GIG CYMRU NHS WALES

Rhwydwaith Gofal Critigol, Trawma a Meddygaeth Frys

Critical Care, Trauma and Emergency Medicine Network

RE-DESIGNED FOR LIFE

Guidelines for the Transfer of the Critically Ill Adult

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Appendices

List of Abbreviations

ACCP	Advanced Critical Care Practitioner
ACCTS	Adult Critical Care Transfer Service
CAA	Civil Aviation Authority
CCP	Critical Care Practitioner
CC3N	Critical Care National Network Nurse Leads Forum
CCTEMN	Critical Care, Trauma and Emergency Medicine Network
CEN	European Committee for Standardisation
ECCH	EMRTS Critical Care Hub
EMRTS	Emergency Medical Retrieval & Transfer Service
GPICS	Guidelines for the Provision of Intensive Care Services
HEMS	Helicopter Emergency Medical Service
ICS	Intensive Care Society
JRCALC	Joint Royal Colleges Ambulance Liaison Committee
ODP	Operating Department Practitioner
PACU	Post Anaesthetic Care Unit
RSI	Rapid Sequence Induction
RTP	Retrieval & Transfer Practitioner
SOBA	Society for Obesity & Bariatric Anaesthesia
UCS	Urgent Care Service
WAACT	Wales Air Ambulance Charitable Trust
WASUNT	Welsh Ambulance Services University NHS Trust

Executive Summary

These guidelines have been produced by the Adult Critical Care Transfer Service in cooperation with the Critical Care, Trauma and Emergency Medicine Network, following two previous editions of similar guidance. As with the previous guidelines, the intention is to provide colleagues with up-to-date information and advice to promote high standards of care during the transfer of critically ill patients within Wales.

There has been a demonstrable change in adult critical care transfer since the COVID-19 pandemic throughout the UK with the commissioning of specialist transfer services and the professionalisation of transfer medicine. These guidelines therefore have significantly evolved from previous versions to reflect the shift away traditional transfers by local hospital staff on frontline ambulance vehicles. However, they provide guidance for these transfers when they must happen.

Summary of Recommendations

1. The decision to transfer a critically ill patient should be taken at consultant level. This decision must weigh the individual risk and benefits for the patient in question.
2. Specialist transfer clinicians may be best placed to aid in quantifying risk of transfer where necessary to support local clinicians in decision making.
3. Patients and their relatives must be informed as promptly of possible regarding the decision and rationale for transfer and involved in the decision where appropriate.
4. The decision to accept a transfer lies with the senior physician at the receiving site, followed by the senior transfer clinician after bedside assessment of the patient.
5. Once a decision to transfer has been made, a clear categorisation of the urgency of transfer must be established and documented in line with defined timeframes.
6. All health boards and independent hospitals must ensure that staff have access to dedicated transfer equipment that provides monitoring at least the same standard as the referring hospital or base unit.
7. Standardisation of transfer equipment must be used wherever possible to maintain familiarity for rotational medical staff. All transferring staff must be competent to operate and troubleshoot transfer equipment.
8. Standardised transfer equipment must be carried in dedicated transfer bags, with appropriate manual handling and cleaning procedures.
9. All medical equipment associated with or attached to the patient must be securely mounted, in compliance with CEN regulations.
10. Any trolley or stretcher used for interhospital transfer must allow secure fastening of the patient via a 5-point harness and secure fastening to the floor of the transferring ambulance.
11. Oxygen consumption must be calculated and documented prior to undertaking transfer and communicated on request of transfer asset.
12. Where oxygen requirements exceed the standard WASUNT configuration, a specialist transfer asset must be considered. Additional loose oxygen cylinders must not be used.
13. Temperature monitoring and external warming devices should be considered to avoid patient hypo- or hyperthermia.
14. Health boards and independent hospitals must ensure that transfer equipment is kept charged and is regularly checked by clinical staff and medical engineering.

15. Transferring staff should have access to appropriate footwear and warm dry clothing, including a high-visibility jacket compliant to BS EN 471, a head torch, a mobile telephone, fluids and money

16. If requesting an ambulance service vehicle, hospital staff should indicate the requirement for transfer, the urgency and the potential for blue light driving. They should not specify a paramedic to crew the vehicle.

17. The optimal team to conduct an interhospital critical care transfer is a specialist clinician and assistant, with extensive training, as part of a specialist transfer service

18. Hospital staff conducting transfers should be selected by the responsible clinician at the referring site, based on appropriate training and experience

19. All hospital staff performing transfers must have received dedicated transfer training, which must be current, such as the All-Wales Transfer Course

20. A suitable airway clinician must be continuously present at the patient's side for transfer of all ICS level 3 patients. They must be trained to stage two level of training l or equivalent

21. A transfer assistant must be a registered healthcare professional with at least 2 years' experience, must be competent to CC3N Step 2 section 2.7, or equivalent and must have competence to assist in RSI

22. Integration of the clinical and logistical elements of transfer is best undertaken by a dedicated clinician acting as a transfer coordinator

23. An accepting consultant at the destination hospital must always be identified prior to transfer. The referring consultant is responsible for achieving this

24. A core set of information should be recorded for every transfer including referring and accepting clinicians & locations, rationale for transfer & urgency, observations and medications administered

25. All hospitals must have capacity to resuscitate critically ill patients, and thorough stabilisation should be aimed for prior to transfer unless clinical urgency limits this

26. Use of blue lights is at the discretion of the ambulance crew, informed by the clinical urgency of the case as judged by the senior transferring clinician

27. Transferring staff should remain seated and secured with seat belts. Where clinical change necessitates intervention in transit, the ambulance should stop in a safe location to permit this

28. Ambulance staff will lead unplanned disembarking from the ambulance. Transferring staff should don high visibility jackets in this situation

29. A handover should occur at origin and destination, in an appropriately quiet location, consisting of an exchange of both verbal and written information

30. Hospital teams should complete the CCTEMN carbon paper transfer form and email ‘emrts.records@wales.nhs.uk or post to EMRTS for all completed transfers

31. Intrahospital transfers require the same standard of training, experience and monitoring as interhospital transfers. A dedicated transfer trolley is not required

32. Intrahospital transfer for MRI imaging represents an additional level of skill and complexity requiring specialist training and local sign-off

33. Independent hospitals must maintain a written policy for stabilisation and transfer of a patient who becomes critically unwell on their site

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Introduction, transfer arrangements & decision-making

1. Introduction

The Adult Critical Care Transfer Service, in cooperation with the Critical Care, Trauma and Emergency Medicine Network, strives to plan and deliver guidance and promote excellence for critical care in the country along with other health care bodies. These guidelines attempt to rationalise advice from a number of sources and also incorporates the unique challenges facing delivery of critical care in Wales.

