



# Responding to COVID-19 and beyond:

A framework for assessing early rehabilitation needs following treatment in intensive care

National Post-Intensive Care Rehabilitation Collaborative Version 1

# **Endorsing organisations**



















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A framework for assessing early rehabilitation needs following treatment in intensive care

National Post-Intensive Care Rehabilitation Collaborative

The National Post-Intensive Care Rehabilitation Collaborative is a multi-professional group from a wide range of backgrounds with expertise in the rehabilitation and support of patients following treatment in intensive care.

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The National Post-Intensive Care Rehabilitation Collaborative has assembled a collective that exemplifies the multi-professional ethic common to both modern intensive care and rehabilitation. We are committed to further action to improve functional outcomes for patients afflicted in the COVID-19 pandemic that will ultimately improve outcomes for all patients requiring rehabilitation support. Further work will undoubtedly present challenges and require collaboration across multiple partners and networks.





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# **Background**

The COVID-19 pandemic has challenged critical care units across the United Kingdom. As of 28 May 2020, more than 9347 patients with confirmed COVID-19 have been admitted to critical care units in England, Wales and Northern Ireland over an eleven week period (1). Resources have been considerably constrained, affecting patient management strategies. Over 1285 patients were last reported as still receiving critical care and many more remain on inpatient wards.

Up to half of critical care patients experience physical, psychological and cognitive compromise, collectively known as Post-Intensive Care Syndrome or PICS (2). Some will recover quickly with few long-term sequalae, while others will follow a slower trajectory requiring ongoing support. At this point in time, there is no evidence to suggest that the burden of survivorship (PICS) is any different for patients with COVID-19. Some organ specific phenomena may emerge, but these will occur in conjunction with aspects of survivorship.

Outcomes for these patients can be improved when needs are identified sufficiently early to enable effective support to be put in place (3). However, there is significant variation in practice and available expertise across NHS Trusts. A need exists to develop a national framework that is applicable across all Trusts, to support hospitals that have scanty support services, reduce variation and improve patient outcomes.

In April 2020 the Intensive Care Society (ICS) convened a national group – the National Post-Intensive Care Rehabilitation Collaborative (subsequently referred to as the Collaborative). They convened over five sessions to generate discussion and make practical recommendations to facilitate early post-intensive care assessment and support. Representative groups included rehabilitation specialists; allied health professionals including physiotherapists, occupational therapists, speech and language therapists, dieticians, psychologists, related fields such as ear, nose and throat (ENT); patient representatives and the intensive care community. National bodies provided leadership - the Intensive Care Society, British Society of Rehabilitation Medicine and UCL Partners.

This report is the initial output of that group. The principles and pathways outlined here are transferrable for all patients following a critical care stay, no matter the precipitating illness. Following the multi-professional meetings outlined above, the principles and pathways were presented to patient representative groups to ensure that the approach remained patient centred. This was received positively, with a critical illness survivor commenting "The plan of action looks good-…I just wish we had been given an opportunity like this at the time."

# Alignment with emerging national Critical Care and Rehabilitation Guidance

It is acknowledged that the NICE guidance (CG83) from 2009 (3) established the principles and necessity to commence rehabilitation as soon as feasible in the critical care environment. The subsequent Quality Standards (2017) provided the critical care community with clear focus in the delivery of the NICE guidance, outlining the operational details





and measurements required. However, local and regional feedback has often reported complexity in sustaining the patient pathway across acute, community and primary care.

These challenges were recently reiterated through in a Faculty of Intensive Care Medicine (FICM) publication (5), where the necessity to provide follow-up outpatient services was reinforced. The multi-disciplinary nature of this service was emphasized, and a variety of delivery strategies were outlined including the use of virtual consultations for individuals and/ or groups.

A recent publication within the rehabilitation medicine community (6) outlines the rehabilitation pathway across the range of current provision (Figure 1). This pathway includes critical care and locally developed "Step Down/Triage" units where patients can receive expert input to direct their onward care into further rehabilitation streams. This pathway aligns to the FICM pathway (Figure 2) where patients require screening and assessments to understand how to maximise their rehabilitation potential.

Both the BSRM and FICM articulate the uncertainty around the proportion of patients recovering from COVID-19 who will require the various rehabilitation pathways currently available and how best to screen patients for more detailed "profession specific" assessments. It is acknowledged that not all critical care services have access at all times to the highly skilled multi-professional team required to assess and treat recovering patients. The challenge is to ensure that patients can be screened in a functional, practical and feasible way in order to signal when specialist referrals are required.

This work seeks to support the critical care community with assessment tools that can be deployed at specific patient transition stages to 1) enable ongoing rehabilitation interventions, and 2) ensure the most appropriate professional is involved with each patient's care in a timely and effective way.

# Aims of this work

This work aims to provide guidance for:

- Improvement the early identification of rehabilitation needs in ICU patients in the acute setting by staff from all backgrounds
- Signposting to appropriate specialist assessment and investigation for patients in the context of the COVID-19 pandemic
- Improvement of the communication of these needs along the patient pathway, providing the patient and ongoing care providers with clear information and documentation of their rehabilitation needs in order to plan how these may be addressed the Rehabilitation Prescription.

# Potential sequelae of ICU admission for COVID-19

The collaborative working groups identified potential sequelae following an ICU admission for COVID-19 (Table 1) based on the emerging literature and early clinical observations. This is an indicative rather than an exhaustive list. Recent documents by both the BSRM (6) and FICM (5) have also outlined potential sequelae.





