

Critical Care Survival: More Complex Than it Might Appear



Owen Gustafson (Chair)

Senior Clinical Academic Physiotherapist,
Oxford University Hospitals NHSFT

Susan Calvert

Critical Care Therapy Clinical Specialist,
University Hospitals Bristol and Weston NHSFT

Charandeep Malhi

Acute Neurosciences Clinical Specialist Physiotherapist,
Oxford University Hospitals NHSFT

Lucy Gardiner

Assistant Professor (Physiotherapy),
School of Sport, Exercise and Rehabilitation Sciences,
University of Birmingham



Critical Care Survival – More complex than it might appear!

What are the new challenges to providing rehabilitation for those recovering from critical illness??

Susan Calvert
Clinical Specialist
Physiotherapist –
Critical Care

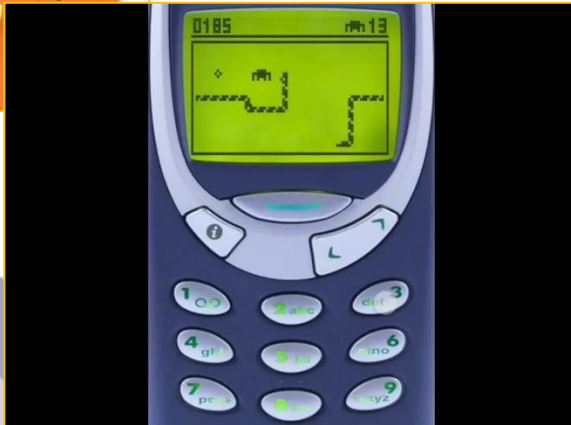
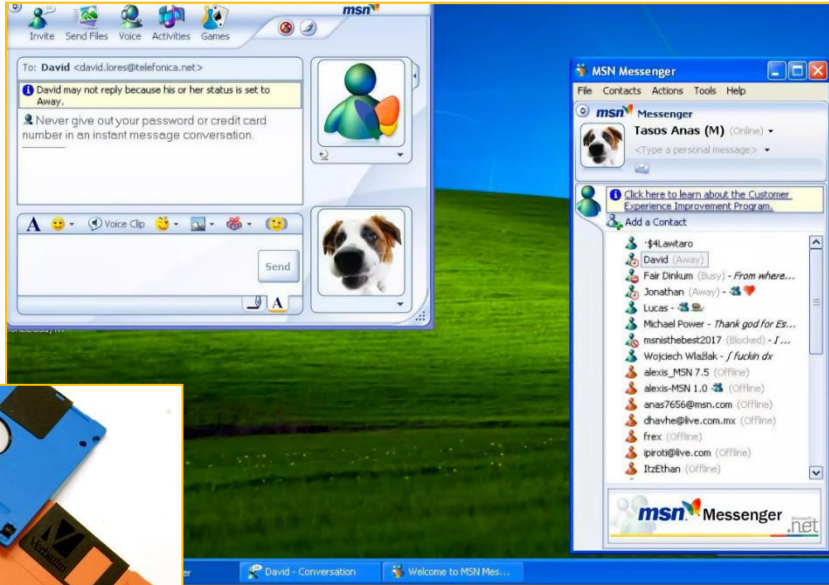




#RehabLegends



University Hospitals
Bristol and Weston
NHS Foundation Trust





Pre-Hospital Care



Pre-Operative
Care



In Hospital
interventions

CASE STUDY 1



2020

Type A dissection:
Mechanical AVR, root
replacement & hemiarth

2022

Adm. With chest pain –
Type B dissection. Semi
elective repair via L
thoracotomy

Post op:

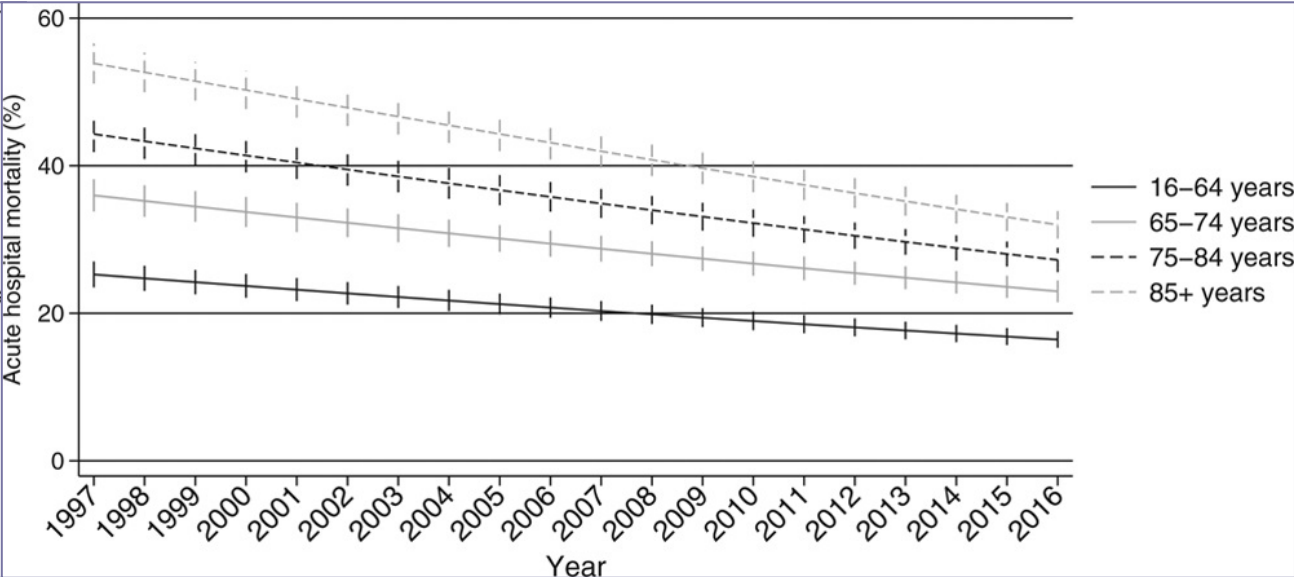
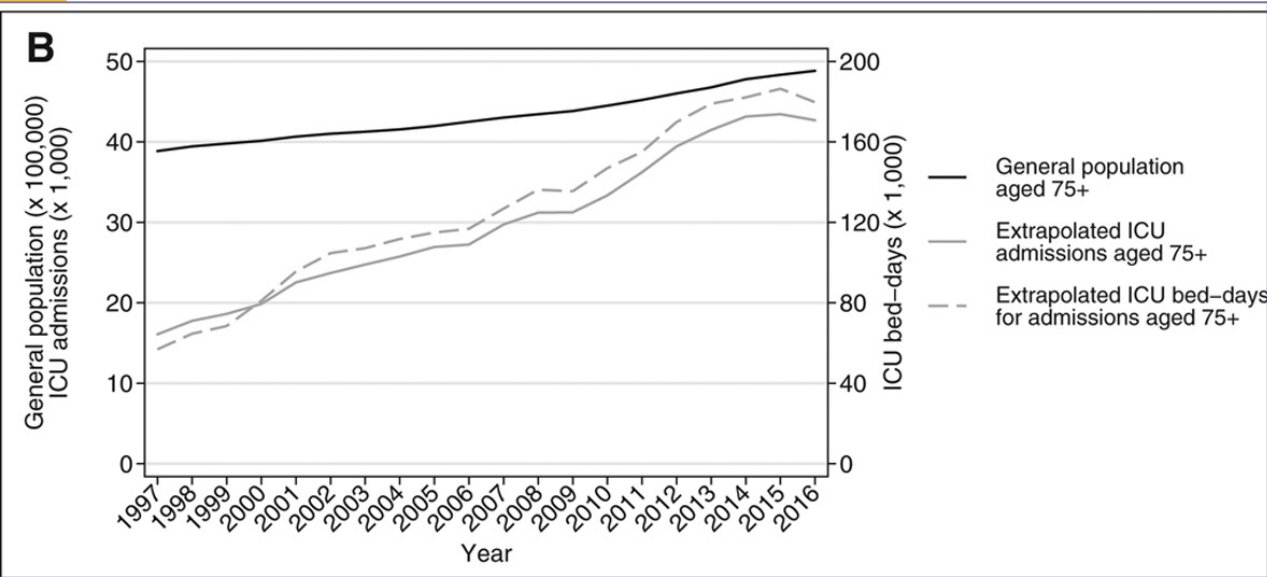
ARDS/HAP – Proned
AKI – Filtered
Ischemic SCI (T3)
Polish speaking
Covid +ve



Changing Population



- Age
- Frailty
- Co-morbidities
- Dementia
- Obesity
- T2DM: implications for CVS/liver/renal
- Diversity/ethnicity/cultural complexity



CASE STUDY 2

30 year old, Male.

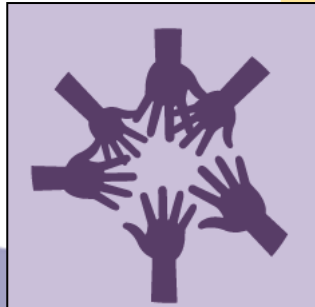
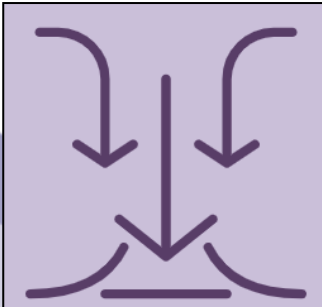
PMH: Obesity (250kg),
Asthma, Hypertension.

