fluids, etc). Infusions that are continuing should ideally be limited to 3-4 infusion pumps and each must have a sufficient length of MRI-compatible infusion lines attached (number and length vary with MRI scanning room layout). There is additional dead space in these lines and supplementary medications are required for at least double the duration of the transfer and scan (typically 60+ minutes).

26.5 Equipment

All equipment entering the MRI scanning room must be MRI-compatible. This often means clinicians using different equipment to that which is routinely used for intra-hospital transfer. In some cases, it will require additional training and familiarisation.

Dedicated MRI-compatible monitoring with a slave screen in the control room should be used. This monitoring must allow the safe monitoring of a Level 3 patient and so must provide ECG, invasive and non-invasive blood pressure, SpO_2 and waveform capnography at a minimum.

MRI compatible ventilator provision varies. Dedicated MRI-compatible transport ventilators are recommended as they enable the patient to be established on the ventilator at the bedside and to remain on it throughout. In hospitals where an anaesthetic machine ventilator is used, this must be checked prior to use and the clinicians familiar and competent with it use.

Ventilator circuits must be of sufficient length to enable the ventilator to be safely located according to manufacturer requirements and the patient to enter the MRI scanner bore head first. Typically, this requires 4-6 metre circuits.

A transfer bag and transfer medications must accompany the patient, in line with usual practice.

26.6 Conduct of the transfer

Given the complexity of critical care patient MRI scanning, it is usually helpful to have a team briefing before transfer to ensure that all safety processes have been followed, to identify any patient- or staff-specific requirements and anticipate potential complications.

Some acute hospitals have a dedicated MRI checklist to facilitate preparation and safe and timely departure.

Upon arrival in the MRI suite, radiographers will ensure the patient and staff are safety screened.

All clinicians that are required (or may be required) to enter the MRI scanning room must remove all items from pockets, remove lanyard, metal hair clips and any other loose metallic items. They should only enter the scanning room with permission from the MRI radiographer.

The patient should be transferred on to the MRI trolley, remote monitoring modules and hearing protection applied. Note that it is common that invasive blood pressure and capnography cannot be connected until the patient is in the MRI scanning room.

Prior to entering the room, syringes must be removed from infusion pumps (unless a faraday cage device is being utilised) and oxygen cylinders must be removed from the transport ventilator (if using an MRI-compatible one).

Once in the scanning room, appropriate ventilation, monitoring and re-establishment of infusions must occur. Exact events are highly specific to individual MRI scanners and equipment being used.

Clinicians should work with MRI radiographers to position the coil (and the patient, if required), secure ventilator circuit, capnography sampling line and infusion lines. Often, the most effective way to do this is to route them all straight down between the patient's legs and weight them with a sandbag.

Invasive line pressure bags contain small metal parts and should be weighted with a sandbag.

Supervise a test move of the patient into the scanner to ensure patient and lines are safe.

Once in the MRI control room, the escorting clinicians must be able to see the patient, slave monitor, ventilator and all infusion pumps.

Upon completion of the MRI scan, the reverse of the process described above should be conducted to exit the scanning room safely and return to the waiting area. Once there, full monitoring, ventilation and medication infusions should be recommenced and patient stability confirmed prior to transfer back to the critical care unit.

26.7 Managing emergencies

- Declare the emergency and inform the radiographer of what you need to do.
- If you need to enter the MRI scanning room, you must be given permission and you must check your pockets as it is easy to have put your phone/a pen back into them.
- Do not under any circumstances take equipment into the scanning room.

- In the event of cardiac arrest, commence chest compressions within the scanning room and rapidly transfer the patient out to the waiting area. MRI suites should have cardiac arrest trolleys or a sign directing clinicians to the nearest equipment.
- If the patient requires any intervention (e.g., airway management, ongoing resuscitation), they must be immediately transferred back to the waiting area.

Appendix 1: Oxygen calculation

The following principles are used when calculating oxygen requirements for transfer:

- The patient is assumed to require an FiO_2 of 1.0 which, in many cases, will provide significant room for escalation.
- Transfer time must include the time it takes to move the patient to and from the ambulance (in the case of inter-hospital transfer). This time is then doubled to allow for unexpected delays.
- Patients receiving high flow nasal oxygen or non-invasive ventilation require **significant** volumes of oxygen and transfers should be carefully considered. Routine transfer of these patients between hospitals should be avoided. When calculating oxygen requirements for these patients, the following should be included:
- An assumption that there will be a moderate degree of unintentional leak (20 litres per minute is a reasonable estimate).
- Additional gas consumption is required to account of the compliance of the circuit and patient interface (additional 20% is typically used).