# Table 1: Sequelae of COVID-19 post-ICU requiring rehabilitation response

Category	Presentation, pathophysiology and other disease drivers, complications, sequelae, or effects of therapy
Medical & Essential Care	<ul> <li>Respiratory</li> <li>Acute laryngeal injury, laryngeal dysfunction, expiratory central airway collapse, laryngotracheal stenosis</li> <li>Pulmonary deconditioning, fibrosis, embolism or hypertension</li> <li>Pneumothoraces</li> <li>Prolonged weaning or long-term tracheostomy, tracheal stenosis</li> <li>Renal and other multi-organ damage:</li> <li>Acute kidney injury resulting in ongoing need for renal replacement therapy</li> <li>Reduced renal reserve with higher likelihood of late chronic kidney disease (needs prolonged monitoring)</li> <li>Neurological:</li> <li>Neurological presentations include seizures, altered consciousness, stroke, hypoxic-ischaemic injury, autoimmune disease, and possible direct viral infection of CNS. Sequelae include motor, sensory, or language deficits, epilepsy, sleep-disordered breathing, or persistent disorders of consciousness</li> <li>Cardiovascular:</li> <li>Left ventricular dysfunction and effort intolerance due to arterial thrombosis and myocardial injury (myocarditis/ cardiomyopathy/microvascular thrombosis)</li> <li>Right ventricular dysfunction (pulmonary thromboembolism or associated severe [possibly progressive] lung injury)</li> </ul>
Nutrition	<ul> <li>Nutritional compromise due to:</li> <li>Disease symptoms: anosmia with or without taste changes, loss of appetite, diarrhoea, nausea and/or vomiting</li> <li>Clinical course during ICU: (causing muscle wasting or feeding difficulties) hyper-inflammation, the requirement for high levels of sedation, paralysis and proning, prolonged endotracheal intubation on upper aerodigestive tract disuse</li> <li>ICU-acquired: dysphagia, delirium, weakness, breathlessness and the environment (staff in PPE, cutlery and crockery, upper limb weakness, specific food items and absence of family members)</li> </ul>





# Physical – movement

#### Intensive care unit acquired weakness

 Myopathic, neuropathic and atrophic aetiology leading to impaired physical function and reduced exercise tolerance

#### **Positional**

- · Brachial plexus injury
- Foot drop associated with ICUAW and possible neuropraxia from prone positioning
- · Pressure effects e.g. sores, neuropraxia
- · Plantar flexion contractures

#### Pain

- · Shoulder girdle pain due to joint stiffness & muscular weakness
- Chronic pain

#### Other

- Breathlessness and fatigue with possible development of breathing pattern disorders
- · Urinary incontinence and sexual dysfunction

#### Communication, Cognition, Behaviour

#### Dysphonia

 Intubation-related injury including oedema, ulceration, granuloma, vocal fold palsy, arytenoid dislocation); compromised respiratory function

#### Cognition

- Delirium may be particularly prominent (due to intensity of host inflammatory response, care from staff in PPE, deep sedation, isolation from relatives, rapid transfers)
- Late cognitive deficits may be common, multifactorial in origin, and affect multiple cognitive domains
- Prolonged disorders of consciousness

#### **Psychosocial**

#### **Mental Health**

- Severe anxiety, depression or post-traumatic stress disorder occur in approximately 50% of post ICU patients
- Exacerbation of pre-existing psychiatric disease, or new major depressive or psychotic illness

#### Family and social considerations

 Isolation from relatives may exacerbate sequelae or the level of social support within communities and the shared experience of the COVID-19 outbreak may constitute a valuable protective factor

#### Fatigue & Pain

#### Multiple mechanisms (see previous sections):

Chronic pain (observed in up to 70% of critical care survivors). Includes:

- · Worsening of pre-existing chronic pain due to medication changes
- New-onset pain relating to acute organ injury or late scarring; hyperinflammatory host response; ICU acquired weakness and deconditioning; musculoskeletal sequelae or neural injury



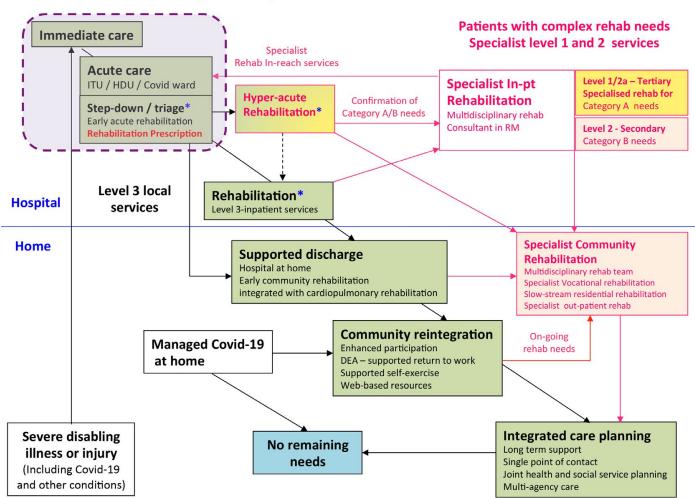


# The Patient Pathway

Early rehabilitation, while the patient is still on the intensive care unit (ICU), is recommended (3) (6). This rehabilitation should continue on step-down from ICU, with early intervention and the opportunity for further triage into post-acute rehabilitation pathways provided in the community setting (Figures 1 & 2).

**Transitions of care** – wherever they occur in the pathway - are critical, providing an important opportunity for assessment of rehabilitation need, communication and signposting to appropriate follow-up support. The consequences of missed opportunities at transition can be significant (3).

\*Covid +ve and -ve streams during the Covid-19 pandemic



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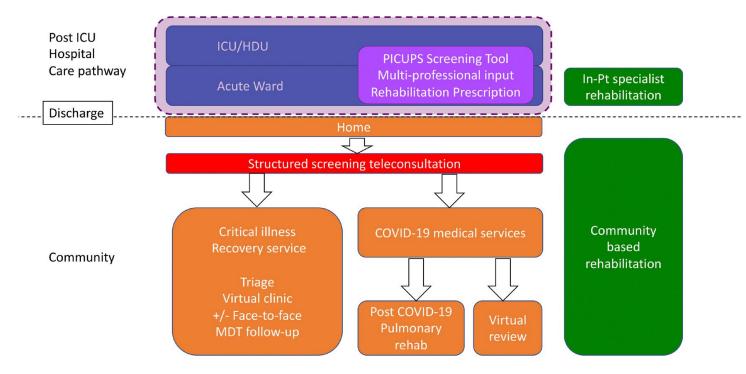
# Figure 1: Focus of this document in relation to BSRM's 'Rehabilitation care pathways in the wake of COVID-19' (6)

Legend: The majority of patients have category C or D needs which can be met by the local level 3 services, led by allied health professions or by consultants in specialities such as care of the elderly, and experts in stroke, cardio-pulmonary rehabilitation and exercise medicine. Patients with more complex rehabilitation needs (category A or B) will require specialist rehabilitation, either in tertiary (Level 1) service with enhanced capacity to support patients with highly complex needs or in a local Level 2 specialist inpatient and specialist community service before re-joining the Level 3 pathway.





## Compliance with existing frameworks



Adapted and simplified from "Recovery and Rehabilitation for Patients following the Pandemic" FICM Position Statement May 2020

# Figure 2: FICM Hospital Care pathway highlighting the focus of this document at the patient transition stage between ICU/HDU and discharge from the acute ward

The two critical transition points presenting key opportunities for assessment, planning and rehabilitation within the early pathway, and addressed within this document, are:

- At ICU step-down
- 2. At hospital discharge.