Adm. 6th July with MI →
MR.


15/7: GA for PCI 16/7:
CABG + MV repair
surgery.

Post op issues:

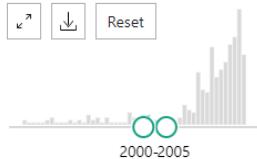
- CVS unstable
- RRT
- Respiratory failure → trache 2/8
- Suitable equipment/manual handling issues → pressure sores



Change in Culture: Respiratory → Rehabilitation focus

MY NCBI FILTERS  9 results Page 1 of 1

RESULTS BY YEAR



TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- Associated data

ARTICLE TYPE


- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial
- Review
- Systematic Review

PUBLICATION DATE

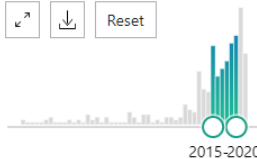
- 1 year
- 5 years
- 10 years
- Custom Range

Additional filters

- 1 **Demographics and clinical outcomes of patients admitted to a respiratory intensive care unit located in a rehabilitation center.**
Cite Ceriana P, Delmastro M, Rampulla C, Nava S. Respir Care. 2003 Jul;48(7):670-6. PMID: 12841857 **Free article.**
- 2 **Carers' opinions and emotional responses following cardiac surgery: cardiac rehabilitation implications for critical care nurses.**
Cite Davies N. Intensive Crit Care Nurs. 2000 Apr;16(2):66-75. doi: 10.1054/iccn.1999.1472. PMID: 11868590
- 3 **[Intensive care handling: specific expectations of rehabilitation].**
Cite Tasseau F, Ducret N, Laissus F, Chougrani M. Ann Fr Anesth Reanim. 2005 Jun;24(6):679-82. doi: 10.1016/j.annfar.2005.03.016. PMID: 15950116 French.
- 4 **Rehabilitation in the ICU: the European phoenix.**
Cite Nava S, Ambrosino N. Intensive Care Med. 2000 Jul;26(7):841-4. doi: 10.1007/s001340051271. PMID: 10990096 No abstract available.
- 5 **Clinical year in review IV: asthma, chronic obstructive pulmonary disease, exercise and rehabilitation, and critical care medicine.**
Cite Rochester CL. Proc Am Thorac Soc. 2005;2(6):461-5. doi: 10.1513/pats.200508-085TT. PMID: 16352748 No abstract available.
- 6 **Rehabilitation and iatrogenic complications of critical care.**
Cite Jacelon CS. Crit Care Nurs Clin North Am. 2001 Sep;13(3):365-73. PMID: 11855267 No abstract available.
- 7 **Severe brain injury rehabilitation. What's going to happen after critical care.**

MY NCBI FILTERS  143 results Page 1 of 15

RESULTS BY YEAR



TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- Associated data

ARTICLE TYPE

- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial
- Review
- Systematic Review

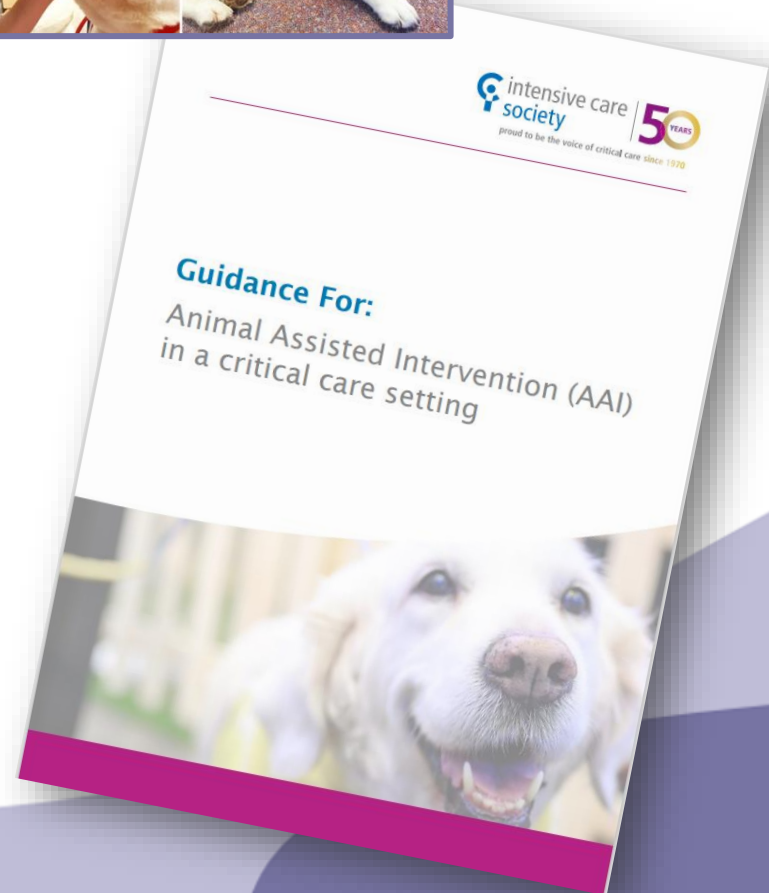
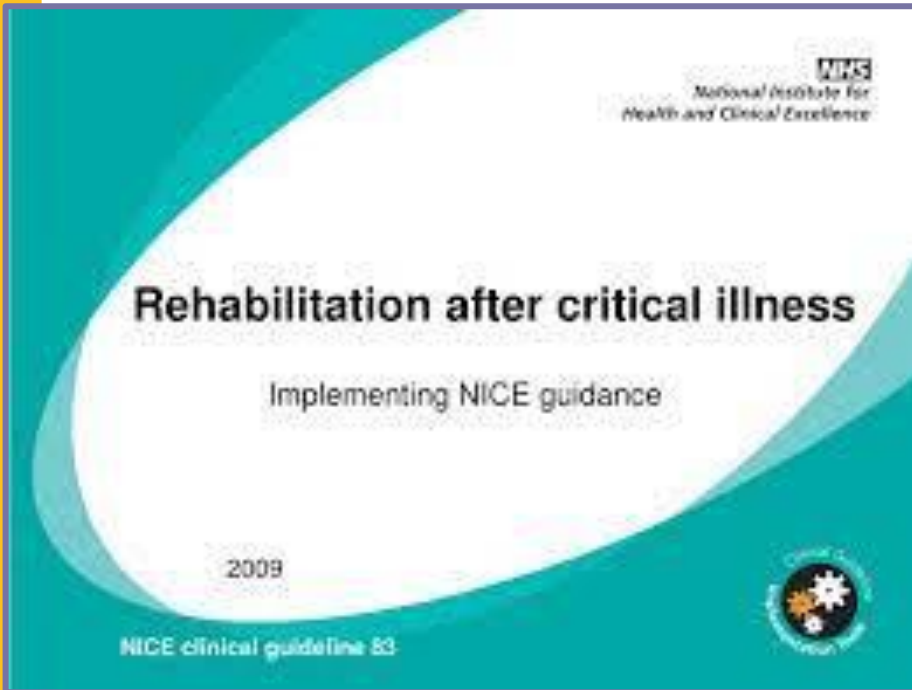
PUBLICATION DATE

- 1 year
- 5 years
- 10 years
- Custom Range

Additional filters

- 1 **Early Mobilization and Rehabilitation in the ICU: Moving Back to the Future.**
Cite Hashem MD, Nelliott A, Needham DM. Respir Care. 2016 Jul;61(7):971-9. doi: 10.4187/respcare.04741. Epub 2016 Apr 19. PMID: 27094396 **Free article.** Review.
- 2 **Early rehabilitation reduces the likelihood of developing intensive care unit-acquired weakness: a systematic review and meta-analysis.**
Cite Anekwe DE, Biswas S, Bussi eres A, Spahija J. Physiotherapy. 2020 Jun;107:1-10. doi: 10.1016/j.physio.2019.12.004. Epub 2019 Dec 19. PMID: 32135387
- 3 **The effects of active mobilisation and rehabilitation in ICU on mortality and function: a systematic review.**
Cite Tipping CJ, Harrold M, Holland A, Romero L, Nisbet T, Hodgson CL. Intensive Care Med. 2017 Feb;43(2):171-183. doi: 10.1007/s00134-016-4612-0. Epub 2016 Nov 18. PMID: 27864615 Review.
- 4 **Physiotherapy in the intensive care unit: an evidence-based, expert driven, practical statement and rehabilitation recommendations.**
Cite Sommers J, Engelbert RH, Dettling-Ihnenfeldt D, Gosselink R, Spronk PE, Nolle F, van der Schaaf M. Clin Rehabil. 2015 Nov;29(11):1051-63. doi: 10.1177/0269215514567156. Epub 2015 Feb 13. PMID: 25681407 **Free PMC article.** Review.
- 5 **Safety of Patient Mobilization and Rehabilitation in the Intensive Care Unit. Systematic Review with Meta-Analysis.**
Cite Nydahl P, Sricharoenchai T, Chandra S, Kundt FS, Huang M, Fischill M, Needham DM. Ann Am Thorac Soc. 2017 May;14(5):766-777. doi: 10.1513/AnnalsATS.201611-843SR. PMID: 28231030 Review.
- 6 **Physical Therapy and Rehabilitation in Chronic Obstructive Pulmonary Disease Patients Admitted to the Intensive Care Unit.**
Cite Marti JD, McWilliams D, Gimeno-Santos E. Semin Respir Crit Care Med. 2020 Dec;41(6):886-898. doi: 10.1055/s-0040-1709139. Epub 2020 Jul 28. PMID: 32725615 Review.
- 7 **Earlier and enhanced rehabilitation of mechanically ventilated patients in critical**

Change in Culture



Hydrotherapy with a Critical Care Patient

Aim To provide guidance of the planning, preparation and procedure of taking a critical care patient for hydrotherapy.
Scope All adult Critical Care patients who have indications for use of hydrotherapy as part of their rehabilitation program.