The bias flow (consumption by the ventilator for internal control) should be considered. This is different for the commonly used ventilators:

- Hamilton T1/MR1 is 3 litres per minute
- Draeger Oxylog 3000/3000 plus is 0.5 litres per minute.

SPONTANEOUSLY BREATHING (FACEMASK, NASAL CANNULAE)
2 x [Flow (L/min) x transfer time (mins)]

HFNO VIA HAMILTON T1 or equivalent ventilator
2 x [Flow (L/min) x FiO_2 (always 1.0) x transfer time (mins)]

CPAP/NIV VIA HAMILTON T1 or equivalent ventilator
2 x [(MV (L) x 1.2) + 20 x FiO_2 (always 1.0) x transfer time (mins)] Includes unintentional leak and compliance of circuit and patient interface assumptions

INVASIVE VENTILATION VIA HAMILTON T1
2 x [(MV (L) + 3) x FiO_2 (always 1.0) x transfer time (mins)] Includes bias flow of 3L/min for Hamilton ventilator

INVASIVE VENTILATION VIA Oxylog 3000/3000 plus
2 x [(MV (L) + 0.5) x FiO_2 (always 1.0) x transfer time (mins)] Includes bias flow of 0.5L/min for Oxylog ventilator

Appendix 2: Recommended minimum equipment

- Recommended minimum equipment to enable escorting clinicians to manage common events and emergencies during transfer. In certain circumstances, acute hospitals may choose to omit items from an intra-hospital transfer bag; these items must be immediately available and a system in place for them to be delivered to the transferring clinicians wherever they are in the hospital/Trust site. Contents based on publications[34], ACCTS equipment[1] and local sources.

Category	Equipment	Number	Comments
Basic airway	Oropharyngeal airway size 2	1	
	Oropharyngeal airway size 3	1	
	Oropharyngeal airway size 4	1	
	Nasopharyngeal airway size 6	1	
	Nasopharyngeal airway size 7	1	
Intubation **Plan A**	Videolaryngoscope with Mac 3 + Mac 4 + hyper-angulated blades (1 of each)	1	Hospitals may choose not to have dedicated VL for intra-hospital bags but immediate access must be guaranteed in event of one being required
	Mac 3 blade and laryngoscope handle	1	
	Mac 4 blade and laryngoscope handle	1	
	Bougie 15Fr	1	
	Lubricant sachet	1	
	Macgills forceps	1	
	Endotracheal tube size 7 cuffed	1	
	Endotracheal tube size 8 cuffed	1	
	20ml syringe	1	
	Endotracheal tube tie	1 length (1m)	
	Scissors	1	
Plan B, C, D	i-gel size 3	1	
	i-gel size 4	1	
	i-gel size 5	1	
	Scalpel 11 blade	1	
	Endotracheal tube size 6 cuffed	1	
Tracheostomy spares	Tracheostomy tube size 6	1	
	Tracheostomy tube size 7	1	
	Gauze 5x5cm	2	
	Large clear dressing (Tegaderm)	2	

Breathing	Nasal cannula	1	
	Non-rebreathe oxygen mask	1	
	Bag-valve-mask	1	
	Face mask size 3	1	
	Face mask size 4	1	
	Face mask size 5	1	
	Mapleson C (Water's) circuit	1	
	Capnography sampling line	1	
	Catheter mount	1	
	HME filter	1	
	Tube clamps	1	
Suction	Yankauer suction tube	1	If not attached to portable suction unit
	Suction catheter 12Fr	2	
	Suction catheter 14Fr	2	
	Suction tubing	1	
Circulation	Disposable tourniquet	2	
	Alcohol wipe	5	
	22G cannula	2	
	20G cannula	2	
	18G cannula	2	
	16G cannula	2	
	IV dressing	4	
	Large clear dressing	2	
	Gauze 5x5cm	2	
	Double microclave	2	Or whichever items are used within acute hospital on central / peripheral venous lines