ICUs and acute wards expertise and resources in regards to rehabilitation are variable, both within and outside of the pandemic context, There is a need for a simple holistic assessment process – a screening tool – which can be applied by staff from all backgrounds with minimal trainings to all patients at transitions of care to **screen for functional deficits**. **This needs to** include triggers for further assessment and/or indicate when specialist support should be sought.





# Screening tool development

The Collaborative worked with leading experts to support the development of two new functional screening tools, "Post ICU Presentation Screen (PICUPS)" and PICUPS Plus (appendix 1). A range of existing and validated metrics were used, acknowledging that the rapidity of the development in the light of the COVID-19 response will require an iterative refinement process.

The tool was constructed from adaptations of:

- UKROC toolset
- Chelsea Critical Care Physical Assessment (CPAX) Tool
- NHSE Standard Contract D02 supplement Levels of nursing care and supervision for tracheostomised patients
- Therapy Outcome Measures (TOMS)
- Modified Medical Research Council Dyspnoea Scale
- Airway-Dyspnoea-Voice-Swallow (ADVS)
- ADVS and International Dysphagia Diet Standardisation Initiative (IDDSI).

The PICUPS is a 14-item screening tool developed to support triage and handover of patients stepping down from critical care to the acute wards, and onwards into rehabilitation.

It is designed to be simple enough to be completed by staff from a range of backgrounds in order to:

- Inform the immediate plan for care on the acute ward (Figure 3)
- Identify problems that are likely to require further more detailed evaluation by members of the multi-disciplinary team and
- Inform development of the Rehabilitation Prescription in the acute care setting (including the Rehabilitation Complexity Scale) indicating the needs for rehabilitation at the next stage of care.

This information will additionally identify where patient needs are and are not being met. Used at population level, the information may assist with quantifying shortfalls in service provision, estimating the gap between need and capacity, informing future planning.

A high-level representation of a proposed assessment framework in the inpatient pathway from ICU is shown in Figure 3 and described on the next page.





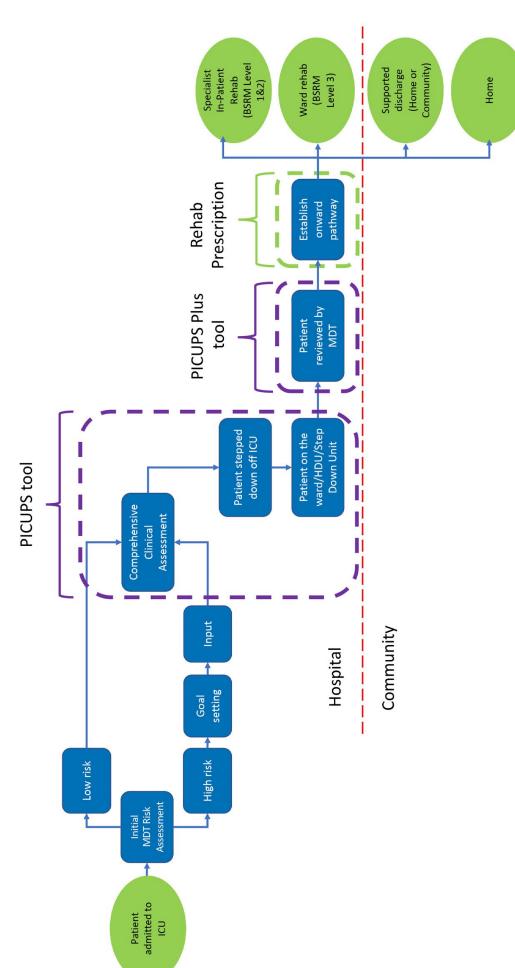


Figure 3: Rehabilitation assessment framework as part of the inpatient pathway from ICU





#### **Transition 1: Stepdown from ICU**

It is recommended that all patients who are transferred from a critical care area to an acute ward are screened using the **Post-ICU Presentation Screen (PICUPS)** within 24 hours prior to, or as close as feasible to arrival in the acute ward (Figure 4). Information gained in this screen should be used to support handover and subsequent care planning.

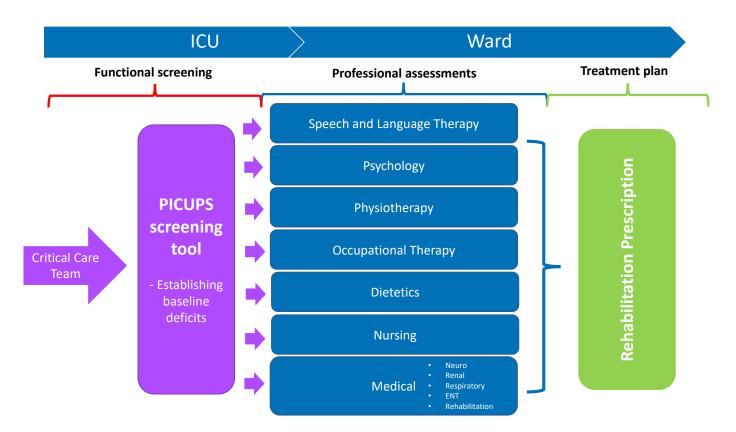


Figure 4: Rehabilitation screening and assessment on stepdown from ICU





#### Transition 2: On the acute ward prior to discharge

As soon as possible after step-down to the acute ward patients should be assessed by the relevant disciplines as sign-posted by the PICUPS tool. The **PICUPS Plus** tool can assist with this process. It is composed of additional <u>optional</u> items that may be used depending on the individual presentation. It is designed to identify potential higher-level items that may need to be addressed as patients progress towards discharge from acute care.

The PICUPS Plus tool can also further assist refinement of the Rehabilitation Prescription (RP) prior to discharge (Figure 5). For example, a patient without a tracheostomy who was previously intubated and extubated on ICU who has ICU-acquired dysphagia, dysphonia or upper airway dysfunction may not be routinely referred to Speech and Language Therapy (SLT), but the Dyspnoea/Voice/Swallowing items on the PICUPS Plus will identify these problems and trigger referral to SLT for further evaluation and intervention.

It is not expected that all items in the PICUPS Plus will be relevant to everyone, but that individual components may be used as relevant.