NHS Number:
D.O.B:
Date of initial risk assessment: 13/8/19

HPC:
Diagnosis of Variant Acute Inflammatory Demyelinating Polyneuropathy/GBS

Planning

1. Identify Suitable Patient

Indications:

- Profound muscle weakness of critical illness (Muscle of major muscle groups – Significant)
- Expectation/early signs of increase in muscle power with appropriate rehabilitation.

2. Critical Care team to co-identify and address any patient key considerations:

- Airway:** Trache or self-ventilating mechanically ventilated, take (e.g. minimum 12hours) ventilation oxygen tubing.
- Circulation:** Ensure suitable
- Disability:** Consider analgesia session.
- Other: Attachments:** PICC lines, arterial lines, CVC lines, can with appropriate covering/glove over empty prior to session, consider
- Bowels:** If patient is unable to stools, consider ordering suit
- Transfers:** Hoist – which sling
- Infections Prevention:** Consider hydro session.
- Ensure risk assessment is**

Academic Department of Critical Care
Queen Alexandra Hospital Portsmouth

3. Identify date/time and

Key considerations:

- Nil other patients in pool
- Minimum of 1hour treatment treatment

Staff Required:

| Role | Key Responsibilities |
|--------------------------------------|---|
| Airway Clinician | Oversee |
| Transfer Nurse | Assist in observation in any mechanical patient for transfers. |
| Senior Critical Care Physiotherapist | Liaise with rehabilitation airway in pool. |
| Aquatic Therapists (x2) | Liaise with hydrotherapy head in water in/out of pool. Lead therapist |
| Pool side assistants (x2) | Support hoist. Assist of the following |
| Hydrotherapy Administration staff | Be prepared for emergency pool. |

4. Patient Preparation

- Lead Aquatic therapist to visit
- Patient/family discussion on
- Gain patient final consent
- Agree signals/patient communication gaze chart with key words

DRAFT: 1.0 | Date: 03 Jan 2020 | Rev

The use of this guideline is subject to professional judgement and is not a substitute for clinical judgement. This liability can be accepted by Portsmouth Hospitals NHS Trust. © 2014



Portsmouth Hospitals NHS Trust

Academic Department of Critical Care
Queen Alexandra Hospital Portsmouth

Procedure

Session start time: Target time to leave unit:

1. Prepare the Patient (aim to leave 45mins prior to session start time)

- Wash & change into
- Prepare personal equipment
- Ensure medications given
- Disconnect non-essential
- Hoist to wheelchair or
- Change to 3m length
- Take first set of observations

On Arrival

3. Prepare for entering the pool

- Park the transfer trolley in the 'dry area'
- Place suction unit +/- Cough assist, in plastic boxes next to the pool side in the designated clinical area (shallow end)
- Place Zoll and Ventilator + portable O2 cylinder into large plastic boxes – to be kept with patient during preparation, place by pool once ready to enter.
- Take a further set of observations. Check attachments covered including inline suction catheter mount/saline port in closed position.
- Hoist to pool bed hoist, wheel to pool side and hoist into pool with help of pool side assistants

2. Prepare the Equipment

- Set up bed with end of
- Ensure main ventilator small cylinders + 1 large
- Attach patient to Zoll
- (<20% change since last
- Consider need to bring (trache dilators)
- (patient dependent – refer to
- Use Intra-Hospital Transfer

In the pool

4. Key points

- Transfer Nurse & Airway clinician: Monitor ventilation, support from pool side if patient requires suction, be ready to manage emergency situations.
- Critical Care Physiotherapist: (in pool)
 - Support ventilation/O2 tubing & suction catheter/subglottic port etc. – ensure expiratory port is not submerged
 - Consider using a small flannel under the trachea to absorb any waves of water when completing more vigorous exercise.
 - Continual monitoring of airway – clear STOP or directional comments if any concerns re: the patient position in the water.
- Aim for 15 minutes in the water for 1st session, increase as patient tolerates. Any member of the team may wish to vocalize concerns that may warrant the aquatic therapist to consider terminating treatment e.g. patient fatigue levels or distress.

After the session

- Pool side assistants to lead transfer out of the pool with aquatic therapists.
- Transfer nurse to complete a set of observations & record on transfer chart.
- Shower patient +/- Hair wash. *Top Tip: Use a plastic back over trachea/shoulders to protect from water.*
- Offer the patient a drink (as appropriate – dependent on patients current oral regime)
- Dry off with towels and hoist back to chair/bed. Cover in towels/blankets for trip back to ward.
- Check observations and if stable transfer back to the ward to complete personal care.

with the patient prior to commencing any hydrotherapy treatment. Informed consent for treatment can be gained from the patient utilising the patient consent form. Consent for treatment will be gained prior to each session.

will be reviewed and adjusted as required prior to each patient treatment session within the hydrotherapy pool. All members of the MDT are involved in the care of the patient prior to, during or as a result of treatment. The lead hydrotherapy and respiratory clinicians are charged with the final responsibility to continue at any stage on the basis of the patients' clinical presentation and risk.

| Actions required to minimise risk | Pre-treatment actions and by whom | Person responsible during treatment session |
|---|---|--|
| <ul style="list-style-type: none"> • Patient to have continued assisted mechanical ventilation throughout treatment • Patient to be switched to dry circuit ventilation • Portable suction unit to be used as required • ITU team to attend with transfer kit to allow following equipment to be poolside: <ul style="list-style-type: none"> • Battery operated back up mechanical | SC to liaise with ITU team to set alternative parameters for ventilation settings if required during treatment SC to secure additional O2 | X1 trachy change trained doctor poolside X1 ventilator trained nurse poolside assist in management of: <ul style="list-style-type: none"> • Suction unit • Cough assist |
| battery powered portable equipment to be | | X1 member of staff (SC) specifically allocated for in pool management of: <ul style="list-style-type: none"> • Ventilator tubing • Trachy maintenance |
| required to minimise risk | <ul style="list-style-type: none"> • CJ to schedule diary appointment to accommodate sole use of department • CJ to ensure adequate poolside assistant staff • CJ to advise OP colleague of schedule | LP and CJ X1 member of hydrotherapy staff (CJ) specifically to maintain patient head position and control in pool |
| lead hydrotherapy sessions in | | SC to lead team in transfer of patient onto and off of pool bed hoist CJ to advise OP colleagues of high risk patient in case of pool evacuation |
| to be in reception/ waiting or | | person responsible during |

(Critical Care)



Demands on Staff

Rotational staff vs expertise

- heavy teaching burden, competencies

Increasing expectation for

- QI projects
- Service development
- Research

Burnout/emotional burden.



COVID-19

From recent clinical experience, it is becoming evident that COVID-19 intubated & ventilated patients do have physiotherapy needs and physiotherapy input can be beneficial to their clinical condition.

Further to the physiotherapy input we can offer, clinicians with experience of working in Critical Care can provide much needed support to the nursing & medical teams – many of whom are working outside of their normal place of work.

Proposal:

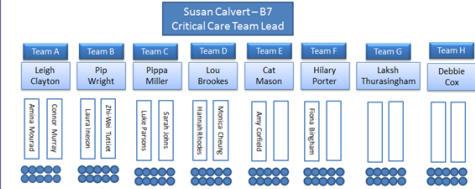
Stage 1. – Cover for up to 32 Critical Care Beds.

Allocate an experienced band 6 physiotherapist to provide support for a set of 4 COVID-19 patients with band 7 Critical Care Team Lead to provide support/clinical reasoning to the 6s.



Stage 2. – Cover for 80 Critical Care Beds.

Create a pod system where by an experience band 6 physiotherapist provides support to a set of 10 COVID-19 patients with the support of an enhance trained band 5/6 physiotherapist (on call trained, some critical care experience or good on call experience).