It is important, when discussing critical care, to understand the complexities of the various levels of care. A précised version of the ICS levels of care is set out in Appendix 1. These guidelines apply to patients receiving critical care (ICS levels 2-3) and enhanced care (ICS level 1) together. Level 1 patients have a demonstrable risk of deterioration in transfer, benefiting from the same standards as patients receiving additional organ support. Patients with major trauma fit within the scope of these guidelines, based on their ICS level of care.

These guidelines pertain to all patient transfers outside of the critical care department, be it an internal (intra-hospital) transfer for example, to the CT scanner, or an inter-hospital transfer to another hospital; termed secondary transfers. Such transfers may originate from the Critical Care Unit, the Emergency Department, and other clinical areas in some circumstances. Primary transfers from the scene of illness or injury (outside of hospital) are termed primary transfers and are the exclusive remit of prehospital services – WASUNT and EMRTS.

The safe and efficient transfer of a critically ill patient requires co-ordination with many elements of the health service and other bodies with the common goal of providing patients with uninterrupted high-quality care. With the operation of two specialist, commissioned services providing interhospital critical care transfer within the Wales Critical Care Network, it is anticipated that transfer by hospital staff will be by exception, if no specialist asset is available, and the transfer cannot be deferred.

This document attempts to standardise the process of transfer by identifying the individual needs of the patients and clarifying roles, responsibilities and capabilities of the transferring teams.

2. Transfer arrangements within the Critical Care Network and Health Boards

The Critical Care, Trauma and Emergency Medicine Network, Health Boards, WAST, and specialist transfer services must work in close collaboration to achieve the common goal of safe transfer of critically ill patients.

Each Health Board is required to nominate a physician and a practitioner with relevant training and experience and an expressed interest in transfer and retrieval medicine to represent their department as a link clinician for transfer medicine. Through engagement with ACCTS Cymru and the CCTEMN these individuals will ensure that their department is meeting the requirements for safe transfer including staff training and equipment. They will aid in aligning their departments with the latest research and guidance in transfer medicine.

3. Adult Critical Care Transfer Service (ACCTS) Cymru

ACCTS provides uninterrupted, high-quality, patient-centred care for critically ill adults requiring interhospital transfer; be that uplift of care, repatriation or strategic management of critical care network capacity.

ACCTS provide a specialist coordinating clinician as a single point-of-contact for all transfer requests, providing clinical support and advice, as well as chairing the daily critical care network sitrep meeting. Additionally, they provide several transfer teams from a dedicated group of personnel encompassing senior transfer physicians, specialist transfer practitioners and support staff.

ACCTS can support transfer of the full range of critically ill patients, including high flow nasal oxygen, non-invasive ventilation, aortic balloon pump counterpulsation, transvenous pacing and other therapies. They also routinely operate over long distances and facilitate inter-network transfers for patients entering and leaving Wales for treatment. Their bespoke training, equipment and vehicles represent an uplift in capability when compared to legacy transfers by local hospital teams.

ACCTS teams deploy predominantly by road in dedicated critical care ambulances but also possess the training and operational capability to utilise rotary wing and fixed wing aircraft to perform selected transfers. The appropriate transfer platform will be selected by the ACCTS team after acceptance of a transfer request.

The EMRTS Critical Care Hub (0300 123 2301) is the first point of contact for ACCTS and EMRTS transfers. An overview of the ACCTS and EMRTS referral process can be found in Appendix 2

4. Emergency Medical Retrieval and Transfer Service (EMRTS) Cymru

EMRTS provide a consultant-led service across Wales for pre-hospital critical care and time-critical secondary transfer of critically ill and injured patients in Wales. Working in conjunction with WAACT, EMRTS provide the HEMS service for Wales and can deploy teams by air or road from 4 locations by day and from Cardiff overnight. These teams are a mix of physician-led and practitioner-led teams both providing advanced interventions above the scope of the JRCALC guidelines.

EMRTS teams are dispatched by clinicians working in conjunction with WAST ambulance control at the ECCH, supported by a dedicated top-cover consultant. The decision to deploy an EMRTS team on transfer is made by the ECCH and top cover consultant, and must weigh the needs of the patient, the available resources the geography and the primary prehospital demands on the service at that time. The team will deploy on the appropriate transport platform based on a number of considerations. In the event that an EMRTS team is not deployed, the ECCH or the top cover consultant can advise the referrer on the appropriate referring asset and process for their patient.

WAACT aircraft deploy with EMRTS or ACCTS clinicians on board. The aircraft may not be requested separately without their clinical team, or in the event that the clinical team are unavailable. Air transfer is a specialist skill requiring planning and additional training and is limited to the specialist transfer teams operating in Wales at the time of these guidelines.

The EMRTS Critical Care Hub (0300 123 2301) is the first point of contact for ACCTS and EMRTS transfers. An overview of the ACCTS and EMRTS referral process can be found in Appendix 2

5. Decision to transfer and ethics

The decision to transfer a critically ill patient should be taken at consultant level. This decision must take into consideration the risks and benefits for individualised patient care. If potential risks outweigh the potential benefits, then transfer should not take place. However, the systemic professionalisation of transfer medicine has significantly improved the safety profile of interhospital transfer. Serious consideration must be given to the quality of care provided in a non-specialist or over-capacity unit when deeming a patient too unwell to transfer.