Medication and fluid administration	2.5ml syringe	2	
	5ml syringe	2	
	10ml syringe	4	
	20ml syringe	4	
	50ml syringe	2	
	Drawing up needle	10	
	3-way tap	2	
	White bungs	10	
	Medication labels	Selection	Recommend two each of common induction, opiate, sedation, vasoactives
	Medication addition labels	2	
	Alcohol wipe	5	
	Blood administration set	1	
	IV fluid administration set	1	
	IV infusion set	2	
Miscellaneous	Small gloves (non-sterile)	4	
	Medium gloves (non-sterile)	4	
	Large gloves (non-sterile)	4	
	Tape	1 roll	Suitable plastic-backed tape (avoid Elastoplast and Micropore)
	Stethoscope	1	
	ECG dots	6 dots	
	Tuff-cut trauma shears	1	
Paperwork	Transfer paperwork	2	Intra-hospital may remain in patient notes or on EPR. Inter-hospital Critical Care Network forms must be included
	Laminated contents list	1	
	Emergency action cards including intubation, tracheostomy emergencies, etc.	1	May be laminated or access electronically

Appendix 3: Recommended minimum medication bag contents

- Recommended minimum medication bag contents to manage common events and emergencies during transfer. Hospitals may create a system whereby clinicians take additional items on a case-by-case basis. All medication should be placed in the bag to ensure secure, organised and rapid identification. Medication bags must be sealed with single-use easily breakable tags (a variety of systems are available).
- This list has been developed with the support of Intensive Care Society Pharmacy Professional Advisory Group using work from ACCTS[1], Thames Valley and Wessex Critical Care Network and other local sources.
- At times, there will be medication shortages, alternative preparations will be needed to be considered and communicated to the teams using medication bags.
- Note: it is uncommon for dedicated transfer bags to include controlled drugs. The addition of such medications (e.g. for ACCTS) adds significant legal and medicines management requirements which must be followed if these types of medications are added.

Medication	Number	Comments
Adenosine 6mg/2mL ampoules	4	
Adrenaline 1:1,000 (1mg/mL) ampoules	2	
Adrenaline 1:10,000 10mL pre-filled syringe	2	
Amiodarone 300mg/10ml pre-filled syringe or Amiodarone 150mg/3ml	2 4	
Atropine 600mcg/1mL ampoules OR Glycopyrronium 600mcg/3mL ampoules	2	One medication required - according to local policy
Atropine 3mg/10mL pre-filled syringe	1	
Calcium chloride 14.7% 10mmol/10mL or Calcium chloride 10% 6.8mmol/10mL pre-filled syringe or Calcium gluconate 10% 2.2mmol/10mL	1 1 5	One concentration required - according to local policy
Cyclizine 50mg /1mL ampoules	1	
Furosemide 50mg/5mL ampoules	2	
Glucose 50% 50mL vial Glucose 20% 100mL vial	1 1	One concentration required - according to local policy
Labetalol 100mg/20mL ampoules	6	
Levetiracetam 500mg/5mL ampoules	8	If carried to terminate seizures, loading dose is 60mg/kg up to a maximum of 4g
Magnesium sulphate 5g/10mL	1	
Metaraminol 10mg/1mL ampoules	2	
Naloxone 400mcg/1mL ampoules	2	

Noradrenaline 4mg/4mL ampoules or 4mg/50mL vials	2	
Ondansetron 4mg/2mL ampoules	2	
Propofol 1% 200mg/20ml	2	
Propofol 1% or 2%, 50mL or 100mL	1	Concentration and volume dependent on local policy. Consider 1% vials for induction of anaesthesia or bolus sedation
Rocuronium 50mg/5mL ampoules	4	If not stored in fridge, typically has 12 week expiry at room temperature. This will depend on the brand used Trusts may choose to carry atracurium in addition
Sodium chloride 0.9% 10mL presentation (ampoules or pre-filled syringes)	10	
Water for injection 10mL ampoules	10	
Fluids	**Number**	**Comments**
Crystalloid 250-500mL	2+	Choice dependent on local policy. Sodium chloride 0.9% has advantage of being a diluent as well, if required
Glucose 5% 250mL	1-2	
Sodium chloride 2.7% or 5% (500mL)	1	Concentration according to local policy or regional transfer/neurosurgical guidelines
Miscellaneous	**Number**	**Comments**
Medication additive labels	10+	
Laminated contents list		Trusts may choose to have an ‘aide memoire’ for clinicians specifying common preparations. These must be approved by the Critical Care Pharmacy team prior to implementation