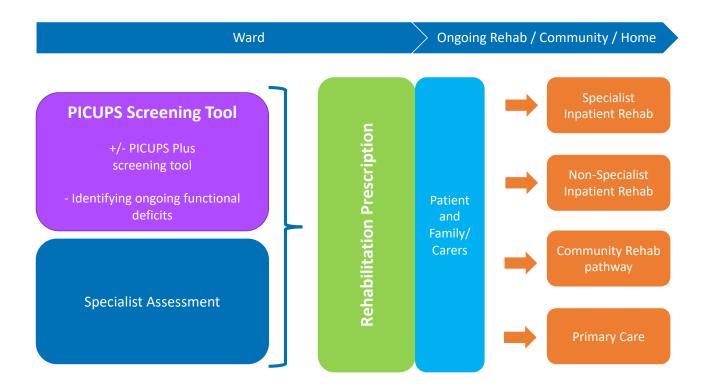


Figure 5: Ward-based care to discharge & Rehabilitation Prescription





# **Specialist Assessments**

Results of screening using the PICUPS and PICUPS Plus, as well as other clinical needs, will be used to trigger targeted assessments by specialists in each of the relevant fields of care. Best practice for specialist assessment, and subsequent treatment where relevant, are being developed linking to the assessment tools and where they can be accessed.

In addition, for those COVID-19 patients who continue to have complex needs for rehabilitation at the point of discharge from acute care a Rehabilitation Prescription should be prepared:

https://www.bsrm.org.uk/downloads/covid-19bsrmissue2-11-5-2020-forweb11-5-20.pdf

# The Rehabilitation Prescription

As the patient progresses towards discharge from acute care, information from the PICUPS tools and the targeted specialist assessments by members of the multi-professional team (see below), feed in to the development of an individualised Rehabilitation Prescription (RP). This approach of utilising a RP was identified by FICM for the value it has provided to the Trauma Networks where, "Rehabilitation Prescription was successfully used to capture met and unmet needs for rehabilitation following discharge from Major Trauma Centres" (5). An important contribution of using a RP is that it prompts development of a plan, as well as a conversation with each patient regarding the ongoing journey of recovery and rehabilitation.

The RP identifies each individual's need for rehabilitation and specifies how these will be met after discharge from the acute ward and as they move on to the next stage of the pathway. Those who make a very rapid recovery may have few needs, but others may require ongoing rehabilitation in the community (e.g. from cardiopulmonary rehabilitation, psychological support, monitored exercise programmes etc). Before referral to those programmes patients should have the appropriate investigations to ensure they can participate safely (e.g. testing of cardiac and respiratory function, provision of suitable orthoses to protect joints that are vulnerable, due to muscle weakness).

A small number of patients will have more complex needs requiring further inpatient rehabilitation before they can make the transition to the community. The RP is a free text tool that sets out the rehabilitation needs, and the recommendations / referrals that have been made to address them. The RP travels with the patient and should be reviewed and updated at appropriate intervals to record actions undertaken to implement the recommendations.





The RP is accompanied by a minimum dataset of which the key elements as follows:

- Does the patient have on-going needs for rehabilitation? Yes / No
  - If yes, a rehabilitation needs checklist is completed to describe the needs under three categories: physical, cognitive and psychosocial
- Are they being transferred to the appropriate facility? Yes / No
  - What type of rehabilitation does the patient need?
  - What is their discharge destination?
  - What is the reason for variance?
- A brief description of further needs for rehabilitation.

Using the RP prior to hospital discharge, and for those patients who are not identified as having needs initially but are recognised 1-2 months after recovery from the acute illness, will allow the patient's rehabilitation pathway to be planned. It will also allow recurrent review of rehabilitation needs at population level in order to target services.

Proof of principle for the RP comes from the Major Trauma Networks where its use is now established. The minimum RP dataset is now mandated for collection in the Trauma Audit and Research Network (TARN) registry. A national clinical audit (7) linked data from the national clinical registries for trauma and specialist rehabilitation and used the RP to track patients and determine whether they received the rehabilitation they needed, and to evaluate the outcomes following major trauma. It demonstrated the feasibility of this approach to quantify any gaps in capacity to meet demand for rehabilitation.

The same principle can be applied in the post-ICU arena and the minimum dataset has been slightly adapted for this purpose.

# Alignment with other relevant guidelines and standards

For UK Critical Care communities, the translation of both CG83 and the subsequent Quality Standards (QS 158) remains the gold standard of both practice and aspiration. Within the rehabilitation medicine community, the BSRM standards of Specialist Rehabilitation following in the Acute Care Pathway (2014) outlines the value and role that rehabilitation medicine consultants and teams can play in supporting acute care.

The deployment of a structured screening tools (PICUPS and PICUPS Plus) in conjunction with the development of a Rehabilitation Prescription, will enable some alignment with both the NICE quality standards (QS 158) and BSRM standards for acute care pathways (Table 2).





Table 2: Compliance with national standards and framework

National Framework	Locally developed process	PICUPS Tool	PICUPS Plus	Rehabilitation Prescription
NICE CG83 - Rehabilitation after critical illness in adults (2009/2017)				
Quality Standard 1:  Adults in critical care at risk of morbidity have their rehabilitation goals agreed within 4 days of admission to critical care or before discharge from critical care, whichever is sooner.				
Quality Standard 2: Adults at risk of morbidity have a formal handover of care, including their agreed individualised structured rehabilitation programme, when they transfer from critical care to a general ward.				
Quality Standard 3:  Adults who were in critical care and at risk of morbidity are given information based on their rehabilitation goals before they are discharged from hospital.				
Quality Standard 4: Adults who stayed in critical care for more than 4 days and were at risk of morbidity have a review 2 to 3 months after discharge from critical care.				
BSRM Core standards for Specialist Rehabilitation following in the Acute Care pathway (2014)				
RM Consultants should be closely involved both at a clinical level and in the planning and delivery of all Major acute care pathways (including critical care, neurosciences and stroke) to support and direct rehabilitation for patients with complex needs.				
Patients who have (or are likely to have) on-going complex physical, cognitive, communicative or psychosocial disability (category A or B needs) should be assessed by an RM Consultant (or their designated deputy) prior to discharge from the acute unit.				
The RM consultant should be involved from an early stage in the patient's acute care pathway to: assess patients with complex rehabilitation needs; participate in the planning and execution of their interim care and rehabilitation; expedite referral and transfer for on-going rehabilitation as soon as they are fit enough.				