Given the complexity of the critical care patient cohort, specialist transfer clinicians may be best placed to assist local clinicians in quantifying transfer risk and supporting the decision to transfer. Multidisciplinary discussions about cases involving the regional ACCTS coordinator and transfer clinician should be facilitated where required via the ECCH

Once a decision to transfer is made, contact with the receiving department must be made at a senior medical level. Additionally, the patient (if they have capacity) and their relatives must be informed as early as possible of the decision to transfer and the reasons behind the decision. The final decision to accept a transfer lies with the consultant at the receiving unit. Additionally, the decision to proceed with a transfer lies with the senior clinician within the transfer team after assessing the case at the patient's bedside.

There are three reasons for transferring the critically ill patient:

1) Transfer for specialist care and investigation

This is often an emergency where efficient transfer is essential for treatment which cannot be provided in the base hospital.

Some patients however may be classed as needing 'urgent' transfer for example when life or limb saving treatment is not immediately required, but definitive care for their condition is unavailable at their current location

2) Transfer for capacity reasons

These transfers involve moving patients to other hospitals to allow equitable access to critical care across a geographical area. Capacity transfers are necessary when demand for critical care beds, staffed to GPICS standards, outstrips supply. This may occur on a local, regional, or national scale.

An ethical decision needs to be made whether to transfer a stable patient already in the critical care unit or an undifferentiated patient from outside the critical care footprint. When weighing the decision, many factors should be considered, including the needs of the patient and the demands of both the institution without capacity and the institution providing mutual aid. While it might seem logical to transfer the patient outside the critical care footprint to a safer environment, transferring already stabilised patients from within critical care carries less clinical risk.

Before requesting a capacity transfer, a critical care unit should work through their locally agreed ***escalation steps***. These steps may include, but are not limited to:

1. ***Contacting a nursing agency*** to increase staffed bed capacity.
2. ***Cancellation of elective surgery*** to free up beds.
3. ***Discharge planning meetings*** between medical, nursing, and bed management staff.
4. ***Prioritising critical care discharges*** over emergency department admissions.
5. ***Temporary use of surge areas*** such as PACU, recovery, resuscitation, and theatres.
6. ***Escalation to strategic level within the organisation*** consideration of declaring a state of business continuity.
7. ***Diverting patients requiring tertiary services*** to other tertiary sites (e.g., major trauma, vascular, cardiothoracic, neurosurgery).
8. ***Flexible use of specialist critical care beds*** (e.g., burns, cardiac, paediatric) with mutual agreement.

Management of a prolonged surge in activity, including alteration to GPICS standards, is outside the scope of this document and should be managed according to local and national guidelines. The Intensive Care Society and Faculty of Intensive Care Medicine believe that planned surgery capacity transfers are not a sustainable alternative to an appropriate increase in adequately funded and staffed critical care (Level 2 and 3) and enhanced care (Level 1) beds and as such should feed into regional commission discussion where appropriate.

3) Repatriation

These transfers are invariably to move a patient for care closer to home, whether returning from a specialist centre delivering tertiary input, or due to falling critically ill away from home. A full risk/benefit assessment must be made and documented by the responsible consultant to support the decision to transfer. Once a request is made for repatriation, this must be acted on ideally within 48 hours of request and this should normally take precedence over elective admissions to the unit. This helps preserve availability of tertiary services for the region, and good-will between units.

Once a decision to transfer has been made, a clear categorisation of urgency for arrival of the appropriate transfer assets must be established. If the transfer is being undertaken by WAST then the current Clinical Response Model standards apply. The following NHS England timeframes can be taken as a guide:

Category	Definition	Timescale
Time-Critical	A patient requiring transfer to specialist care for immediate (within 1 hour of arrival) life, limb or sight-saving intervention	As soon as possible Arrival in receiving hospital within 4 hours of referral
Urgent	A patient requiring transfer for ongoing time-sensitive management	Arrival in receiving hospital 4-12 hours from referral
Planned	A patient requiring transfer for elective intervention or ongoing care	Arrival in receiving hospital 12-48 hours from referral

Equipment & transfer platforms

6. Equipment: All transfers

All Health Boards and independent hospitals must ensure that staff have access to dedicated transfer equipment that provides monitoring to the same standard as the referring hospital or base unit. The standards of monitoring required, as described by the Association of Anaesthetists and Intensive Care Society are:

- Continuous observation
- Cardiac rhythm (ECG) monitoring
- Non-invasive blood pressure
- Oxygen Saturation (SaO_2)
- End tidal carbon dioxide ($ETCO_2$) in intubated/ventilated patients.
- Temperature

Intermittent non-invasive blood pressure measurement is sensitive to motion and vibration artefact and can be unreliable in a moving vehicle. It is also a significant drain on the battery supply of monitors. Continuous invasive blood pressure measurement, via an arterial catheter, should ideally be used as routine.

Transfer equipment should be standardised as much as possible, allowing medical trainees to remain familiar and current with equipment between training rotations around Wales. Certainly, the equipment used for transfers must mirror that in routine daily use to avoid the burden of additional training for staff. Staff involved in transfer must be competent in the use of all necessary equipment.

Supplementary equipment should be rationalised in dedicated medical bags available within each Health Board for the purpose of transfer. These bags should be durable and compliant with infection prevention & control guidance. The weight of the bags should not exceed HSE manual handling guidelines. All medical equipment attached to or associated with the patient must be mounted securely in compliance with CEN regulations.

A suggested contents list and layout for transfer bag equipment can be found in appendix 3.

7. Equipment: Road Transfer

ACCTS teams routinely respond with a dedicated critical care transfer vehicle, and their own bespoke equipment. On the rare occasion where a specialist team is unavailable, all WAST emergency and urgent care vehicles carry equipment for basic monitoring and resuscitation as standard. The equipment available on such ambulances is standardised independently of the clinical skill level of the crew.