The physio team allocated to their patients would provide what ever support was of the greatest priority. This may include, but is not exclusive to:

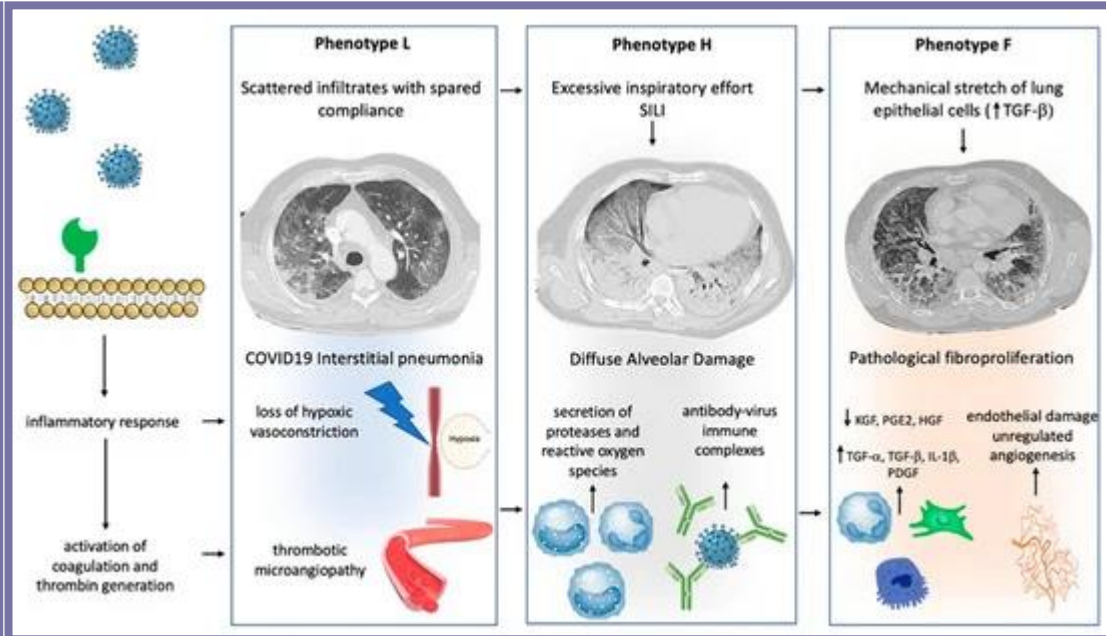
- Physiotherapy assessment and treatment for the patient's respiratory function
- Assistance with personal care and pressure relief/repositioning for the patient including proning and semi-proning
- Cleaning of bed space & equipment
- 'Runner' – topping up PPE trolleys, getting & passing equipment to colleagues.
- Ventilator adjustments/clinical reasoning
- Assistance with data inputting to IT systems.

Cover will be needed from 8am – 6pm 7 days a week. Ideally teams the above teams would work a staggered week to allow for even coverage. This would dilute the number of beds covered unless more teams were formed or teams covered larger groups of patients. (e.g. 40-50 patients covered with 8 teams working 7 days 38hour weeks?

| | Team A | Team B | Team C | Team D | Team E | Team F | Team G | Team H |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|
| Monday | 5 | | | | | | | |
| Tuesday | 4 | | | | | | | |
| Wednesday | 5 | | | | | | | |
| Thursday | 4 | | | | | | | |
| Friday | 5 | | | | | | | |
| Saturday | 5 | | | | | | | |
| Sunday | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

Training Needs:

- Key presentation of COVID-19
- Refresher on ventilator basics
- New NIV vents
- VHI
- PEEP recruitment
- Manual assisted cough
- Semi prone & prone position
- Non-bronchoscopic lavage
- ABG taking/running
- IT systems
- Donning/Doffing PPE & post work decontamination.



What does it all mean??

Increasing need for rehabilitation / therapy input during AND following ICU stay

ICU environment needs to be fit for purpose

Staffing levels and skill mix need to take into account ALL the complexity issues discussed

Provision of roles specifically for Education, Clinical Expertise?



References

- Jones, Andrew MD, FRCP^{1,2}; Toft-Petersen, Anne P. PhD¹; Shankar-Hari, Manu MSc, PhD^{1,2,3}; Harrison, David A. PhD¹; Rowan, Kathryn M. PhD¹. Demographic Shifts, Case Mix, Activity, and Outcome for Elderly Patients Admitted to Adult General ICUs in England, Wales, and Northern Ireland. *Critical Care Medicine*: April 2020 - Volume 48 - Issue 4 - p 466-474
- Adhikari NK, Fowler RA, Bhagwanjee S, Rubenfeld GD. Critical care and the global burden of critical illness in adults. *Lancet*. 2010 Oct 16;376(9749):1339-46. doi: 10.1016/S0140-6736(10)60446-1. Epub 2010 Oct 11. PMID: 20934212; PMCID: PMC7136988.
- Pugh RJ, Bailey R, Szakmany T, Al Sallakh M, Hollinghurst J, Akbari A, Griffiths R, Battle C, Thorpe C, Subbe CP, Lyons RA. Long-term trends in critical care admissions in Wales*. *Anaesthesia*. 2021 Oct;76(10):1316-1325. doi: 10.1111/anae.15466. Epub 2021 May 2. PMID: 33934335.
- Laporte L, Hermetet C, Jouan Y, Gaborit C, Rouve E, Shea KM, Si-Tahar M, Dequin PF, Grammatico-Guillon L, Guillon A. Ten-year trends in intensive care admissions for respiratory infections in the elderly. *Ann Intensive Care*. 2018 Aug 15;8(1):84. doi: 10.1186/s13613-018-0430-6. PMID: 30112650; PMCID: PMC6093821.
- Jones A, Toft-Petersen AP, Shankar-Hari M, Harrison DA, Rowan KM. Demographic Shifts, Case Mix, Activity, and Outcome for Elderly Patients Admitted to Adult General ICUs in England, Wales, and Northern Ireland. *Crit Care Med*. 2020 Apr;48(4):466-474. doi: 10.1097/CCM.0000000000004211. PMID: 32205592.
- Denehy L, Granger CL, El-Ansary D, Parry SM. Advances in cardiorespiratory physiotherapy and their clinical impact. *Expert Rev Respir Med*. 2018 Mar;12(3):203-215. doi: 10.1080/17476348.2018.1433034. Epub 2018 Feb 1. PMID: 29376440.
- Shankar-Hari M, Wunsch H, Rowan K, Singer M, Rubenfeld GD, Angus DC. Reflections on Critical Care's Past, Present, and Future. *Crit Care Med*. 2021 Nov 1;49(11):1855-1865. doi: 10.1097/CCM.0000000000005246. PMID: 34473655.



THE COMPLEXITY CHALLENGE

A CSP SUMMIT

Neurocritical care: are we adapting to meet the challenges of increasing complexity?

Charandeep Malhi

Acute Neurosciences Clinical Specialist Physiotherapist

Oxford University Hospitals NHS Foundation Trust



Neurocritical care complexity

- National system change: Major trauma networks and centres 2012
19% increased odds of survival
>1600 extra trauma victims alive
no formal provision for specialist rehabilitation

Moran et al, 2018

- Workforce change: Neurosurgeons
1993 – 132.5 WTE Neurosurgeons (UK & Ireland)
2020 – 453 WTE

Whitehouse et al, 2020



Neurocritical care complexity continued

- Statistics change: UK ABI admissions
356, 699 in 2019-20 (12% increase from 2005-6)
977 admissions per day
1 head injury every 3 minutes

Headway, 2022

- Evidence change/availability: decompressive craniectomies (TBI)
lower mortality
higher rates of vegetative states & severe disability

Hutchinson et al, 2016

Neurocritical care complexity continued

- Guidelines change: NICE Head Injury CG 2003, 2007, 2014
2007 severe TBI management in specialist centres
reduced mortality 16-64 age group
Marincowitz et al, 2019
- Patients change: trauma
1990 – mean age 36.1 years, RTCs 59.1%, CT 33.6%
2013 – mean age 53.8 years, <2m falls 39.1%, CT 86.8%

Kehoe et al, 2015



Neurocritical care complexity continued

- Society and behaviour change: e-scooters
MTC (London) 202 injuries Jan – Dec 2020
8 ITU
Mortality 0.5% (n=1)

Ahluwalia, 2022

- Patient complexity change and challenges: PDOC
RCP guidelines 2020
Therapy provision and care pathways
Registry (UKROC pilot)



Major trauma, complex needs and rehabilitation

- TARN and UKROC data (recruitment 01/07/2016 – 31/08/2017)
- 550/1381 (40%) category A/B needs identified in MTC received SR
- 1154 in SR post MTC admission (56% category A/B needs identified)
- Increased provision 328 beds (£53M)
- Annual net cost benefit >£500M



NCASRI, 2019



Specialist rehabilitation for TBI

- 3578 pts (289 VS) severe TBI
- 75 SR centres 2010-18
- Mean episode of cost of rehab £42 894 (offset within 18.2 months)
- Net life-time savings in care costs £679 776/patient
- >£4B savings in cost of ongoing care over 8-year national cohort

Turner-Stokes et al, 2019

OPEN

J Head Trauma Rehabil
Vol. 34, No. 4, pp. 205-214
Copyright © 2019 The Authors. Published by Wolters Kluwer Health, Inc.