# **Conclusions**

There have previously been a number of separate efforts to develop standards for rehabilitation following ICU, notably by the ICS, FICM and the BSRM. The National Post-Intensive Care Rehabilitation Collaborative is a co-operative body of expertise representing a breadth of stakeholder organisations across multiple disciplines to establish a unified approach with applicability across all NHS institutions as the NHS reboots after the COVID-19 pandemic. Our immediate priority are those surviving from COVID-19, but the longer-term ambition is to improve rehabilitation for all post ICU patients going forward. The recommendations in this document, and the national datasets that it generates, will also provide a valuable foundation for future improvements in ICU after-care. This would include enabling audit and service evaluation, to understand population-level needs, optimise current care and address the current gaps in provision across the range of services (inpatient and community, specialist and non-specialist). The data that are generated will also support much needed research into the epidemiology, mechanisms, treatment, and health economics of ICU Survivorship.

The PICUPS tools and Rehabilitation Prescription are available in paper form for immediate integration into hospital assessment and rehabilitation pathways.

# **Next Steps**

There is now an imperative to move on to the next phases of work for the Collaborative:

- Using the tool in clinical practice to improve the clinical care of COVID-19 patients
- Refining the PICUPS and PICUPS Plus tools through patient and public involvement, implementation, feedback and iteration
- Sharing and aligning this work to that of other networks developing longitudinal rehabilitation pathways for COVID-19 patients and beyond
- Developing a national dataset incorporating PICUPS and the Rehabilitation Prescription to better understand longer term outcomes of ICU patients and the national need for rehabilitation support and services





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# **Appendix 1. PICUPS Tool**

(credited to UKROC Rehabilitation Collaborative, Kings College London, and Prof Lynne Turner-Stokes together with members of the Intensive Care Society working group – see page 25)

# The Post-ICU Presentation Screen (PICUPS)

A brief functional screening tool to inform the rehabilitation needs after treatment in Intensive Care Settings

The PICUPS is a 14-item tool developed to support triage and handover of patients stepping down from ITU into the acute wards, and onwards into rehabilitation.

#### It is designed to:

- · Inform the immediate plan for care on the acute ward
- Identify problems that are likely to require further more detailed assessment / evaluation by members of the multi-disciplinary team and
- Inform development of the Rehabilitation Prescription as patients leave the acute care setting (which will include the Rehabilitation Complexity Scale) to indicate the patients needs for rehabilitation at their next stage of care.

As well as helping to guide decision-making for individual patients, this information will help to identify where their needs are and are not being met. Used at population level, the information will enable us to quantify shortfalls in service provision and to estimate the gap between capacity and demand for future planning.

The PICUPS is essentially just a **checklist and guide**, so accuracy is not critical –

- The item levels are in rough order, but it is not intended that it should be used as a numerical scale
- If a patient falls between two scores or their condition fluctuates, then record the lower score.

The PICUPS Plus represents 10 additional <u>optional</u> items that may be used on a 'pick 'n' mix' basis depending on the individual's presentation, to identify potential higher level items that may need to be addressed as patients progress during acute care, and to further assist towards development of the Rehabilitation Prescription that will help to direct their on-going care. These items may be adjusted or added to as the tool develops.

Ultimately the tool will have additional functionality so that score levels on the individual items may trigger actions such as referral to the appropriate discipline. Higher scores on some of the PICUPS items may prompt completion of the relevant PICUPS plus items or could suggest further tools that could provide more detailed clinical information.

Both tools may be applied serially to monitor changes that may occur as the patient progresses

# The Post-ICU Presentation Screen (PICUPS) - to inform rehabilitation needs after treatment in Intensive Care Settings

14 - 10	c	•	c	c	•	u
Item	0	_	7	ડ	4	C
Medical and esse	ential care (Not ne	and essential care (Not needed if RCS-E is recorded alongside this tool)	alongside this tool)		,	
Medical stability (1)	Critically unstable. Requiring management in a critical care or HDU setting (Level 2-3)	Medically unstable. Primary needs are medical/surgical, requiring an acute ward setting (Level 0-1)	Primary needs are for rehab, but potentially unstable. Requires inpatient treatment in acute setting with 24 hr medical care (eg HA unit)	Requires inpatient rehabilitation, but stable – can be managed in non-acute setting with day-time medical cover only	Can be managed in the community with enhanced support – eg hospital at home or nursing home	No medical needs – can be managed in community with normal access to GP as required
Basic care needs and safety (Score worst case of care or risk for safety)	Constant 1:1 supervision For safety or behavioural management (Will usually require DOLS)	Very high care / risk Requires assistance from ≥3 people for most basic care OR Very frequent checks (1/4 hrly)	High care / risk Requires assistance from 2 people for most basic care OR Frequent checks (½ hrly)	Moderate care / risk Requires assistance from 1 person for most basic care OR 1-2 hourly checks	Mild care / risk Requires incidental assistance from 1 person for basic care OR 3-4 hourly checks	No care needs – largely independent in basic care and able to maintain own safety - no risk
<b>Breathing and Nu</b>	Nutrition					
Respiratory function/ventilator assistance (2)	Complete invasive ventilator dependence – Continuous ventilatory support (eg on home ventilator)	Partial invasive ventilator dependence Manages short periods off ventilator	Non-invasive ventilation via mask (eg CPAP): Continuous or near continuous support	Intermittent non- invasive only (Eg CPAP at night only) OR Continuous high flow oxygen (>15)	Self-ventilating with Standard oxygen therapy (<15l)	Self-ventilating with no oxygen therapy
Tracheostomy nursing management (3)	(E: Ceiling of care (including planned end-of-life care) limited trachy interventions for comfort only)	A: Unstable airway Very frequent trachy intervention (eg ½ -1 hourly) +/- de-saturation / mucous plugging	B: Complex tracheostomy Frequent trachy intervention eg 1-2 hrly) including regular deep suction. Trachy needs may be unpredictable.	C: Standard trachy requiring intervention usually every 2-4 hours	D: Simple stable trachy requiring occasional intervention only	No Tracheostomy
Tracheostomy weaning stage 4)	Cuff up all the time	Cuff partially deflated or periods of cuff deflation	Tolerating continuous cuff deflation or cuffless tracheostomy in situ	Cuff deflated/cuffless tube. Tolerating one way valve continuously	Cuff deflated/cuffless tube. <b>Tolerates capping</b> trials	Decannulated OR N/A - No tracheostomy
Cough (2)	Absent cough, may be fully sedated or paralysed	Cough stimulated on deep suctioning only	Weak ineffective voluntary cough, unable to clear secretions independently (e.g.requires deep suction)	Weak, partially effective voluntary cough, sometimes able to clear secretions (e.g.requires Yankauer suctioning)	Effective cough, clearing secretions with airways clearance techniques	Consistent effective voluntary cough, clearing secretions independently
Nutrition/feeding (1)	Nil by mouth requiring full enteral or parenteral nutrition.	Minimal oral intake or food/liquid requiring full enteral or parenteral nutrition.	Partially tube-de- pendent - Eating and drinking less than ½ hospital meals requiring supplemental enteral tube feeding.	Eating and drinking less than % hospitals meals and requiring oral nutrition supplements and/or assistance or supervision required throughout meal.	Eating and drinking 3/4 hospital meals but needs set-up or prompting to ensure sufficient intake.	Eating and drinking full hospital meals independently and is not prescribed oral nutrition supplements.