Appendix 4: Suggested Critical Care Network transfer minimum data set

- The ACCTS minimum mandatory data set was in development at the time of publication of this guideline. However, the following data points should be adopted by all Critical Care Networks so that sufficient operational details are captured to describe and track activity. An example of the South West Critical Care Network transfer record is included in Appendix 5 to illustrate the additional physiological parameters that could be incorporated[48].
- In time, all critical care transfer activity is anticipated to be captured via submission of an MMDS in order to build a detailed picture of national activity.

Category	Data point	Comments
Demographics	Name	
	Date of birth (or approximate age if not known)	
	NHS number	
	Gender	
Referring hospital	Hospital name	
	Location of patient	
	Referring specialty	
Receiving hospital	Hospital name	
	Destination of patient	
	Referring specialty	
Team	Transfer escort occupation 1 (doctor, ACCP, nurse, ODP, etc)	
	Transfer escort 1 grade/band	
	Transfer escort occupation 2 (doctor, ACCP, nurse, ODP, etc)	
	Transfer escort 2 grade/band	
Dates and times	Date of transfer	
	Time of onset of illness/injury	Enables tracking of time of onset to intervention
	Time of arrival at referring hospital	If onset pre-hospital
	Time receiving hospital contacted	
	Time receiving hospital accepted patient	
	Time transport booked (via ACCTS, 999 or Trust transport)	
	Time transport arrived	
	Time departing/ed referring hospital	
	Time arriving/ed receiving hospital	

Transfer details	Type of transfer: escalation of care, continuation of care, repatriation, capacity	
	Urgency: time critical, urgent, planned	
	Reason for transfer/diagnosis	
	Transport provider (ACCTS, 999 ambulance, Trust ambulance, air ambulance, HM Coastguard)	
	999 ambulance reference number	Facilitates incident management
Risk assessment outcome	High, medium, low	
Checklist compliance	Completed?	
Critical incidents	Did a critical incident occur (yes/no)	
	What type of incident (communications, equipment, organisational delay, patient-related/physiological deterioration, staffing, transport)	
	What degree of harm occurred (No physical harm, low physical harm, moderate physical harm, severe physical harm, fatal, no psychological harm, low psychological harm, moderate psychological harm, severe psychological harm)	

See example of transfer form on the next page. The original SWCCN form can be viewed at www.retrieve.nhs.uk/transferform.

Transfer Record

Contact Retrieve for all critical care transfers. Use this form to document any transfer not undertaken by Retrieve.

PATIENT DETAILS

Name .....

NHS No.....

DOB .....

Gender

Male ☐ Female ☐ Not known ☐ Other ☐

ESCORTING PERSONNEL

Clinician 1

Name .....

Profession ..... Speciality .....

Grade ..... Professional no. .....

Clinician 2

Name .....

Profession ..... Speciality .....

Grade ..... Professional no. .....

TRANSFER DETAILS

Date of transfer.....

Reason for transfer (see www.retrieve.nhs.uk/refer for definitions)

Escalation (time-critical) ☐ Repatriation ☐

Escalation (non-time-critical) ☐ Capacity ☐

Working diagnoses:

1)

2)

3)

Referring hospital (from): .....

ICU ED Ward Theatre Other

Named Consultant .....

Receiving hospital (to): .....

Accepting Consultant .....

Accepting speciality .....

Contact name/number .....

Exact destination in hospital .....

Physiological status

Airway

ETT ☐ Trache ☐ SV ☐

Tube size ..... Tube length .....

BVM Easy ☐ Difficult ☐ Impossible ☐

CL Grade 1 2 3 4

Circulation

Noradrenaline ☐ Adrenaline ☐

Dobutamine ☐

Other .....

IABP/Impella Pacing Wire

Breathing

FM ☐ HFNO ☐ NIV/CPAP ☐ IPPV ☐

FiO_2 ..... Pmax/IPAP ..... PEEP .....

RR ..... Vt ..... LPM .....

Drain L ☐ R ☐

Disability/neuro

Pre-sedation GCS E..... V..... M.....

Pupil size/reactivity L..... R.....

Blood sugar .....