A standard ambulance trolley is not recommended for secondary critical care transfer. Customised critical care trolleys have historically been provided by the CCTEMN, with fixings

compatible with WASUNT ambulances. With the advent of specialist critical care teams, transfer stretchers with a variety of mounting options are now available, addressing some of the limitations of the legacy trolleys. An overview of the transfer trolley configuration utilised by ACCTS can be found in appendix 4. Any trolley or stretcher used for interhospital transfer must allow secure fastening of the patient via a 5-point harness, be securely mounted within the transfer ambulance, and allow secure mounting of all necessary medical equipment and gas cylinders.

Oxygen supply, flow rate and length of journey must be considered and discussed with ambulance control if requesting a vehicle. WASUNT ambulances have secure fittings and pipework for two HX (2300L) oxygen cylinders and carry at least 2 supplementary ZD cylinders (600L). These cylinders must be checked prior to departure as they may have been used on previous assignments. Where oxygen demands exceed the standard configuration, a specialist transfer platform and team should be strongly considered, as these offer increased oxygen capacity (ACCTS ambulance) or decreased journey time (WAACT Aircraft). Additional loose oxygen cylinders should not be carried.

Battery life must be considered with all equipment, and hospitals must ensure transfer equipment is always suitably charged for use and appropriately checked by clinical staff and medical engineering. All new WASUNT emergency ambulances have 230V power. Power requirements can be checked and confirmed with ambulance control. Device alarms must be audible as well as visual, and the appropriate setting of these is the responsibility of the transferring clinicians.

Ambulance vehicles have environmental heating and cooling systems, but external warming and temperature monitoring should be considered according to patient condition and ambient weather conditions to avoid hypo- or hyperthermia. Transfer staff should similarly have access to appropriate warm, dry clothing which should include appropriate footwear, High-Visibility jackets (compliant with BS EN 471) and head torches. Staff should also have access to a charged mobile telephone, fluids for hydration and money when leaving hospital on transfer.

If requesting a WASUNT asset for an urgent transfer, requesters should clearly request a vehicle for transfer and indicate the urgency and the potential need for blue light driving. However, a paramedic crew should not be requested unless in exceptional circumstances. As the appropriate clinical team is provided by the hospital, a trained paramedic should not be required. An appropriate asset will be selected by WASUNT staff, which may be a UCS ambulance.

8. Equipment: Air Transfer

The process of integrating medical equipment with an aircraft is a complex process, regulated by the CAA and the aviation provider. Ultimately, the decision to allow any individual or piece of equipment onto the aircraft is the decision of the aircraft's captain who takes responsibility for the safety of the aircraft. Requirements for electrical safety, dynamic stress testing and weight are all significantly more rigorous than for land transfer, making ad-hoc air transfer with hospital equipment impractical. Similarly, staff require competency and currency with operating in the aircraft environment, effectively limiting this to specially trained teams.

EMRTS and ACCTS carry their own specialist equipment and will package patients themselves to ready them for air transfer. Similarly, WAACT aircraft have bespoke stretchers, powered equipment mounts and a medical gas system, with compatible electronic medical equipment including infusion pumps and monitoring. Aside from patient medication, it is unlikely that ACCTS or EMRTS teams will require material assistance from referring hospitals for aeromedical transfer. In the unlikely event that an air transfer is conducted by a hospital team, the principles of land transfer apply, with some considerations. Stretchers may not be carried, and a vacuum mattress is the ideal packaging medium for the patient. Continuous power supplies are not guaranteed, equipment must be rigorously secured, oxygen supply must be rationalised to be minimum weight, and environmental exposure to cold and noise is likely to be greater than in land ambulances. Search and rescue helicopters are further precluded from landing at certain hospital sites due to weight and size restrictions, so teams must be prepared for an additional land transfer on arrival.

9. Equipment: Bariatric Transfer

Transfer of the critically ill patient living with obesity represents additional complexity. Airway management, ventilation, vascular access, sedation, temperature and pressure area management along with drug dosing are all recognised to present additional challenges in this patient population. The CCTEMN legacy critical care transfer trolley represents a potential barrier to the transfer of patients living with obesity due to its standard design.

ACCTS have developed a unique bariatric transfer stretcher which is available to patients across Wales for timely transfer. Furthermore, the ACCTS specialist ambulances have been designed to accommodate this stretcher while providing a winch-based loading mechanism and 360-degree access to embarked patients. Potential requirement for bariatric equipment should be discussed with the coordinator at time of referral. Bariatric transfer represents additional clinical risk and should be limited to specialist transfer teams unless not permitted by clinical urgency and availability of an appropriate team. Additional information including a drug calculator can be obtained from SOBA: ***www.sobauk.co.uk***

Personnel, procedures & training

10. Personnel

The optimal team configuration is composed of a pair of clinicians with extensive experience and training as part of dedicated transfer services. These teams may be led by physicians or practitioners as appropriate. The transfer team should be supported by another remote clinician, providing coordination and objective oversight of the transfer process.

Where this is not available due to operational/logistical reasons and the transfer cannot be reasonably deferred, the following staffing standards should be adhered to for transfer of critically ill patients:

- Two clinicians must be continuously at the patient's side for all critical care transfers.
- For level 3 transfers, at least one clinician must be a designated and suitably trained airway clinician (see below)
- They must be suitably experienced in the care of the critically ill patient
- They must have received suitable and contemporaneous training in transfer
- They should be selected by the responsible clinician at the hospital who will decide on the appropriate escort according to:
    - The clinical condition of the patient
    - Likelihood of deterioration during transfer
    - Potential for requiring intervention during transfer
    - Mode of transfer
    - Duration of transfer

Specific requirements for transfer staff are as follows:

Airway Clinician

- Doctor, ACCP, RTP* or CCP* (*following sign-off by local ACCTS clinical lead)
- Stage 2 of specialist training in anaesthesia or ICM training, or equivalent
- Must have advanced airway skills
- Must have completed the All-Wales Transfer course or equivalent training.

Second Clinician

- Nurse, ODP, Paramedic or other experienced and qualified healthcare professional deemed appropriate by the responsible clinician.
- 2 years post registration experience
- Competent to CC3N Step 2 section 2.7, or equivalent
- Must have undertaken specific training to assist Rapid Sequence Induction (RSI)
- Must have completed the All-Wales transfer course or equivalent training.