Item	0	7	2	8	4	5
Physical / movement	nent			-	-	
Repositioning within bed (1, 2)	Unable, to be moved except with extreme care (eg requires log-rolling)	Requires assistance of 3 or more people to reposition in bed	Requires assistance of 2 people to reposition	Requires moderate hands-on assistance of 1 person to change position	Requires minimal assistance of 1 person or prompting only to change position	Able to change position fully independently
<b>Transfers:</b> bed-chair and back (1)	Unable/unstable	Full hoist transfers	Transfers with assistance of two people (with or without aid)	Transfers with physical assistance of one person (with or without aid)	Transfers with standby supervision/promoting only (with or without aid)	Fully Independent transfer without equipment
Communication / Cognition / Behaviour	Cognition / Be	haviour				
Communication (1,4)	No consistent functional communication	Unable to attract attention, but responds to direct questions about basic care needs using Yes/No or gestures.	Able to attract attention and communicate at the level of expressing basic needs/ information	Communicates within context to familiar people – but substantial listener burden	Some listener burden, but <b>communicates with</b> a unfamiliar people and out of context	Unrestricted communication Able to understand and express complex information and to communicate with anyone
Cognition / delirium (1)	Unconscious – in coma (Including if still fully sedated)	Awake but still disordered consciousness (ie inconsistent responses equivalent to vegetative or minimally conscious state)	Emerged into consciousness, but severe cognitive deficit or severe confusional state	Moderate cognitive problems. Not fully orientated	Fully orientated but some higher level problems with memory and attention and/or executive function	Normal cognition
Behaviour (1)	Agitated, physical aggression requiring restraint at times (Should be on DOLS)	Challenging behaviour with verbal (but not physical) aggression	Marked behavioural problems, but largely controlled in structured environment	Moderate behavioural problems. Some problems with temper control. Needs persuasion to comply with rehabilitation or care.	Mild behavioural problems. Needs prompting for daily activities. Occasional outbursts only	No behavioural problems Socially appropriate, co- operative, able to engage actively in rehabilitation. OR N/A – eg in coma / Vegetative state
<b>Psychosocial</b>						
Mental health (1)	Known active pre- existing mental health condition requiring on-going secondary mental health input and psychiatry eg bipolar disorder, schizophrenia, other psychosis	Severe new mental health problems (eg stress/ severe depression / psychosis) that effectively prevent engagement in daily activities (requires psychiatric input)	Marked anxiety / depression /mood / stress problems that impact significantly on daily function and ability to engage in rehab, requiring frequent support	Moderate anxiety / mood issues with some impact on function/ rehab requiring active intervention/ treatment	Mild anxiety / mood issues which does not impact on engagement daily function / rehabilitation, but requiring further exploration /support	No mental health issues No problems with anxiety/ depression/ stress OR N/A – eg in coma / Vegetative state





# Optional items for post ICU patients who are progressing towards discharge to the community

PICUPS plus: "pick 'n' mix" -

Dyspnoea/Voice/Swallowing items on the PICUPS plus will identify these problems and trigger referral to an SLT for further evaluation and who has ICU-acquired dysphagia, dysphonia or upper airway dysfunction may not trigger referral to SLT on the PICUPS, but the The PICUPS Plus represents some additional optional items that may be used depending on the individual's presentation, to identify potential higher-level items that may need to be addressed as the patient progresses within acute care, and to further assist towards development of the Rehabilitation Prescription. For example, a non-brained injured patient who was intubated and extubated on ITU and intervention. The PICUPS Plus items should be addressed as early as possible after step-down from ICU. It is not expected that all of these will be relevant to everyone, but that they may be used on a 'pick 'n' mix' basis as relevant.

Item	0	1	2	3	4	5
Upper airway						
Breathing (5)	Extreme dyspnoea Too breathless to leave the house or breathless when dressing	Severe dyspnoea Stops for breath after walking 100 yards or after a few minutes	Significant dyspnoea Walks slower than people of the same age because of breathlessness, or has to stop for breath when walking at own pace	Moderate dyspnoea Breathless when hurrying or walking up a slight hill	Mild dyspnoea Breathless only with strenuous exercise	No dyspnoea
Voice (6)	<b>Aphonia</b> No voice	Severe dysphonia Can only produce a weak whisper; at times no voice	Significant dysphonia Voice sounds very abnormal or is effortful to produce all of the time; consistent difficulties being heard on the telephone and in conversation	Moderate dysphonia Voice occasionally sounds abnormal or effortful to produce; occasional difficulties being heard in conversation	Mild dysphonia Difficulty being heard in loud environments; sound of the voice varies throughout the day or gets worse towards the end of the day	No dysphonia
Swallowing (7)	Extreme dysphagia Difficulty managing secretions or aspirates secretions requiring nil by mouth	Severe dysphagia Commencing oral intake Tolerates small amounts of oral intake for therapeutic purposes	Significant dysphagia Requires more than two IDDSI diet/fluid level restrictions; fatigue limiting oral intake	Moderate dysphagia Requires 1-2 IDDSI diet/ fluid level restrictions, and/or consistent use of compensatory strategy for safe/efficient swallowing	Mild dysphagia Able to eat (near) baseline diet with some difficulty or supervision required, e.g. no more than one IDDSI diet level restriction; difficulty with specific foods; longer mealtimes; coughing when drinking liquids quickly	No dysphagia