Drugs already given:

Levetiracetam ☐ Phenytoin ☐

Hypertonic saline ☐ Mannitol ☐

Aspirin ☐ Nimodipine ☐

Infections

MRSA ☐ CPE ☐ VRE/GRE ☐ COVID ☐

Other .....

		$ETCO_2$
PCO_2		
pO_2		
BE		
Lac		
K^+		
Hb		
Glu		

Timeline

999 call		
Hospital arrival		
CT complete		
Intubation		
Receiving hospital contacted		
Receiving hospital accepted		
Retrieve contacted		
Transport arrived		
Departed referring hospital		
Arrived receiving hospital		

Checks (see over) - Must be completed before moving to vehicle

Risk assessment High ☐ Medium ☐ Low ☐

Checklist 1 & 2 complete ☐

Approximate O_2 requirements .....LITRES

Logistics (via Retrieve)

SWASFT ref

Land ambulance ☐ Search & Rescue ☐

Air ambulance ☐

DRUG													

TIME (use 24 hr clock)														
FLUIDS 1 2 3	220 200 180 160													
Please record **MAP** – **SBP** ∨ **DBP** ∧ **HR** • Every 5 mins	140 120 100 80 60 40													
SpO_2														
$ETCO_2$														
FiO_2														
Pmax/PEEP														
RR														
IVI														
U/O														
Pupils L														
R														
Temp														

LINES

Line	**Art**	**CVC**	**IV 1**	**IV 2**	**IV 3**	**Vascath**		
Site								
Size								
Day								

SPINE Precautions taken for spinal injury

☐ N/A ☐ Yes Details .....

SUMMARY OF TRANSFER (including comments/problems)

Clinician 1 name (please print) .....

Signature of Clinician 1 .....

CRITICAL INCIDENTS

Accidental extubation	☐	Pupil dilation	☐
Need for intubation	☐	Seizure	☐
Hypoxia	☐	Monitor fail	☐
Tension	☐	Pump fail	☐
Hypotension	☐	Ventilator fail	☐
Hypertension	☐	Oxygen exhaustion	☐
Arrythmia	☐	Vehicle breakdown	☐
Cardiac arrest	☐		

Other .....

.....

Please complete incident form on return to hospital

COMMENTS OF RECEIVING DOCTOR

Dr's name (please print) ..... Signature of Receiving Doctor .....

Please file red copy in receiving hospital patient notes, return blue copy to SWR Base, Unit 350 Quadrant Trading Estate, Ash Ridge Road, Bradley Stoke, Bristol BS32 4QA

Checklist 1 - Is the patient prepared for transfer?

Airway/breathing

- ☐ ETT/tracheostomy secure?
- ☐ Tube clamp?
- ☐ Tracheostomy spares (inner cannula, brushes, humidification, speaking valve, spare tube)?
- ☐ Lung protective ventilation?
- ☐ CXR checked?
- ☐ Pneumothoraces treated (underwater drain)?

Circulation

- ☐ IV access (minimum x2) secure (ideally on right)?
- ☐ Arterial line (if intubated/vasopressor requirements AND time allows)?
- ☐ Blood transfusion required en route? (must be in transport box from blood bank)

Neuro

- ☐ Neuroprotection for presenting condition (see boxes opposite)
- ☐ Seizures managed?
- ☐ ICP crisis management considered?
- ☐ Spinal protection as indicated?

GI/GU

- ☐ NGT required/checked?
- ☐ Urinary catheter (all intubated patients)?
- ☐ Anti-emetic considered (all awake patients)?

Medications

- ☐ Allergy status known?
- ☐ Acute antibiotics administered?
- ☐ Acute medications administered (e.g. nimodipine)?
- ☐ Prepare minimum infusions/drugs:
  - All infusions for x3 expected duration of transfer
  - Rocuronium 1-2mg/kg
  - Metaraminol 10mg/20ml (or noradrenaline)

Packaging considerations

- ☐ Use dedicated transfer trolley wherever possible
- ☐ Active/passive heat conservation?
- ☐ Core temperature probe?
- ☐ 30 degrees head-up if not contraindicated?
- ☐ Pelvic binder/femoral traction as indicated?
- ☐ Wounds dressed?
- ☐ 2x ID bands?
- ☐ Monitoring minimums:
  - ECG, SpO_2, NIBP for all
  - $ETCO_2$ +/- ABP for all intubated patients

Admin

- ☐ Notes and transfer letter copied?
- ☐ Drug chart copied?
- ☐ Blood results/micro results copied?