The transfer of the critically ill is complex and requires timely interrogation and dispatch of transfer resources, the recommendations outlined below represent the recommendations within specialist transfer teams. With non-specialists transferring patients the local staff at the referring unit will continue to co-ordinate the transfer in association with WAST control.

Co-ordinator

- A registered healthcare professional
- Must have undertaken additional training in transfer and tasking
- Must have completed ACCTS Cymru/EMRTS co-ordinator competency pack
- Must have completed the All-Wales transfer course or equivalent training

11. Education and Training

Within Wales the core elements components of transfer training in the form of the All-Wales Transfer Course'. Clinical staff involved in the transfer of the critically ill patient should ensure that they attend this training every four years. Staff regularly involved in transfer and CPD or those acting as course faculty may be exempt from attendance if agreed by regional transfer lead or the ACCTS clinical lead.

To obtain certification, a candidate must:

- Complete pre-course reading
- Pass the ESR Module 000 NHS WALES – Transfer Course
- Attend the practical course
- Continually be assessed as working at a suitable level in their workplace

The one-day practical course is intended to consolidate the candidates clinical experience and knowledge, to allow them to undertaken transfers to a given standard. The day consists of a morning of equipment familiarisation and afternoon of Simulation. It is intended for candidates to leave with the skills to deliver a range of level 3 transfers safely.

There may be opportunities for appropriate candidates to spend time with ACCTS Cymru clinical teams in a supernumerary capacity. This would give them further practical experience to meet curriculum requirements in higher anaesthetics/ICM training and would be valuable to support an interest or career aspiration in transfer medicine.

12. Communication & Documentation

The delivery of efficient and high-quality transfers requires seamless integration between the clinical and logistical elements of patient care. Given the complexity of this process, it is best undertaken by a dedicated clinician acting as a transfer coordinator. The ECCH is best placed to allow integration of specialist teams, transfer coordinator and top-cover consultants, air and land assets, and acute hospitals. The ECCH therefore forms the single point of contact to access all specialist transfer services in Wales, both for clinical advice and

to arrange a transfer, and can facilitate conference calls to ensure efficient communication and decision making.

Good communication between and within referring and receiving hospitals is essential with patients, relatives, and transferring teams. The referring consultant should initiate communication directly with the receiving consultant at the destination hospital, and the patient must be accepted before the transfer can proceed. A consultant accepting responsibility for the patients care at the destination hospital must always be identified.

The patient (if they have capacity) and/or the relatives of that patient must be involved in the decision to transfer at the earliest opportunity. When transfer is arranged the patient's relatives must be informed of the destination hospital and department and given contact numbers and directions for that area.

A core set of information should be communicated and documented in the appropriate patient record, either the paper All-Wales Transfer Form or an electronic patient record:

- Patient name, Date of Birth and Hospital/NHS numerical identifier
- Indication for transfer and clinical status of patient
- Level of nursing care required (ICS Level 0-3)
- Urgency of transfer (Time Critical, Urgent Escalation, Planned)
- Names, specialities, grades and contact details of referring and receiving clinicians
- Destination hospital and department
- Mode of transport and identity of transfer team
- Observations and interventions during transfer
- Administered medications & infusions and test results
- Departure and arrival times

Transfers undertaken by ACCTS or EMRTS will have continuous communication with ECCH and access to the top cover consultant. For transfers undertaken by a non-specialist team, direct clinical advice should first be sought from the senior clinicians at the referring or receiving site. Specialist support may be sought from the ECCH in exceptional circumstances e.g. vehicle breakdown, death in transit.

13. Clinical Management

All acute hospitals must be able to initialise measures to stabilise and resuscitate critically ill patients. Thorough resuscitation and stabilisation of the patient should be aimed for before transfer, though this will depend on the resources of the referring hospital, and the urgency of the transfer. ACCTS and EMRTS can provide additional expertise in stabilisation and can resuscitate patients both prior to, and in transit where necessary.

The necessary resuscitation of a patient will vary on a case-by-case basis, but all patients should have an A-E assessment that includes the likelihood of deterioration en-route, and a systematic plan to address specific points of deterioration. Traditionally, arterial blood gas analysis was performed after transfer to a transport ventilator. Specialist transfer teams utilise both high-performance ventilators and point-of-care testing that no longer mandates this as routine practice. For hospital teams an assessment of adequacy of ventilation may include arterial blood gas sampling before departure, provided this does not result in a clinically significant delay.

Patients must be secured to the transfer trolley or stretcher by means of a 5-point harness, used in line with manufacturer's instructions, in all cases. The straps must be checked to avoid pressure damage, asphyxiation or impaired venous drainage, but must be tightened to prevent movement of the patient in transit. The stretcher itself must be securely fastened to the ambulance floor by means of dedicated brackets. Operation of dedicated tail lifts or winching equipment for loading and offloading from the ambulance should only be used by appropriately trained staff.

For the majority of cases, high speed travel is not necessary. The decision to use blue lights rests with the ambulance crew who will take advice from the senior clinician on the urgency of transfer. A police escort is not recommended, seldom adds benefit and may counterintuitively add risk to the ambulance journey. During road transfer staff must remain seated and wear seat belts. In the event that an intervention out-of-harness is needed, the transport vehicle should be stopped in a place of safety. Where staff move outside of the vehicle, high visibility clothing must be worn. Clinical staff must obey instructions from the ambulance crew on matters of safety at all times.

14. Handover

Handover should occur at both origin and receiving hospital and should include a verbal component and an exchange of written documentation. This handover should take place in a calm environment where both hospital and transfer team can give the handover their full attention.

In most cases the referring team will prepare a transfer or discharge letter, but for selected cases originating in the emergency department, a copy of the admission notes may be suitable. Handover must also include any adverse events during transfer which must be thoroughly documented.