Estimated Life-Time Savings in the Cost of Ongoing Care Following Specialist Rehabilitation for Severe Traumatic Brain Injury in the United Kingdom

Lynne Turner-Stokes, DM, FRCP; Mendwas Dzingina, PhD; Robert Shavelle, PhD; Alan Bill, BCom; Heather Williams, MSc; Keith Sephton, BSc(Eng), ACGI

Objectives: To evaluate cost-efficiency of rehabilitation following severe traumatic brain injury (TBI) and estimate the life-time savings in costs of care. **Setting/Participants:** TBI patients ($n = 3578/6043$) admitted to all 75 specialist rehabilitation services in England 2010-2018. **Design:** A multicenter cohort analysis of prospectively collated clinical data from the UK Rehabilitation Outcomes Collaborative national clinical database. **Main Measures:** Primary outcomes: (a) reduction in dependency (UK Functional Assessment Measure), (b) cost-efficiency, measured in time taken to offset rehabilitation costs by savings in costs of ongoing care estimated by the Northwick Park Dependency Scale/Care Needs Assessment (NPDS/NPCNA), and (c) estimated life-time savings. **Results:** The mean age was 49 years (74% males). Including patients who remained in persistent vegetative state on discharge, the mean episode cost of rehabilitation was £42 894 (95% CI: £41 512, £44 235), which was offset within 18.2 months by NPCNA-estimated savings in ongoing care costs. The mean period life expectancy adjusted for TBI severity was 21.6 years, giving mean net life-time savings in care costs of £679 776/patient (95% CI: £635 972, £722 786). **Conclusions:** Specialist rehabilitation proved highly cost-efficient for severely disabled patients with TBI, despite their reduced life-span, potentially generating over £4 billion savings in the cost of ongoing care for this 8-year national cohort. **Key words:** *brain injuries, Economic evaluation, outcome assessment (Healthcare), Rehabilitation, traumatic*



Specialist hyperacute inpatient rehabilitation

- Two HA inpatient services 2012 – 2015
- 180 patients with complete data set
- Mean LOS 103 days
- Mean episode cost £77 119
- Mean reduction ‘weekly care costs’ £462/week
- Mean time to offset cost of SR 27.6 months

Turner-Stokes et al, 2016

Downloaded from <http://bmjopen.bmj.com/> on September 23, 2016 - Published by group.bmj.com

Open Access

Research

BMJ Open Cost-efficiency of specialist hyperacute in-patient rehabilitation services for medically unstable patients with complex rehabilitation needs: a prospective cohort analysis

Lynne Turner-Stokes,^{1,2} Ganesh Bavikatte,³ Heather Williams,² Alan Bill,² Keith Sephton²

To cite: Turner-Stokes L, Bavikatte G, Williams H, *et al*. Cost-efficiency of specialist hyperacute in-patient rehabilitation services for medically unstable patients with complex rehabilitation needs: a prospective cohort analysis. *BMJ Open* 2016;6:e012112. doi:10.1136/bmjopen-2016-012112

► Prepublication history for this article is available online only at <http://bmjopen.bmj.com/>.

ABSTRACT

Objectives: To evaluate functional outcomes, care needs and cost-efficiency of hyperacute (HA) rehabilitation for a cohort of in-patients with complex neurological disability and unstable medical/surgical conditions.

Design: A multicentre cohort analysis of prospectively collected clinical data from the UK Rehabilitation Outcomes Collaborative (UKROC) national clinical database, 2012–2015.

Setting: Two HA specialist rehabilitation services in England, providing different service models for HA rehabilitation.

Strengths and limitations of this study

- Hyperacute (HA) rehabilitation is an emerging field about which there is currently very little in the published literature.
- This 3-year national consecutive cohort analysis compares two different service models of HA rehabilitation from opposite ends of England.
- Prospective routinely collected data are reflective of real clinical practice.
- Missing data are inevitable in routine clinical data sets, but the 95% capture is high compared with many such analyses.



Summary

- Increasing patient numbers and complexity
- ‘Change is the constant’
- Are we adapting to meet the changes and challenges?
- Can our workforce meet complex neurocritical care and (hyper)acute rehabilitation needs with services operating 5/7 with limited extended hours cover?



References

- Ahluwalia, R. *et al.* (2022) 'The e-scooter pandemic at a UK Major Trauma Centre: A cost-based cohort analysis of injury presentation and treatment', *The Surgeon*. Available at: <https://doi.org/10.1016/j.surge.2022.07.001>.
- Carter, B. *et al.* (2022) 'A national study of 23 major trauma centres to investigate the effect of frailty on clinical outcomes in older people admitted with serious injury in England (FiTR 1): a multicentre observational study', *The Lancet Healthy Longevity*, 3(8), pp. e540–e548. Available at: [https://doi.org/10.1016/S2666-7568\(22\)00122-2](https://doi.org/10.1016/S2666-7568(22)00122-2).
- Hawley, C. *et al.* (2017) 'Traumatic brain injuries in older adults—6 years of data for one UK trauma centre: retrospective analysis of prospectively collected data', *Emergency Medicine Journal*, 34(8), pp. 509–516. Available at: <https://doi.org/10.1136/emmermed-2016-206506>.
- Headway (2022) *Statistics*. Available at: <https://www.headway.org.uk/about-brain-injury/further-information/statistics/> (Accessed: 25 September 2022).
- Hutchinson, P.J. *et al.* (2016) 'Trial of Decompressive Craniectomy for Traumatic Intracranial Hypertension', *New England Journal of Medicine*, 375(12), pp. 1119–1130. Available at: <https://doi.org/10.1056/NEJMoa1605215>.
- Kehoe, A. *et al.* (2015) 'The changing face of major trauma in the UK', *Emergency Medicine Journal*, 32(12), pp. 911–915. Available at: <https://doi.org/10.1136/emmermed-2015-205265>.
- Marincowitz, C. *et al.* (2019) 'Evaluation of the impact of the NICE head injury guidelines on inpatient mortality from traumatic brain injury: an interrupted time series analysis', *BMJ Open*, 9(6), p. e028912. Available at: <https://doi.org/10.1136/bmjopen-2019-028912>.
- Moran, C.G. *et al.* (2018) 'Changing the System - Major Trauma Patients and Their Outcomes in the NHS (England) 2008–17', *EClinicalMedicine*, 2–3, pp. 13–21. Available at: <https://doi.org/10.1016/j.eclinm.2018.07.001>.
- NCASRI (2016) 'Specialist rehabilitation for patients with complex needs following major surgery.' Available at: [specialist-rehabilitation-for-patients-with-complex-needs-following-major-injury-report-2016.pdf \(hqip.org.uk\)](https://www.hqip.org.uk/wp-content/uploads/2016/08/specialist-rehabilitation-for-patients-with-complex-needs-following-major-injury-report-2016.pdf) (Accessed: 25 September 2022).
- Turner-Stokes, L. *et al.* (2016) 'Cost-efficiency of specialist hyperacute in-patient rehabilitation services for medically unstable patients with complex rehabilitation needs: a prospective cohort analysis', *BMJ Open*, 6(9), p. e012112. Available at: <https://doi.org/10.1136/bmjopen-2016-012112>.
- Turner-Stokes, L. *et al.* (2019) 'Estimated Life-Time Savings in the Cost of Ongoing Care Following Specialist Rehabilitation for Severe Traumatic Brain Injury in the United Kingdom', *The Journal of Head Trauma Rehabilitation*, 34(4), pp. 205–214. Available at: <https://doi.org/10.1097/HTR.0000000000000473>.
- Whitehouse, K. *et al.* (2020) 'UK Neurosurgery Workforce Report 2020'. Available at: [file:///C:/Users/malhic/Downloads/UK_Neurosurgery_Workforce_Report_2020%20\(3\).pdf](file:///C:/Users/malhic/Downloads/UK_Neurosurgery_Workforce_Report_2020%20(3).pdf) (Accessed: 25 September 2022).





THE COMPLEXITY CHALLENGE

A CSP SUMMIT

Post-Critical Care The Rehabilitation Challenge

Owen Gustafson



NICE National Institute for
Health and Care Excellence



Rehabilitation after critical illness in adults

Clinical guideline
Published: 25 March 2009
www.nice.org.uk/guidance/cg83

NICE National Institute for
Health and Care Excellence



Rehabilitation after critical illness in adults

Quality standard
Published: 7 September 2017
www.nice.org.uk/guidance/qs158



**British Society of
Rehabilitation Medicine**
Promoting quality through
education and standards



proud to be the voice of critical care since 1970



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



Case mix (i)

| | 2019 | 2020 | 2021 |
|---|-----------------|-----------------|-----------------|
| Age (years), mean (SD) | 60.6 (17.8) | 59.7 (16.9) | 59.0 (16.9) |
| Male, n (%) | 91,528 (55.6%) | 84,847 (58.1%) | 81,706 (57.9%) |
| Ethnic group, n (%) | | | |
| White | 141,275 (85.8%) | 118,738 (81.3%) | 112,880 (80.0%) |
| Mixed/multiple ethnic groups | 1143 (0.7%) | 1234 (0.8%) | 1284 (0.9%) |
| Asian/Asian British | 7011 (4.3%) | 8817 (6.0%) | 8473 (6.0%) |
| Black/African/Caribbean/Black British | 4358 (2.6%) | 5109 (3.5%) | 5048 (3.6%) |
| All other | 3339 (2.0%) | 4229 (2.9%) | 4374 (3.1%) |
| Not stated | 7531 (4.6%) | 7839 (5.4%) | 9112 (6.5%) |
| Index of Multiple Deprivation (IMD) quintile *, n (%) | | | |
| 1 (least deprived) | 25,741 (15.9%) | 22,050 (15.4%) | 21,030 (15.2%) |
| 2 | 29,574 (18.3%) | 25,111 (17.5%) | 24,204 (17.5%) |
| 3 | 32,361 (20.0%) | 28,446 (19.9%) | 27,047 (19.5%) |
| 4 | 35,229 (21.8%) | 31,817 (22.2%) | 30,997 (22.4%) |
| 5 (most deprived) | 38,783 (24.0%) | 35,663 (24.9%) | 35,174 (25.4%) |

*Index of Multiple Deprivation (IMD) is based on the patient's usual residential postcode (assigned at the level of Lower Layer Super Output Area) according to: English Index of Multiple Deprivation 2019 for postcodes in England; Welsh Index of Multiple Deprivation 2019 for postcodes in Wales; Northern Ireland Multiple Deprivation Measure 2017 for postcodes in Northern Ireland.