Checklist 2 - Are you ready to leave the hospital?

Patient condition

- ☐ Pre-departure ABG (esp note sugar and $PaCO_2$ vs current $ETCO_2$)
- ☐ Sedation, analgesia and muscle relaxation adequate?
- ☐ Check pupils and GCS

Communication

- ☐ Patient and/or NOK aware of transfer and destination?
- ☐ Receiving hospital aware of imminent departure and confirm bed still available
- ☐ Confirm exact destination and give ETA
- ☐ Confirm best contact number for receiving clinician

Logistics

- ☐ Return travel confirmed for the team?
- ☐ How will equipment get back?
- ☐ Have images been successfully transferred via PACS?

Team Personal Check

- ☐ Clothing/footwear suitable?
- ☐ Phone/battery charged?
- ☐ Other duties handed over?
- ☐ Bladder empty?

Checklist 3 - Are you ready to move? (in ambulance)

- ☐ Driver knows destination and urgency?
- ☐ Transfer equipment and bag secure?
- ☐ Drugs-emergency and routine aboard?
- ☐ Devices plugged in and charging?
- ☐ Oxygen from ambulance main supply?
- ☐ Patient and trolley secure?
- ☐ Team all seat-belted?

Oxygen consumption

Litres required (MV + bias) x 2(minutes duration of transfer)

[Bias: Hamilton T1 = 3LPM, Oxylog 3000/3000+ = 0.5LPM]

For other calculations, inc NIV/HFNO, see Retrieve oxygen calculator: **www.retrieve.nhs.uk/SOPs**

Transfer Risk Assessment Tool

Patient condition	Risk category	Escort requirements
Maintaining airway, FiO_2 <0.4 No inotrope/vasopressor support GCS 14-15 (stable for at least 60 mins) Base deficit 0 to -4 mmol/L Normothermic NEWS2 1-4	Low	Clinical practitioner with appropriate competencies (nurse, ODP, etc)
Maintaining airway, FiO_2 <0.6 Low-dose inotrope/vasopressor support GCS 9-13 (consider intubation) Base deficit -4 to -8 mmol/L Mild hypo-/hyperthermia NEWS2 5-6	Medium	Clinical practitioner with appropriate competencies (nurse, ODP, etc) **PLUS**
Intubated/tracheostomy Invasive ventilation FiOz >0.6 CVS unstable/requiring higher dose inotrope/vasopressor Base deficit worse than -8mmol/L NEWS2 ≥7	High	Doctor (ST3/equivalent) with advanced airway competencies or ACCP with FICM membership and completion of the Advanced Airway Management AASF and Inter-hospital Transfer AASF

NEUROPROTECTIVE STRATEGIES

- **Physical:**
  - Head up 30° and neutral head position
  - Check tube ties
  - Untape and check pupils every 15 mins
- **Ventilation:**
  - PaO_2 10-13kPa
  - $PaCO_2$ 4.5-5.5kPa

Blood pressure:

- Assume ICP 20
- CPP 60-70 will be achieved with a
- MAP of 80-90mmHg

- **Sedation:** RASS-5
- **Blood sugar:** 6-10mmol/L
- **Serum sodium:** 140-155mmol/L
- **Temperature:** <37.5°C
- **Seizure prophylaxis:** 1g levetiracetam BD

DRUGS FOR RAISED ICP CRISIS

- **Sedation bolus:**
  - 10-20mg propofol
  - 1-2mg midazolam
- **Analgesia bolus:**
  - 50-100mcg fentanyl
  - 0.5-1mg alfentanil
  - 1-2mg morphine
- **Muscle relaxant bolus:**
- 50mg atracurium or rocuronium
- **5% sodium chloride:** 3ml/kg

BP MANAGEMENT IN PAEDIATRIC TBI

- Treat with 10ml/kg 0.9% saline/plasmalyte or packed red cells
- $^2/_3$ maintenance fluids of 0.9% saline plasmalyte/Hartmann's

Age (years)	MAP (mmHg)
<1	>50
1-4	>60
5-11	>70
≥12	>80

Metaraminol:
Bolus: 10mcg/kg
Inf: Start at 0.25mcg/kg/min
(2.5ml/hr of weight-specific mix)