ACCTS and EMRTS utilise an electronic patient care record (EPCR) which can be printed or emailed to the referring site and incorporates a medication administration and record and observations from patient monitoring. Hospital teams should utilise the CCTEMN transfer form, completed in its entirety and ensure the carbon copies are legible and should be distributed to the referring site, receiving site and a copy scanned and electronically sent via NHS Wales email for audit purposes to '***emrts.records@wales.nhs.uk***' or posted to EMRTS Records, Wales Air Ambulance, Llanelli Gate, Wales Air Ambulance Charity, Ffordd Angel, Dafen, Llanelli SA14 8LQ. It is the responsibility of both referring and receiving sites to ensure that transfer documentation is incorporated into the patients care record once received.

15. Audit & Quality Assurance

Audit is essential for quality assurance and all eligible transfers by any provider must be registered on the critical care transfer audit system, hosted by ACCTS and EMRTS. Cases are then audited against the standards according to data completeness, staffing, and clinical components. Individual electronic feedback will be distributed to transferring teams and local or service leads on a case-by-case basis. The national audit dataset will be analysed by the network and presented regularly to stakeholders. Undergoing the same process for all critical care secondary transfer across Wales provides clinical scrutiny and validation as well as optimising the governance process providing a means to ensure quality improvement.

16. Insurance & Indemnity

All staff undertaking NHS transfers for direct patient care are covered by the NHS Wales risk pool. Additional insurance is available if desired and maybe included in professional memberships such as the ICS or The Association of Anaesthetists.

17. Intrahospital Transfers

The minimum monitoring standards, training standards and experience of personnel apply to intrahospital as well as interhospital transfers. Given the lower relative velocity and shorter distances, use of a dedicated transfer trolley is not required. However, secure fastening of equipment to ensure integrity and function is still required, and equipment should not be placed on the patient's body.

Oxygen, medications and power remain limited resources which should be considered and calculated, particularly when transiting between floors in a lift, which may isolate the team in the event of a breakdown. Thorough resuscitation and stabilisation of patients prior to intrahospital transfer should be aimed for.

Intrahospital transfer represents an important opportunity for supervised transfer practice for junior clinicians, with opportunity to acquire and refine skills relevant to interhospital transfer.

Transfer into the MRI scanner represents a specific skillset above other intrahospital transfers with additional hazards. It mandates use of special MRI-compatible equipment and monitoring, and staff competence in conduct of anaesthesia within the field of the MRI magnet. Many radiology departments require safety training prior to working in MRI, which can be informed by the responsible MRI superintendent radiographer.

18. Independent Hospitals

All independent hospitals must have a written policy for the procedure of transferring a patient who becomes critically ill to another hospital. It is the responsibility of the independent hospital to ensure that this protocol is in place.

All independent sector hospitals must be able to commence resuscitation and stabilisation of critically ill patients with access to transfer equipment which meets the minimum standards.

Appendix 1 – Intensive Care Society Levels of Adult Critical Care

Ward Care

- Patients whose needs can be met through normal ward care in an acute hospital.
- Patients who have recently been relocated from a higher level of care, but their needs can be met on an acute ward with additional advice and support from the critical care outreach team.
- Patients who can be managed on a ward but remain at risk of clinical deterioration.

Level 1 – Enhanced Care

- Patients requiring more detailed observations, including basic support for a single organ system and those 'stepping down' from higher levels of care.
- Patients requiring interventions to prevent further deterioration or rehabilitation needs which cannot be met on a normal ward.
- Patients who require on going interventions (other than routine follow up) from critical care outreach teams to intervene in deterioration or to support escalation of care.
- Patients needing a greater degree of observation and monitoring that cannot be safely provided on a ward, judged on the basis of clinical circumstances and ward resources.
- Patients who would benefit from Enhanced Perioperative Care.