Physical / activities of daily living	es of daily livin	5				
Postural management and seating	Unseatable – Unable to sit in any modified seating system (eg due to severe posturing, severe pressure ulcers etc)	Severe postural problems that limit seating (ie, severe contractures, pressure ulcers) requiring a Tilt-in-space seating system with bespoke customisation (requiring highly specialist seating assessment/provision)	Marked postural problems Poor head and trunk control requiring standard Tilt-in-space or reclining seating system +/- some modification	Able to sit out in standard wheelchair with minor modifications (eg pressure relief cushion)	Mild postural problems but able to maintain good sitting position in standard wheelchair with no modifications	No postural problems able to sit in ordinary armchair Or not applicable Eg seating prevented by other conditions eg severe agitation, medical instability etc
Personal hygiene eg grooming, washing, bathing, dressing, managing continence (1)	Unable to contribute in any way All hygiene tasks are done for them	Maximal help Able to contribute in a very small way, but nearly all hygiene maintenance is done for them	Moderate help Able to manage some hygiene tasks themselves, but needs help for > half	Moderate help Able to manage > half of hygiene tasks themselves but needs some hands- on help	Minimal help eg just reminding to wash or setting up for them	Fully Independent
Care needs for basic activities of daily living, maintaining safety etc (1)	Totally dependent 2 or more carers required throughout 24 hours	Severe dependence 1 carer required throughout 24 hours with second carer for some tasks (eg bathing)	Marked dependence 1 carer required throughout 24 hours (may be sleep-in at night, but unable to live alone)	Moderate dependence 1-2 carers required on visiting basis – able to summon help and so be left alone between visits	Mild dependence Incidental help, safety checks or support for extended activities only eg visit once daily or less often	Fully independent
Moving around (1) (Indoors)	Bed bound	Wheelchair bound – attendant propelled	Independently mobile in wheelchair	Walks with assistance from someone (+/- aid)	Walks independently (+/- aid) but concerns for safety (eg falls risk)	Normal mobility indoors – no safety concerns
Arm and hand function	No functional use of either arm/hand	Poor functional use of both hands – very limited dexterity affecting all activities	Some functional use of one hand – but dexterity is poor even in good hand	Good use of one hand but upper limb activities limited (eg by lack of bimanual function)	Good functional use of one or both hands but problems with fine dexterity affect higherlevel function	Normal dexterity and hand function
Symptoms that in	that interfere with daily	ily activities				
Fatigue	Extreme Fatigue Only able to get up for very short periods – spends most of the day in bed or in a chair due to fatigue	Severe Fatigue Fatigue impacts severely on daily activities — requires several rest periods during the day	Marked Fatigue Fatigue impacts significantly on daily activities – requires a rest period during the day	Moderate Fatigue Fatigue requires modification of some activities – eg part time working, limited exercise - but able to manage basic daily activities	Mild Fatigue Able to carry out normal activities (including work) but tired at the end of the day	No fatigue – normal stamina
Pain	Extreme Pain Interferes with sleep and almost all activities. Medication / pain interventions have little or no effect	Severe Pain Severe pain, not controlled by medication / pain interventions. Interferes with daily activities every day	Marked Pain Reports marked pain. Medication/ pain interventions partially effective. Interferes with some activities most days	Moderate Pain Reports moderate pain. Helped by medication / pain interventions and only occasionally interferes with activities	Mild Pain Reports mild pain symptoms but they are well controlled and do not interfere with activities	No Pain

Other optional pick 'n ' mix items may be added as necessary as the tool develops to help clinicians in their decision-making process





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- 2. Adapted from the Chelsea Critical Care Physical Assessment (CPAX) Tool ©Chelsea and Westminster. Corner EJ, et al. Physiotherapy (2012), doi:10.1016/j.physio.2012.01.003
- 3. Adapted from the NHSE Standard Contract D02 supplement Levels of nursing care and supervision for tracheostomised patients ©Lynne Turner-Stokes 2015.
- 4. Adapted from the Therapy Outcome Measures (TOMS). Enderby, P., John, A. (2019) Therapy Outcome Measure User Guide. Croydon: J & R Press Ltd
- 5. Adapted from the Modified Medical Research Council Dyspnoea Scale
- 6. Adapted from Airway-Dyspnoea-Voice-Swallow (ADVS) scale (Nouraei, S., et al Clin Otolaryngol. 2017;42(2):283-294) and Grade, Roughness, Breathiness, Asthenia, Strain (GRBAS) Perceptual Voice Rating Scale
- 7. Adapted from ADVS and International Dysphagia Diet Standardisation Initiative (IDDSI)



**NHS No** 



# Appendix 2. PICUPS Data Collection sheet and Rehabilitation Prescription

Ward

# ICU step down data collection - PICUPS and Rehabilitation Prescription

Pt Name	Local use	only		ccg			
DoB	/	( or	Age)	Date Admitted to IC	U		./
Gender				Date Stepped down	from ICU		./
Ethnicity				Date discharged fro	m acute		./
Essential inforn	nation fron	n ICU - (	Condition	n(s) that required ITU	J treatmer	nt	
Primary Diagnos	sis				Summary Impairme	_	an
Secondary diag	noses				☐ Respira	atory	☐ Liver
					☐ Cardia	c	☐ Brain
					☐ Vascula	ar	□ Neuro/
Covid-related ill	ness	☐ Yes	□ No	☐ Don't know	☐ Renal		muscular  Other
							<u> </u>
Organ support requirements		Require ITU	ed on	Duration	Still red	quired	at stepdown
ECMO		☐ Yes	□ No				
Invasive ventilation	on	☐ Yes	□ No			J Yes	□ No
Non-invasive ven	itilation	☐ Yes	□ No			J Yes	□ No
Tracheostomy		☐ Yes	□ No			J Yes	□ No
Renal replaceme	nt	☐ Yes	□ No			J Yes	□ No
Liver replacemen	nt	☐ Yes	□ No			J Yes	□ No
Inotropic support		☐ Yes	□ No			J Yes	□ No
Pain managemer	nt	☐ Yes	□ No			J Yes	□ No
ВМІ			/kg/m²				/kg/m²

<sup>\*</sup>NB This information should ultimately be available through linkage with ICNARC but will need to be collected directly during the Pilot period





# At Step down from ICU - Post ICU Presentation Screen (PICUPS tool)

Domain	Item	Score	Score	Triggers assessment by:
Medical / Care	Medical stability	(0-5)	2, 3	Consultant in RM
	Basic care and safety	0-5)	≤ 4	O/T
Breathing / Nutrition	Ventilatory assistance	0-5)	≤ 4	P/T
	Tracheostomy care	0-5)	≤ 4	P/T, SLT, ENT
	Trache weaning	0-5)		
	Cough / Secretions	0-5)	≤ 4	P/T
	Nutrition / feeding	0-5)	≤ 4	Dietician, SLT, O/T
Physical Movement	Repositioning in bed	0-5)	≤ 4	P/T O/T
	Transfers (bed / chair)	0-5)	≤ 4	P/T O/T
Communication / Cognition	Communication	0-5)	≤ 4	SLT, O/T
	Cognition & delerium	0-5)	≤ 4	Psychologist, O/T
	Behaviour	0-5)	≤ 4	Psychologist / O/T
			≤ 2	Psychiatrist / neuropsychiatrist
			0	Liaise with existing MH team
Psychosocial	Mental Health	0-5)	≤ 4	Psychologist / psychiatrist, O/T
	Family distress	0-5)	≤2	Consultant in RM / Psychologist