Noradrenaline (central line):
Start at 0.1mcg/kg/min
(1ml/hr of weight-specific mix)

www.watch.nhs.uk/drug-sheet/

	TBI inc. traumatic SAH	ICH/haemorrhagic CVE	Acute ischaemic CVE	Spontaneous SAH
BP (see blue box for paediatrics)	>110 <150 MAP >90	<150 within first 6hrs and pre-op	>140 - <185 if for/ received thrombolysis <220 if for thrombectomy or if 'lysis contraindicated	>110 - <160
$PaCO_2$	4.5-5.0kPa, brief period of 4.0-4.5kPa if impending herniation suspected			
Oxygenation	>13.0kPa	>13.0kPa	Aim SpO_2 >95%, supplemental O_2 only if <95%	>13.0kPa

Appendix 6: Pre-transfer risk assessment form

Updated version of the risk assessment tool from the 2019 guidelines[2]. This should be performed prior to any critical care transfer to guide the number and type of clinical escorts that are required.

Patient sticker	*Risk assessment must be completed prior to all inter- and intra-hospital critical care transfers*

To perform this risk assessment, assess the low/medium/high risk criteria. If patient parameters fall across risk categories, the higher category should be chosen. It is recognised that subjectivity and other factors not included may influence your perceived level of risk.

It is the responsibility of the referring consultant / senior clinician to ensure the appropriateness of transfer and that the escorting clinicians have the required training, competencies and experience.

Low Risk

Maintaining airway

FiO_2 <0.4

No inotrope/vasopressor support

GCS 14-15 (stable for at least 60 mins)

Base deficit 0 to -4mmol/L

Normothermic

NEWS2 1-4

Clinical practitioner with appropriate competencies (Advanced Critical Care Practitioner, critical care nurse, etc)

☐ Tick if yes

Medium Risk

Maintaining airway

FiO_2 <0.6

Low-dose vasopressor support

GCS 9-13 (consider intubation)

Base deficit -4 to -8mmol/L

Mild hypo-/hyperthermia

NEWS2 5-6

Advanced Critical Care Practitioner (Critical Care Nurse, ODP etc)

PLUS

Doctor with advanced airway competencies or Advanced Critical Care Practitioner (with FICM membership and completion of the Advanced Airway Management AASF and Inter-hospital Transfer AASF)

☐ Tick if yes

High Risk

Intubated/tracheostomy

Invasive ventilation

FiO_2 >0.6

CVS unstable / requiring higher dose vasopressor

Base deficit worse than -8mmol/L

NEWS2 >7

Major trauma

Advanced Critical Care Practitioner (Critical Care Nurse, ODP etc)

PLUS

Doctor with advanced airway competencies or Advanced Critical Care Practitioner (with FICM membership and completion of the Advanced Airway Management AASF and Inter-hospital Transfer AASF)

☐ Tick if yes

Name of clinician undertaking risk assessment:	
Designation:	**Signature:**
Date:	**Time:**

Appendix 7: Examples of intra-hospital transfer checklists

This intra-hospital checklist has been adapted from a number of local checklists in use across the country.

Preparation checklist

		CHECKED?
Team	Risk assessment completed?	
	Escorting team identified and available 20-30 minutes prior to departure time?	
Airway/Breathing	ETT / tracheostomy secure?	
	Tracheostomy spares (inner cannula, brushes, humidification, speaking valve, spare tube)	
	Lung protective ventilation	
	Oxygen calculation: Litres required = (MV + bias) x 2 (minutes duration of transfer) Bias: Oxylog 3000 0.5LPM; Hamilton T1/MR1 3LPM	
Circulation	IV access (minimum x2) secure?	
	Arterial line inserted and transduced (do not delay immediate imaging for this)	
Neuro	Neuroprotection optimised? What is the starting ICP?	
	Does patient require additional sedation / analgesia / paralysis?	
	Spinal precautions required?	
GI/GU	Is NG required?	
	Feed stopped and insulin infusion stopped?	
	Urinary catheter	
Medication	Acute medications administered (e.g. nimodipine)?	
	Prepare infusions for 2x transfer time (assume 60 minutes for CT)?	
	Is any additional medication required (paralysis, vasopressor, etc)?	
Packaging	Temperature management – sheet +/- blanket?	
	30 degrees head up?	
ID	ID wrist bands x2?	
Monitoring	ECG, SpO_2, NIBP for all Capnography +/- invasive arterial BP for intubated	
	Monitoring cables tied together to create umbilicus?	