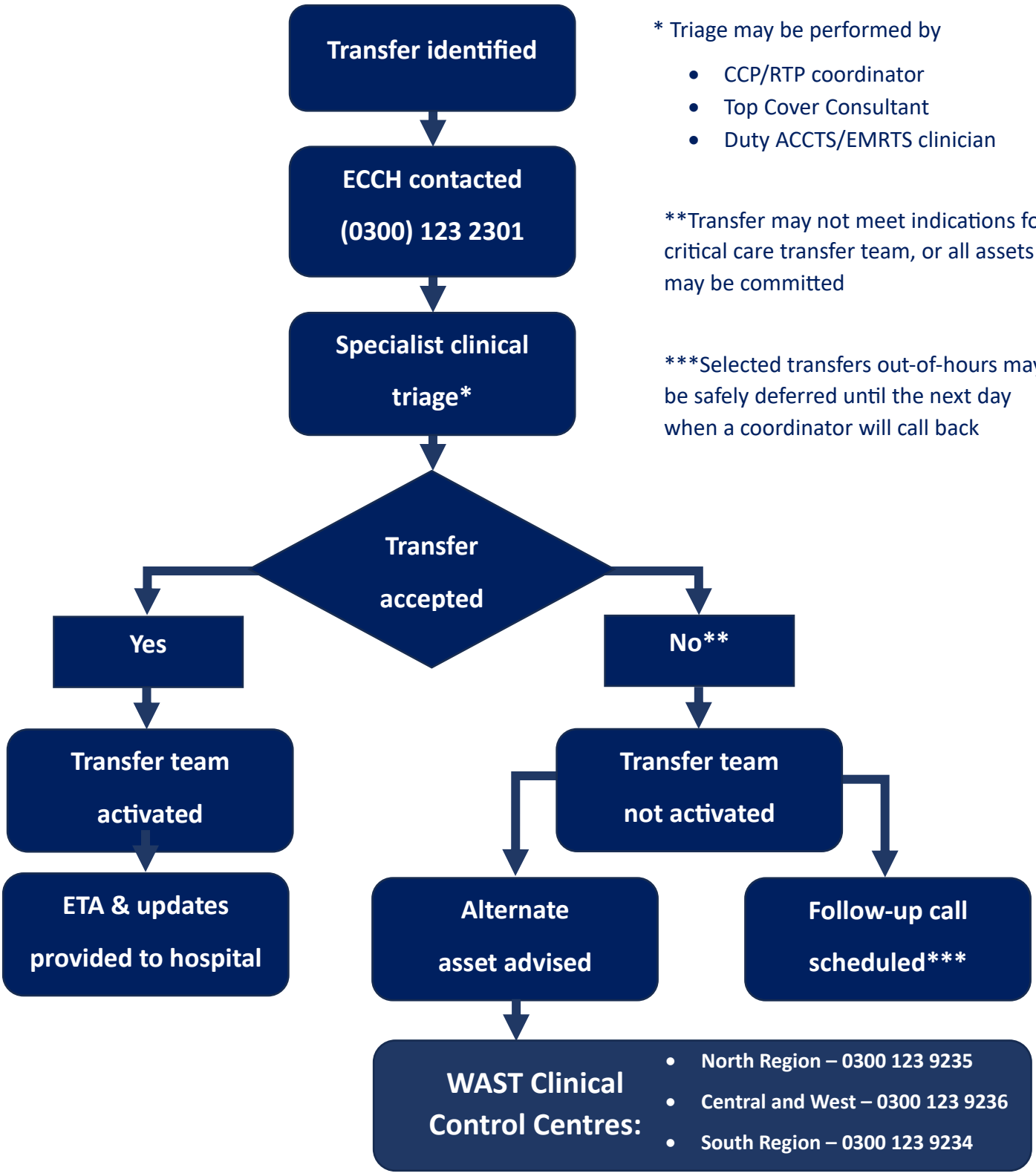
Level 2 – Critical Care

- Patients requiring increased levels of observations or interventions (beyond level 1) including basic support for two or more organ systems and those 'stepping down' from higher levels of care.
- Patients requiring interventions to prevent further deterioration or rehabilitation needs, beyond that of level 1.
- Patients needing two or more organ systems monitored and supported at an advanced level (other than advanced respiratory support).
- Patients needing long term advanced respiratory support.
- Patients who require level 1 care for organ support but who require enhanced nursing for other reasons, in particular to maintain their safety if severely agitated.
- Patients needing extended post-operative care outside that which can be provided in enhanced care units: extended postoperative observation is required either because of the nature of the procedure and/or the patient's condition and co-morbidities.
- Patients with major uncorrected physiological abnormalities, whose care needs cannot be met elsewhere.
- Patients requiring nursing and therapies input more frequently than available in level 1 areas.

Level 3 – Critical Care

- Patients needing advanced respiratory monitoring and support alone.
- Patients requiring monitoring and support for two or more organ systems at an advanced level.
- Patients with chronic impairment of one or more organ systems sufficient to restrict daily activities (co-morbidity) and who require support for an acute reversible failure of another organ system.
- Patients who experience delirium and agitation in addition to requiring level 2 care.
- Complex patients requiring support for multiple organ failures, this may not necessarily include advanced respiratory support.

Appendix 2 – Referral process for specialist transfer teams



* Triage may be performed by

- CCP/RTP coordinator
- Top Cover Consultant
- Duty ACCTS/EMRTS clinician

**Transfer may not meet indications for a critical care transfer team, or all assets may be committed

***Selected transfers out-of-hours may be safely deferred until the next day when a coordinator will call back

GIG CYMRU NHS WALES
Gwasanaeth Casglu a Throsglwyddo Meddygol Brys
Emergency Medical Retrieval & Transfer Service

ACCTS
Gwasanaeth Trosglwyddo Gofal Critigol Oedolion Cymru
Adult Critical Care Transfer Service Cymru

Appendix 3 – Suggested supplementary equipment for transfer

Quantity	Airway Section
1 of each	Guedel Airway, Sizes 2-4
2 of each	Nasopharyngeal airway sizes 6-7
4	Airway lubricant (sachet)
1	Adhesive tape (Zinc oxide)
1	ETT ribbon tie (roll)
1 of each	ETT, cuffed, sizes 6, 7, 8 & 9
1 of each	iGEL airway, sizes 3-5
1	Magill forceps, adult
1	ETT clamp
1	Intubating stylet, 10Fr
1	Bougie, 15ch
1	Scalpel, size 10
1	Direct laryngoscope handle
1 of each	Macintosh blades 3 & 4
1	Sidestream CO2 sampling line
1	Yankaeur suction catheter
2 of each	Soft suction catheters 10, 12 & 14 Fr
5	Sterile water 10mL ampoules
	Suggested Additional
1	Direct laryngoscope handle, stubby
1	Video laryngoscope
1 of each	Video laryngoscope blade Mac 3-4
1	Video laryngoscope blade, hyperangulated
1	Tracheal dilator forceps*
1 of each	Cuffed tracheostomy tube 6, 7 & 8*
1 of each	Closed suction system, ETT & tracheostomy
1	Thomas tube holder
1	Endotracheal cuff manometer