SD - standard deviation



Hot Topic

Chronic
Respiratory
Disease

Inequality in Pulmonary Rehabilitation – The challenges magnified by the COVID-19 pandemic

Chronic Respiratory Disease
Volume 19: 1–4
© The Author(s) 2022
Article reuse guidelines:
sagepub.com/journals-permissions
DOI: 10.1177/14799731221104098
journals.sagepub.com/home/crd


Lucy Gardiner¹  and Sally Singh^{2,3}





THE COMPLEXITY CHALLENGE

A CSP SUMMIT



Adapting to the New Challenge – the Community Element

Lucy Gardiner



Learning objectives

- To develop an awareness of unmet rehabilitation need
- To develop an awareness of inequalities in prevalence and impact of long-term conditions
- To consider strategies that may support the provision and delivery of equitable rehabilitation

*Scan for
references*



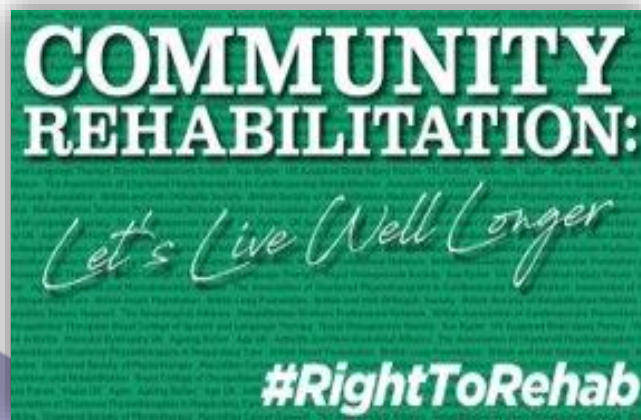


REHABILITATION
— 2030 —
a call for action

Multimorbidity: a priority
for global health research

April 2018

 The Academy of
Medical Sciences



Millions in poor health due to lack of rehab after illness, warns UK report

Stroke, heart attack and cancer patients at risk of being 'stuck in downward spiral' without recovery support, say physiotherapists

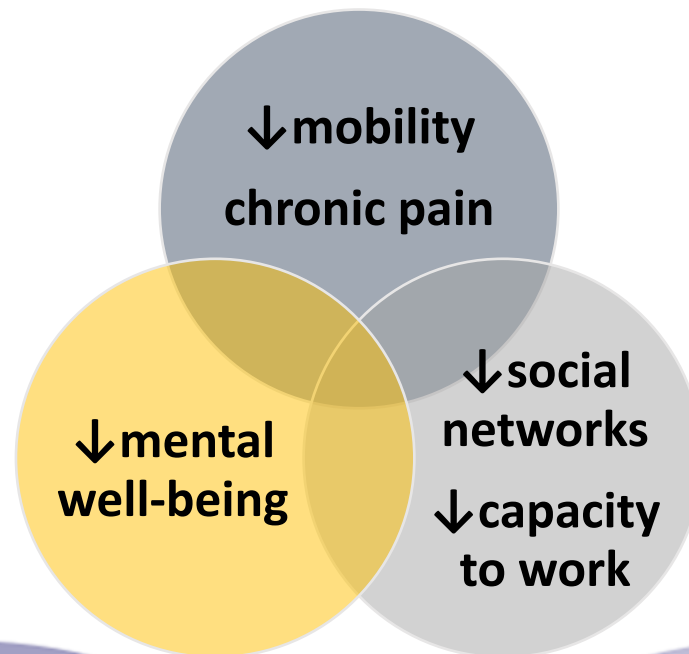


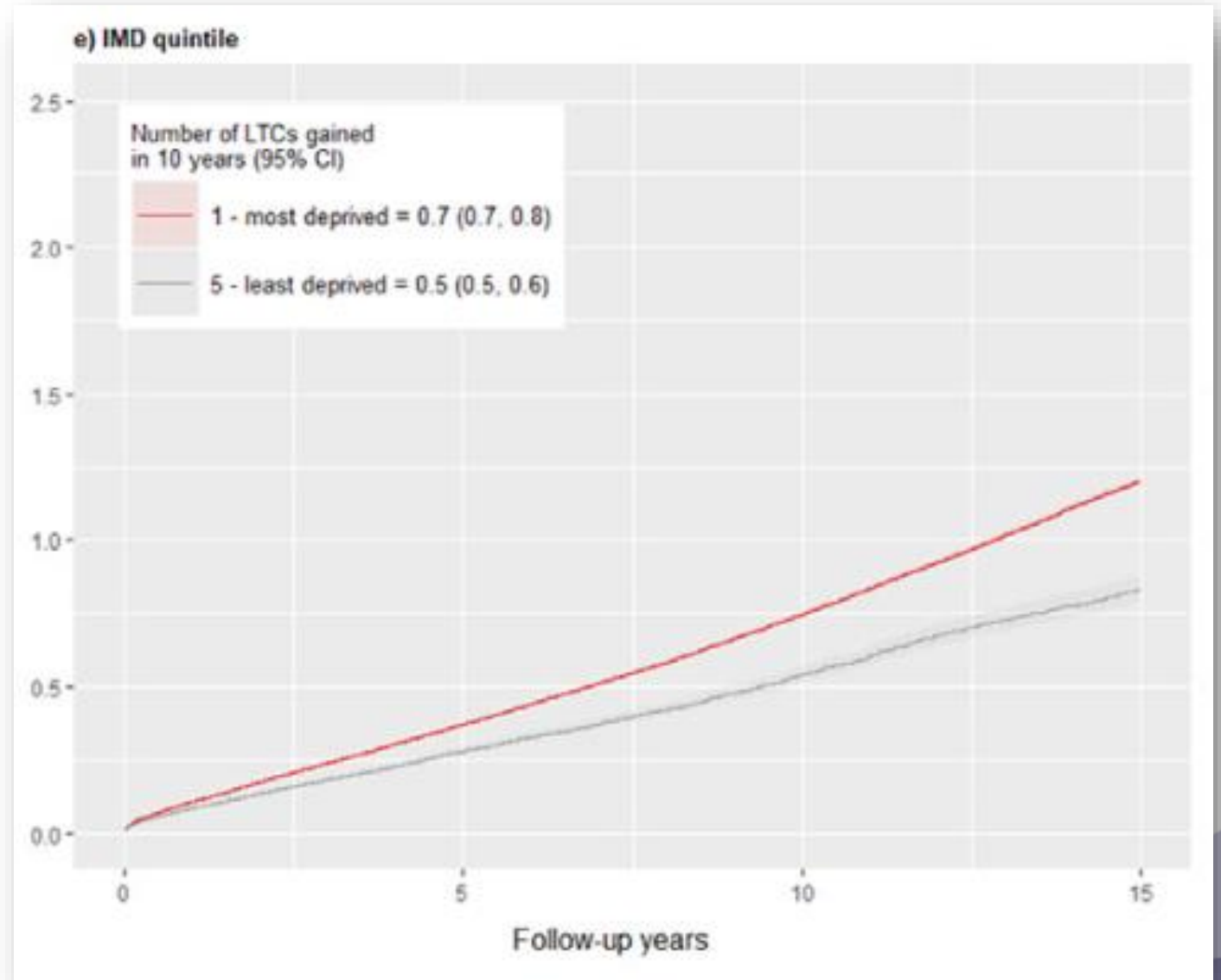
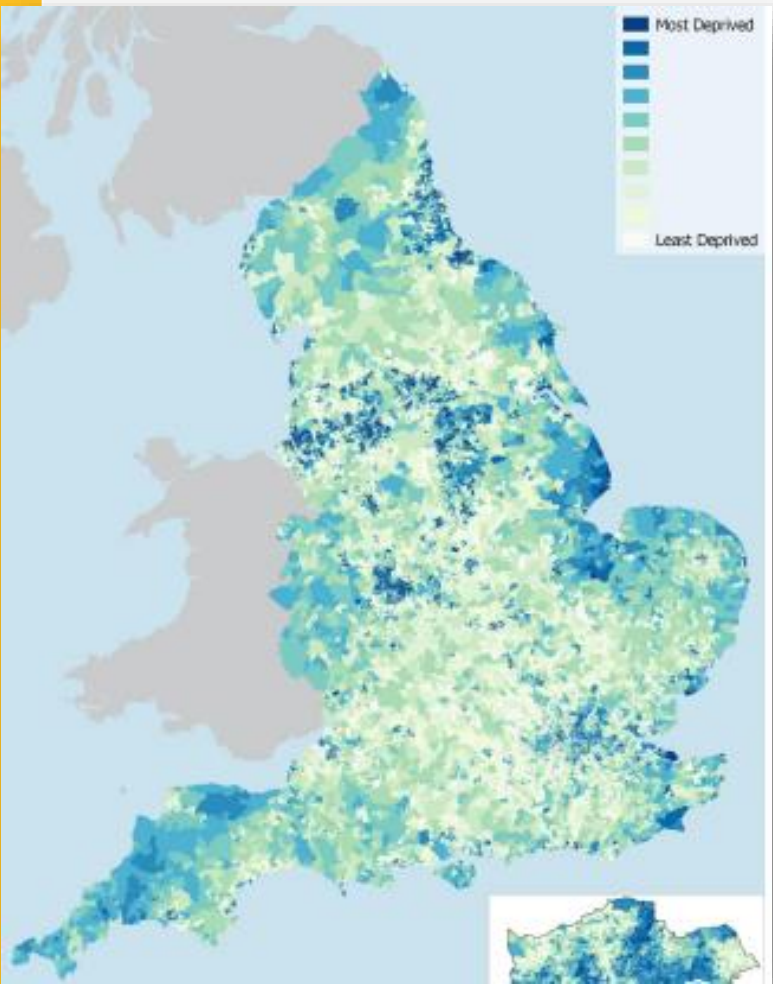
The Chartered Society of Physiotherapy is calling for better access to high-quality rehabilitation services to avoid 'further entrenching health inequalities'. Photograph: Janine Wiedel Photolibrary/Alamy