# In acute care phase - Optional additional information that may help team to formulate RP

# PICUPS plus items

Domain	Item	Score	Score	Triggers assessment by:
Upper Airway	Dyspnoea	(0-5)	2, 3	P/T
	Voice	0-5)	≤ 4	SLT, ENT
	Swallowing	0-5)	≤ 4	SLT, Dietitian
Physical and Activities of daily living	Postural management / seating	0-5)	≤ 4	P/T, O/T
	Maintaining hygiene	0-5)	≤ 4	O/T
	Care needs	0-5)	≤ 4	O/T
	Moving around (indoors)	0-5)	≤ 4	P/T, O/T
	Arm and hand function	0-5)	≤ 4	O/T
Symptoms that interfere	Fatigue	0-5)	≤ 4	P/T, O/T, Psychologist
with daily activities	Pain	0-5)	≤ 4	P/T, O/T, Psychologist

If the patient is thought to have category A or B needs requiring further specialist in-patient rehabilitation.





# Rehabilitation Complexity Scale – RCS-E v13 - acute

	On step down	On discharge	sciplines required acute care	sciplines involved acute care
Date:			Physio	Physio
Care /Risk (0-4)			O/T	O/T
Nursing (0-4)			SLT	SLT
Medical (0-6)			Dietitian	Dietitian
Therapy Disciplines			Psychology	Psychology
(0-4)			Social work	Social work
Therapy Intensity (0-4)			Consultant in RM	Consultant in RM
Equipment (0-3)			Other	Other

# **Complex Needs Checklist (CNC)**

Checklist of needs that are likely to require specialist rehabilitation (tick any that apply)		
Specialist rehab medical	☐ On-going specialist investigation/ intervention	☐ Yes
(RM) or neuropsychiatric needs	☐ Complex / unstable medical/surgical condition	□ No
liceus	☐ Complex psychiatric needs	
	☐ Risk management or Treatment under section of the MHA	
Specialist rehabilitation	☐ Co-ordinated inter-disciplinary input	☐ Yes
environment	☐ Structured 24 hour rehabilitation environment	□ No
	☐ Highly specialist therapy /rehab nursing skills	
High intensity	☐ 1:1 supervision	☐ Yes
	☐ ≥4 therapy disciplines required	□ No
	☐ High intensive programme (>20 hours per week)	
	☐ Length of in-patient rehabilitation ≥ 3 months	
Specialist Vocational	☐ Specialist vocational assessment	☐ Yes
Rehab	☐ Multi-agency vocational support (for return to work /re-training /work withdrawal)	□ No
	☐ Complex support for other roles (eg single parenting)	
Medico-legal issues	☐ Complex mental capacity / consent issues	☐ Yes
	☐ Complex Best interests decisions	□ No
	☐ DoLs / PoVA applications	
	☐ Litigation issues	
Specialist facilities /	☐ Customised / bespoke personal equipment needs	☐ Yes
equipment needs	(eg Electronic assistance technology, communication aid, customised seating, bespoke prosthetics/orthotics)	□ No
	☐ Specialist rehabilitation facilities	
	(eg treadmill training, computers, FES, Hydrotherapy etc)	





# At discharge from acute care – the Rehabilitation Prescription

## Rehabilitation Prescription – Minimum dataset

Does the patient have COMPLEX on-going clinical needs for rehabilitation? ☐ Yes ☐ No				
(If yes please tick all that apply)				
Complex Physical eg	Complex Cognitive / Mood eg	Complex Psychosocial eg		
<ul><li>Complex neuro-rehabilitation</li><li>Prolonged Disorder of</li></ul>	Complex communication support	☐ Complex discharge planning eg		
consciousness	☐ Cognitive assessment/	o Housing / placement issues		
☐ Tracheostomy weaning	management	o Major financial issues		
☐ Ventilatory support	☐ Challenging Behaviour management	o Uncertain immigration status		
Complex nutrition / swallowing issues	☐ Mental Health difficulties	☐ Drugs/alcohol misuse		
☐ Profound disability / neuro-palliative rehabilitation	o Pre-injury o Post injury	☐ Complex medicolegal issues (Best interests decisions,		
☐ Neuro-psychiatric rehab	☐ Mood evaluation / support	safeguarding, DOLS, litigation)		
☐ Post ICU syndrome	☐ Major family distress / support	☐ Educational		
☐ Complex MSK management	☐ Emotional load on staff	☐ Vocational /job role requiring		
☐ Complex amputee rehabilitation needs	☐ Other	specialist vocational rehab		
Re-conditioning / cardiopulm'y rehab		☐ Other		
☐ Complex pain rehabilitation				
☐ Specialist bespoke equipment needs				
☐ Other				





Are they being transferred to the appro	opriate facility?	lo		
(If yes please tick all that apply)				
What is the patients' rehabilitation need	What is the patients' destination	What is the reason for variance?		
□ Specialist inpatient rehabilitation	☐ Transferred for ongoing medical/surgical needs ☐ Local hospital O Without specialist rehab O Awaiting specialist rehab ☐ Other in-pt rehabilitation than that recommended in the RP ☐ Own home O Without rehabilitation With rehabilitation Nursing home O Specialist NH / Slow-stream O Other residential ☐ Mental health unit without physical rehabilitation ☐ Other	<ul> <li>Service exists but access is delayed</li> <li>Service des not exist</li> <li>Service exists but funding is refused</li> <li>Patient ' carer declined</li> <li>Ongoing medical / surgical needs requiring rehabilitation at a later date</li> </ul>		
Is the patient thought to have Category A/B needs for rehabilitation the patient?  Yes No Don't know  If yes: Complete Complex needs checklist and RCS-E  Have they been reviewed by a consultant in RM (or their designated deputy from a Level 1 or 2 specialist rehabilitation service)  Yes No Don't know				





# **Rehabilitation Prescription summary of recommendations**

A text 'Passport to rehabilitation' that travels with the patient

Brief summary of further needs:		
How will these be met?		
Referrals made (or to be made)		

Completed by: Date: ....../......





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