Ready to leave checklist

		CHECKED?
Team	Escorting team present?	
	Team brief conducted?	
	Anticipated problems discussed?	
Patient Condition	ABG seen (note BM, $PaCO_2$ vs $ETCO_2$)?	
	Sedation, analgesia, paralysis adequate?	
	Check pupils	
Patient Equipment Transfer Trolley	Attached to bed	
	Transfer Bag present?	
	Transfer Medications Bag present?	

Appendix 8: Examples of inter-hospital transfer checklists

- This checklist has been adapted from the South West Critical Care Network transfer documentation[48]. It helps clinical escorts confirm patient preparation and then subsequent readiness for departure.
- Some ACCTS have preparation checklists to help referring hospital teams prepare a patient for transfer[47]. The content of all of these is very similar.

Checklist 1: Is the patient prepared for transfer?

		CHECKED?
Team	Risk assessment completed?	
	Escorting team identified and available 20-30 minutes prior to departure time?	
Airway/Breathing	ETT / tracheostomy secure?	
	Tracheostomy spares (inner cannula, brushes, humidification, speaking valve, spare tube)	
	Lung protective ventilation	
	CXR checked?	
	Pneumothoraces treated (underwater drain)?	
	Oxygen calculation **Litres required** = (MV + bias) x 2 (minutes duration of transfer) Bias: Oxylog 3000 0.5LPM; Hamilton T1/MR1 3LPM	
Circulation	IV access (minimum x2) secure (ideally on right of patient)?	
	Arterial line inserted and transduced (if intubated/vasopressor requirements AND time allows)?	
	Blood transfusion required en route (units must be in transport box from transfusion lab)?	
Neuro	Neuroprotection required for presenting condition? ICP crisis management plan considered?	
	Seizures managed?	
	Does patient require additional sedation / analgesia / paralysis?	
	Spinal precautions required?	
GI/GU	Is NG required/checked?	
	Feed stopped and insulin infusion stopped?	
	Urinary catheter (all intubated patients)	
	Anti-emetic considered (all awake patients)?	
Medications	Allergy status known?	
	Acute medications administered (e.g. antibiotics, nimodipine)?	
	Prepare infusions for 2x transfer time?	
	Is any additional medication required (paralysis, vasopressor, etc)?	

Packaging	Use dedicated transfer trolley wherever possible	
	Temperature management – sheet +/- blanket?	
	Core temperature probe?	
	30 degrees head up if not contraindicated?	
	Pelvic binder/femoral traction as indicated?	
	Wounds dressed	
ID	ID wrist bands x2?	
NOK	Patient and/or NOK aware of transfer and destination?	
Monitoring	ECG, SpO_2, NIBP for all Capnography +/- invasive arterial BP for intubated	
	Monitoring cables tied together to create umbilicus?	
Admin	Notes and transfer letter copied?	
	Medication chart copied?	
	Blood results/micro/radiology copied/sent?	

Checklist 2: Are you ready to leave the hospital?

		CHECKED?
Patient condition	Pre-departure ABG (note glucose and $PaCO_2$ vs current $ETCO_2$)	
	Sedation, analgesia and paralysis adequate?	
	Check pupils and GCS	
Communication	Confirm receiving hospital bed still available	
	Confirm exact destination, best access and give ETA	
	Confirm best contact number for receiving clinician	
Team	Team brief conducted?	
	Anticipated problems discussed?	
	Clothing/footwear suitable?	
	Other duties handed over?	
	Bladder empty?	
Logistics	Phone charged?	
	Transfer bag present?	
	Medications bag present? Are there any additional medications required for this patient?	
	Return travel confirmed for team?	
	How will equipment get back?	

Checklist 3: Are you ready to move in the ambulance?

		CHECKED?
Driver	Destination confirmed – hospital and access point?	
	Urgency communicated (time critical, urgent, planned)?	
Equipment	Transfer equipment and bag secure?	
	Transfer medications bag aboard?	
	Devices/trolley plugged in and charging?	
	Oxygen from ambulance main supply	
	Patient and trolley secure?	
Team	All seats belted?	

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