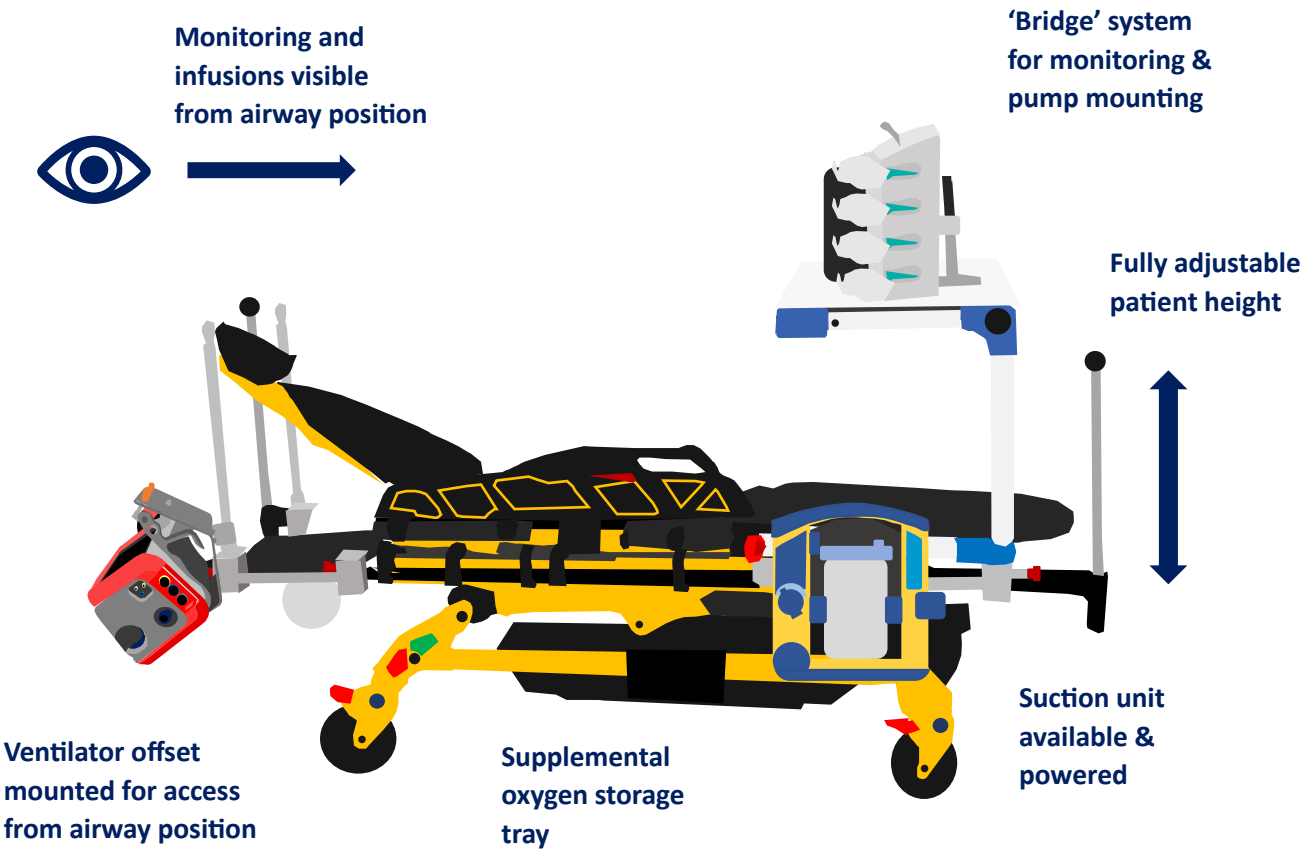
Quantity	Breathing Section
1	Nasal oxygen cannulae, adult
1	Nebuliser mask, adult
1	Non-rebreathe mask, adult
1	T-Piece nebuliser
1	Bag-valve mask, adult
1	Mapleson C circuit
1 of each	Anaesthetic facemasks, size 4-5
1	Tracheostomy mask
1	Airway catheter mount
1	Airway HME filter
2	Spencer wells forceps, 80mm+
2	Scalpel, size 22
1	Chest drain valve, heimlich
	Suggested Additional
1	24 Fr Thoracic drainage catheter
2	Pneumofix chest decompression system
1	1-way adhesive chest seal

*Though not suggested for routine inclusion, any patient with a tracheostomy must have appropriate patient-specific supplemental tracheostomy equipment in-line with guidance from the National Tracheostomy Safety Project. This may be carried in a Trachi-Case, or equivalent.

Quantity	Circulation Section
2 of each	IV Cannula 14G – 22G
4	IV dressing
2	Arterial cannula, flow-switch
2	Arterial canula, seldinger Fr
1	Central venous cannula, multi-lumen
1 of each	ETT, cuffed, sizes 6, 7, 8 & 9
3 of each	Syringes 10ml, 20ml & 50ml
6	Drawing-up needles, blunt
6	Obturator red bung
6	Alcohol wipes
3 of each	Needle 21G (green) & 23G (blue)
1	Blood giving set, gravity
1	Blood giving set, volumetric
1	Wide-bore IV extension set
2	Fluid giving set, volumetric
3	Infusion device giving set (syringe)
2	Pressure transducer set
2	Pressure bag, 500mL
5	0.9% Saline 10mL ampoules
1	0.9% Saline 500mL
1	Buffered crystalloid 500mL
	Suggested Additional
1	EZ-IO insertion driver
2 of each	EZ-IO cannula 25mm & 45mm
2	Ultrasound probe cover
2	Fluid warmer cartridges
3	‘Octopus’ multi-lumen extension set

Quantity	Additional Section
1	Temperature probe, oesophageal
3	Chloraprep applicator, 3mL
3	Suture 1-0, curved
3	Sterile gauze 5x5 pack
2 of each	Sterile gloves, small medium & large
2	Surgical gown, sterile
1	Sterile procedure pack
6	Lubricant sachets
6	Obturator red bung
1	Micropore tape
2	Eye shields
1	Trauma shears
1	Stethoscope
1	Non-sterile aprons, roll
3	Clinical waste bag
1	Sharps bin
6	FFP3 mask
1 of each	Nasogastric tube, 10Ch & 16Ch
1	Bile drainage bag
1 of each	Enteral syringe, 10mL & 50mL
2	Catheter-tip syringe, 50mL
1	Nasogastric spigot
1	ECG electrodes, pack
2	Defibrillator pads, pack
1	Pen torch
1	Sphygmomanometer, manual
1	Thermometer, tympanic
1	Glucometer
5	Glucometer test trips
5	Glucometer lancets
1	Skin sanitising wipes, pack
1	Universal disinfectant wipes, pack
	Suggested Additional
1	Sleek tape
1	Portable SpO2 monitor
1	Portable waveform capnograph
1	Passive warming (foil) blanket
1	Active warming (chemical) blanket

Appendix 4 – ACCTS configuration for interhospital transfer trolley



Complete stretcher configuration

- Powered lifting mechanism
- Adjustable backrest
- Push-pull poles at head and feet ends
- X2 IV drip stands (adjustable)
- Mounted 7-gang power supply
- High-performance transfer ventilator
- X3 CD/ZD oxygen cylinders
- LSU 4 portable suction unit
- Medirail for additional mounting, bilateral, head and feet ends
- Powered secure mounting for 4 infusion pumps
- Ruggedised, 4G-ready transfer monitor & defibrillator
- Adjustable trolley sides
- Fully removable, wipe-clean patient mattress