

Supplementary data

Supplement 1

Documentation - Critical Care Access when resources are limited.

| | |
|---|---|
| Name d.o.b. MRN NHS Number | |
| Have efforts to find resources been exhausted | Y/N Comment: |
| Service Capacity (Table 1) | Available / limited / severely limited |
| Level of demand for service | Normal / increased up to x2 / increased >2-fold |
| Physiology and co-morbidity | |
| SOFA class | /4 |
| NEWS | /20 |
| Pre-existing life shortening illness | Y/N |
| Comorbidity score | /21 |
| Functional capacity | CRS category /other |
| Age | |
| Patient and family/carers | |
| Does the patient have capacity? | Y/ N If no will need |
| Is there an existing power of attorney/advanced decision to refuse treatment? | Y/ N |
| Are there safeguarding concerns | Y/ N |
| Patient and family/carer discussion | |
| Named individuals | |
| Can a decision be agreed at this point? | Y/N |
| Ethics note | |

| | |
|-----------------------------------|-----------------|
| Clinician note | |
| Consensus reached | Unanimous/Split |
| Nature of disagreement if any | |
| Agreed outcome | |
| Communicated to patient or family | |
| Agreed plan? | |
| Clinician 1 Name and role | Signature |
| GMC number | Date |
| Clinician 2 Name and role | Signature |
| GMC number | Date |
| Clinician 3 Name and role | Signature |
| GMC number | Date |
| Others Name and role | Signature |
| GMC number | Date |
| Others Name and role | Signature |
| GMC number | Date |

Supplement 2

Critical care referral form – this will be completed at point of referral..

Referral form for Critical Care Assessment

To be completed by referring medical / surgical / ED team

Date:**Time:**

Patient label / details (including MRN):

Location / ward:**Assessing doctor:****Bleep / contact no.****Consultant approving referral:****Likely diagnosis:****COVID19 status:** Suspected Y / N

Confirmed Y / N

Age: _____ **Clinical Frailty Score (Rockwood score - essential):** _____**Co-morbidities (including severity):****Weight:** _____ **BMI:** _____

- 1.
- 2.
- 3.
- 4.
- 5.

Function / Physiological reserve in preceding month - Is the patient able to do the following?

1. Take care of self eg dressing, bathing, using the toilet? Yes No
2. Walk indoors? Yes No
3. Climb a full flight of stairs, without stopping or resting? Yes No
4. Walk 100 yds on level ground at normal pace, without stopping or resting? Yes No
5. Run a short distance or more? Yes No

Activity limited by: (eg SOB, claudication, back pain etc):

Patient's values & wishes - what is important to the patient about outcomes of their care?**Treatment Escalation Plan completed?** **Next of kin:****NOK Contact no.**

SEVERITY OF ILLNESS ASSESSMENT:

Modified SOFA score: _____ **NEWS2 Score** _____

(Please circle relevant boxes in table below):

| Modified SOFA score calculator | | | | | |
|---|----------|-----------|-----------|----------------------|----------------------|
| | 0 | 1 | 2 | 3 | 4 |
| PaO ₂ (on 15L O ₂) | > 40 KPa | 30 - 39 | 20 - 29 | 10 - 19 | < 10 |
| Platelet count | > 150 | ≤ 150 | ≤ 100 | ≤ 50 | ≤ 20 |
| Bilirubin | < 20 | 20 - 32 | 33 - 100 | 101 - 203 | > 203 |
| Blood pressure | MAP > 70 | MAP < 70 | | | |
| GCS | 15 | 13 - 14 | 10 - 12 | 6 - 9 | < 6 |
| Creatinine | < 106 | 107 - 168 | 169 - 300 | 301 - 433 | > 434 |
| | | | | Urine <500ml/24hr | Urine <200ml/24hr |

Arterial Blood Gas results:

| | | | |
|-------------------------------|--|--|--|
| Date / time | | | |
| pH | | | |
| PaO ₂ | | | |
| PaCO ₂ | | | |
| Lactate | | | |
| HCO ₃ ⁻ | | | |
| Base excess | | | |

Other relevant info:

ICU ASSESSMENT: ICU Doctor: _____ Date/time: _____

Patient for escalation to ICU when bed available

Patient for ICU if deteriorates – for regular ward-team review & re-refer if needed

Patient for ward level care

2nd ICU opinion - Name: _____

Supplement 3.

Appendix 1. Poor prognostic indicators that indicate ward based or palliative care is likely to be the ceiling of treatment during normal resource availability. This list is not exhaustive and is not a substitute for pragmatic discussion between experienced colleagues, if necessary, with recourse to a third opinion.

- SOFA score 11 or higher
- Age over 85 yrs
- Clinical Frailty Scale score 5 or above
- Life expectancy less than 6 months, for example uncontrolled malignancy
- Moderate or advanced dementia
- Advanced neurodegenerative disorders
- New York Heart Association Class IV heart failure
- Severe chronic lung disease (eg pulmonary fibrosis) causing functional limitation
- Cirrhosis with Child-Pugh score ≥ 7
- End-stage renal disease in patients older than 75
- Severe COPD (FEV1 <30% predicted) with significantly impaired mobility due to breathlessness
- Advanced immunocompromise (e.g. advanced myelodysplasia)

Clinical Frailty Scale*



1 Very Fit – People who are robust, active, energetic and motivated. These people commonly exercise regularly. They are among the fittest for their age.