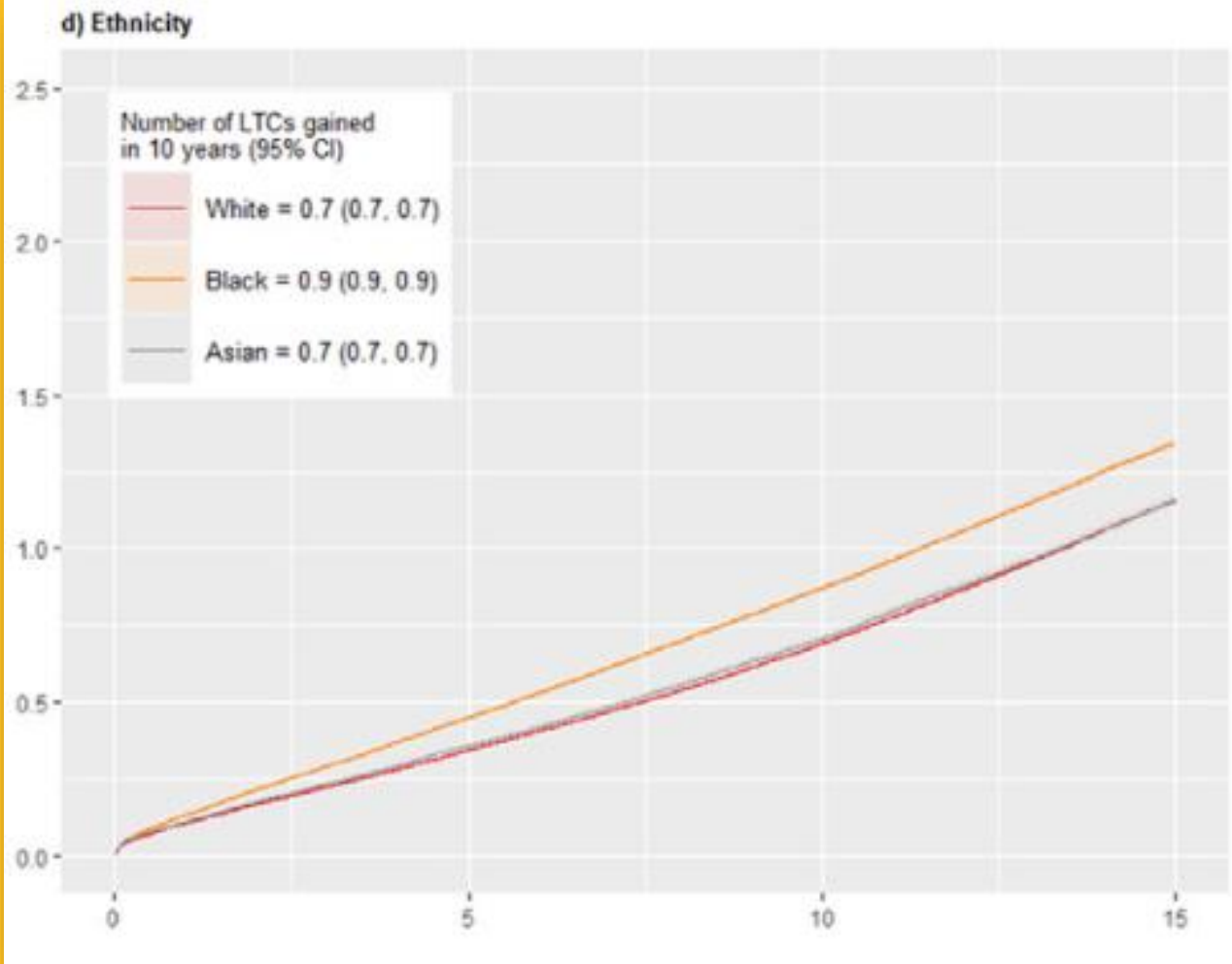
Living with Multiple LTCs

- More likely to have poorer health, quality of life and at higher risk of dying
- Some conditions may cluster with varied impact and experiences

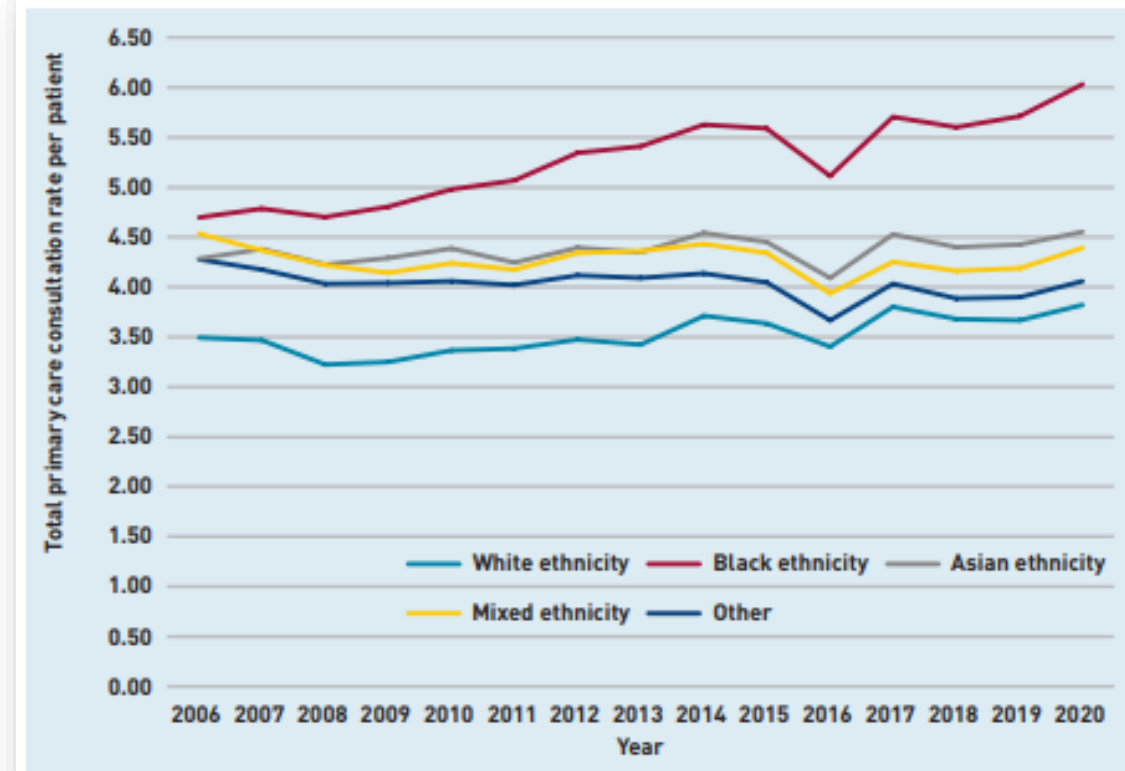
NIHR, 2021



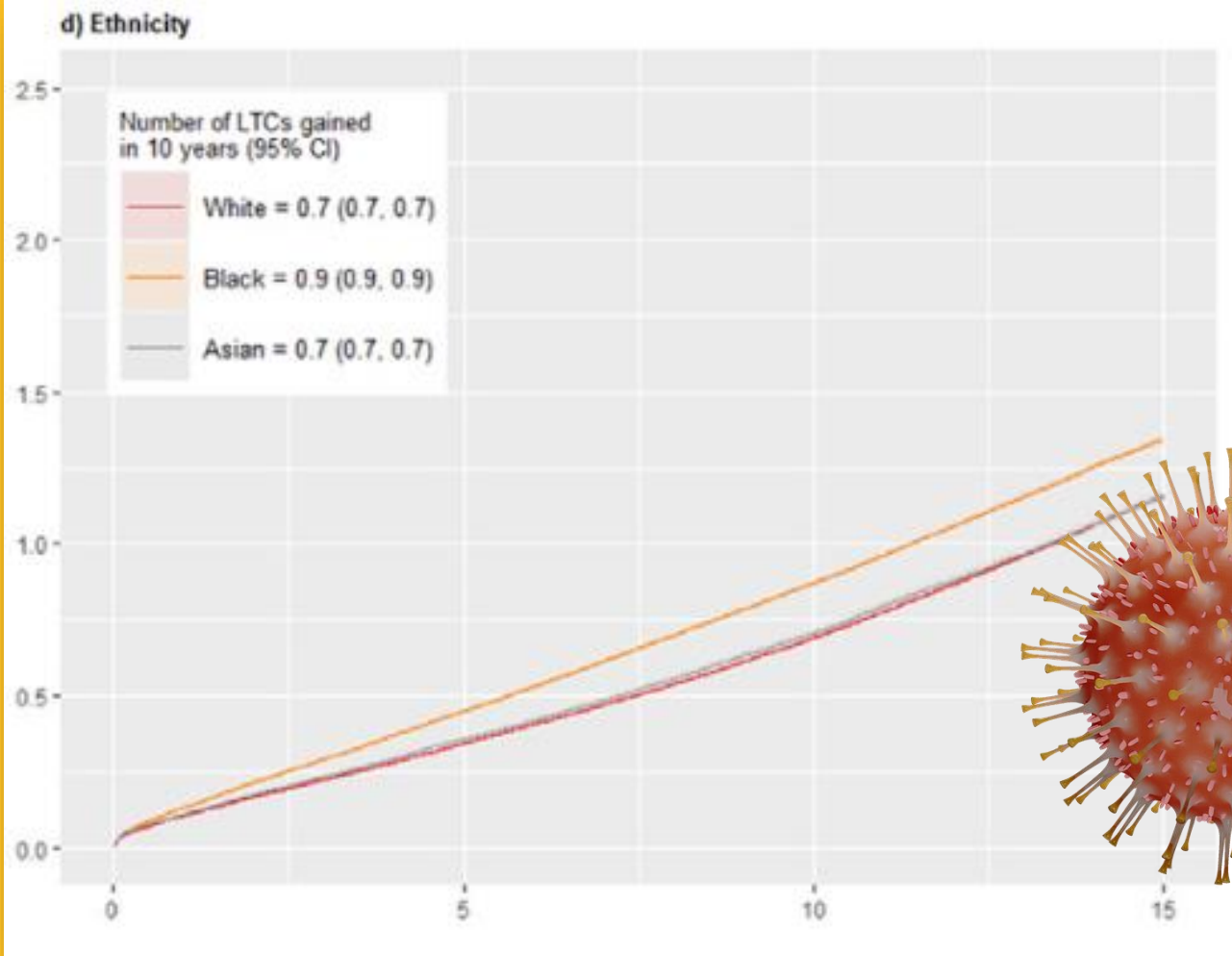




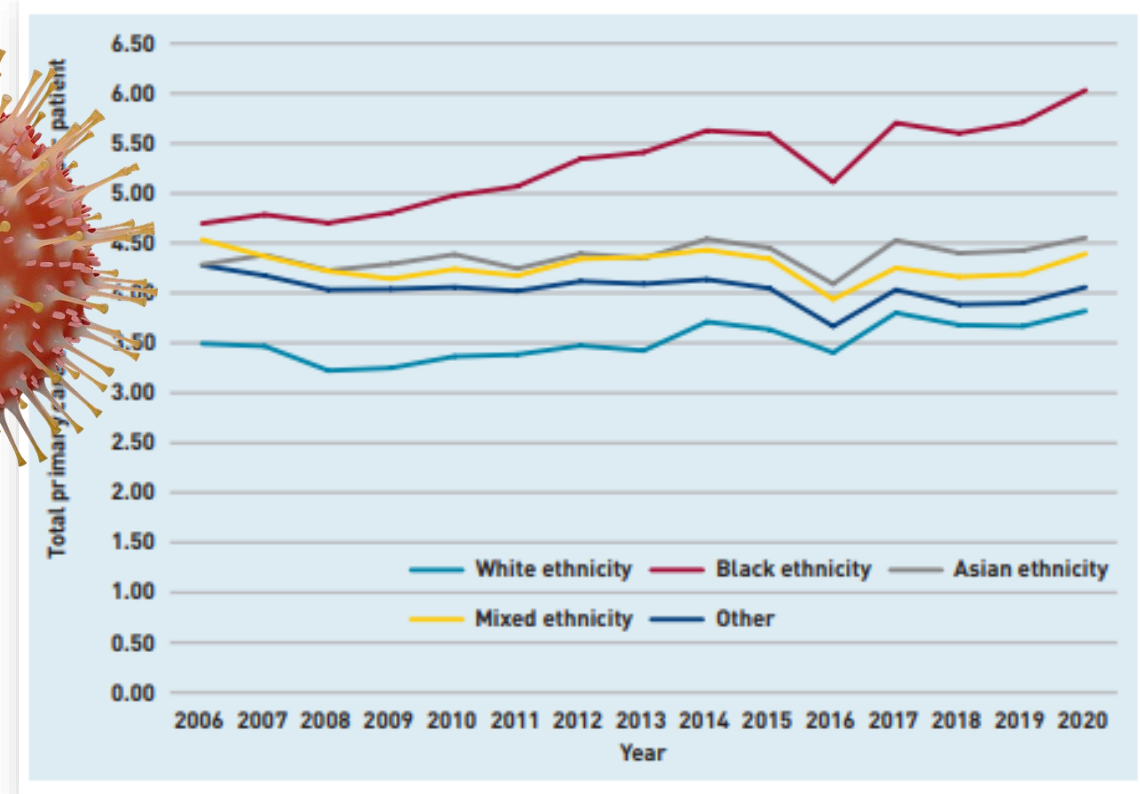
Bisquera et al., 2022



Soley-Bori et al., 2022



Bisquera et al., 2022



Soley-Bori et al., 2022

Pulmonary rehabilitation

“Additional RCTs comparing pulmonary rehabilitation and conventional care in COPD are not warranted”

McCarthy et al., 2015, pp.2

- People living with COPD in more socioeconomically deprived areas less likely to complete PR than counterparts living in the least deprived areas
- Ethnicity of UK PR attendees predominantly White-British*



Influenced by:

- Environment
- Knowledge
- Beliefs about consequences

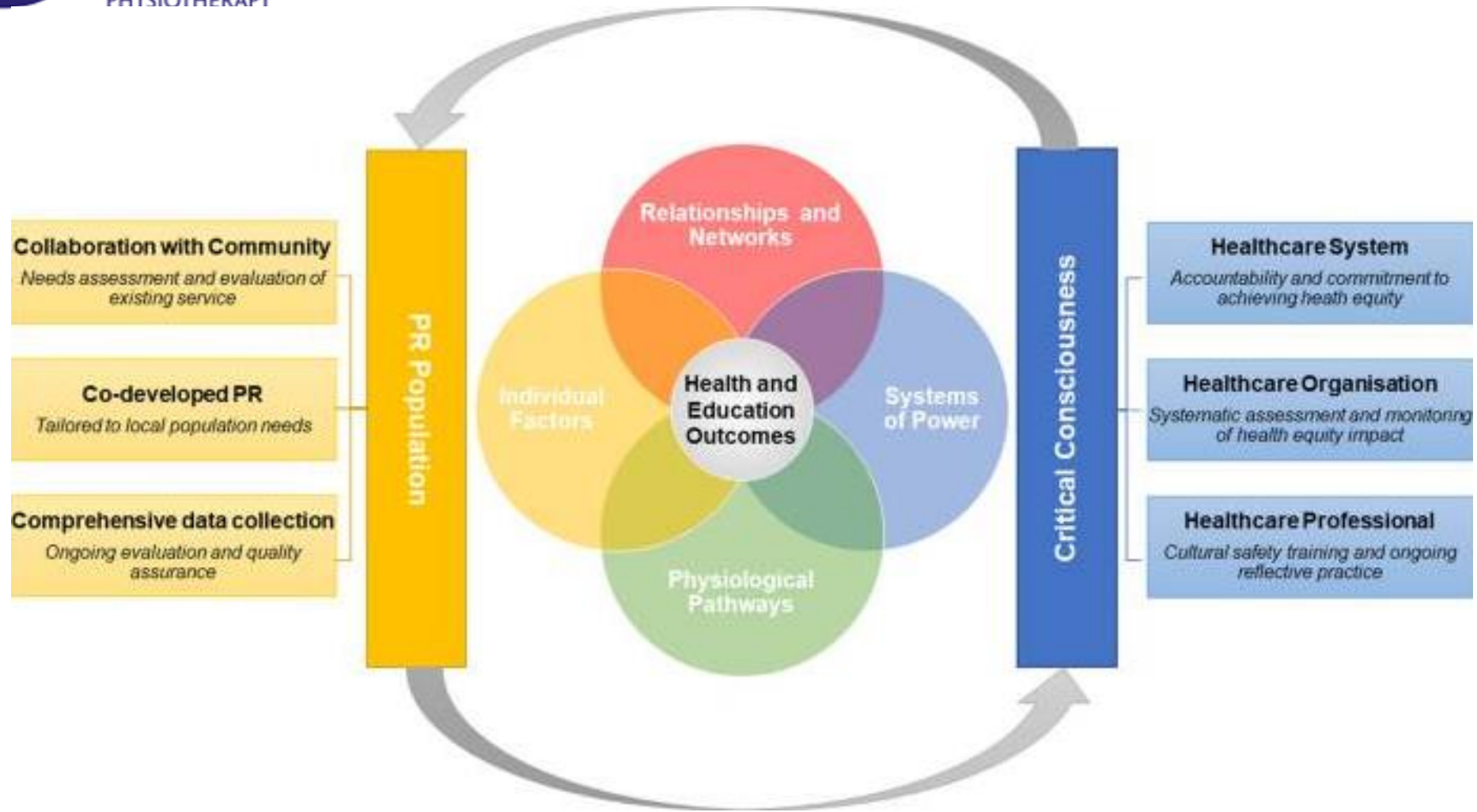
Cox et al., 2017



Defining components
of culture:

- Knowledge
- Values
- Beliefs
- Practices





Gardiner & Singh, 2022

Toward health equity in rehabilitation

- ✓ Knowing our population
- ✓ Comprehensive, good-quality data
- ✓ Individual and organisational reflexivity



Scan for reference list



@LucyGardinerPT
@theACPRC