2 Well – People who have **no active disease symptoms** but are less fit than category 1. Often, they exercise or are very **active occasionally**, e.g. seasonally.



3 Managing Well – People whose **medical problems are well controlled**, but are **not regularly active** beyond routine walking.



4 Vulnerable – While **not dependent** on others for daily help, often **symptoms limit activities**. A common complaint is being “slowed up”, and/or being tired during the day.



5 Mildly Frail – These people often have **more evident slowing**, and need help in **high order IADLs** (finances, transportation, heavy housework, medications). Typically, mild frailty progressively impairs shopping and walking outside alone, meal preparation and housework.



6 Moderately Frail – People need help with **all outside activities** and with **keeping house**. Inside, they often have problems with stairs and need **help with bathing** and might need minimal assistance (cuing, standby) with dressing.



7 Severely Frail – **Completely dependent for personal care**, from whatever cause (physical or cognitive). Even so, they seem stable and not at high risk of dying (within ~ 6 months).



8 Very Severely Frail – Completely dependent, approaching the end of life. Typically, they could not recover even from a minor illness.



9 Terminally Ill - Approaching the end of life. This category applies to people with a **life expectancy <6 months**, who are **not otherwise evidently frail**.

Scoring frailty in people with dementia

The degree of frailty corresponds to the degree of dementia. Common **symptoms in mild dementia** include forgetting the details of a recent event, though still remembering the event itself, repeating the same question/story and social withdrawal.

In **moderate dementia**, recent memory is very impaired, even though they seemingly can remember their past life events well. They can do personal care with prompting.

In **severe dementia**, they cannot do personal care without help.

* 1. Canadian Study on Health & Aging, Revised 2008.

2. K. Rockwood et al. A global clinical measure of fitness and frailty in elderly people. CMAJ 2005;173:489-495.

Supplement 4.

Appendix 2. This is the Gold Standards Framework Proactive Identification Guidance (PIG) 6th Edition which is used to identify nearing the end of life.

Available from www.goldstandardsframework.org.uk/PIG Reproduced with permission.



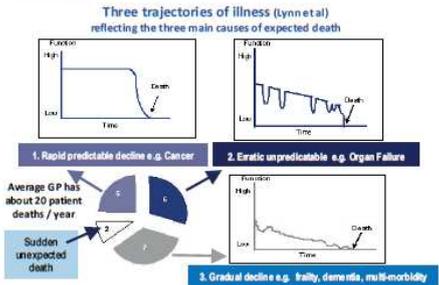


The National GSF Centre's guidance for clinicians to support earlier identification of patients nearing the end of life leading to improved proactive person-centred care

GSF PIG 6th Edition Dec 2016 K Thomas, Julie Armstrong Wilson and GSF Team, National Gold Standards Framework Centre in End of Life Care <http://www.goldstandardsframework.org.uk> for more details see **GSF PIG**

Proactive Identification Guidance – proactively identifying patients earlier.

This updated 6th edition of the GSF PIG, renamed as Proactive Identification Guidance and formally known as Prognostic Indicator Guidance, aims to enable the earlier identification of people nearing the end of their life who may need additional supportive care. This includes people who are nearing the end of their life following the three main trajectories of illness for expected deaths – rapid predictable decline e.g. cancer, erratic decline e.g. organ failure and gradual decline e.g. frailty and dementia. Additional contributing factors when considering prediction of likely needs include current mental health, co-morbidities and social care provision.



Why is it important to identify patients early?

Earlier identification of people who may be in their final stage of life leads to more proactive person-centred care. About 1% of the population die each year, with about 30% hospital patients and 80% of care homes residents in their last year of life. Most deaths can be anticipated though a minority are unexpected (estimated about 10%). Earlier recognition of decline leads to earlier anticipation of likely needs, better planning, fewer crisis hospital admissions and care tailored to peoples' wishes. This in turn results in better outcomes with more people living and dying in the place and manner of their choice. Once identified, people are included on a register and where available the locality/electronic register, triggering specific active supportive care, as used in all GSF programmes and in GSF cross boundary care sites.

The 3 key steps of GSF

- Identify**
patients who may be in their last year of life and identify their needs-based code/stage
- Assess**
current and future, clinical and personal needs
- Plan**
living well and dying well

PIG and GSF – Early proactive identification of patients is the crucial first step of GSF, used by many thousands of doctors and nurses in the community and hospitals. For more information on GSF, how it is used in practice to help identify patients early, assess needs and wishes through advance care planning discussions and plan care tailored to patient choices, see the GSF website.

National Policy support for earlier identification.

General Medical Council – 2010
www.gmc-uk.org/static/documents/content/End_of_life.pdf

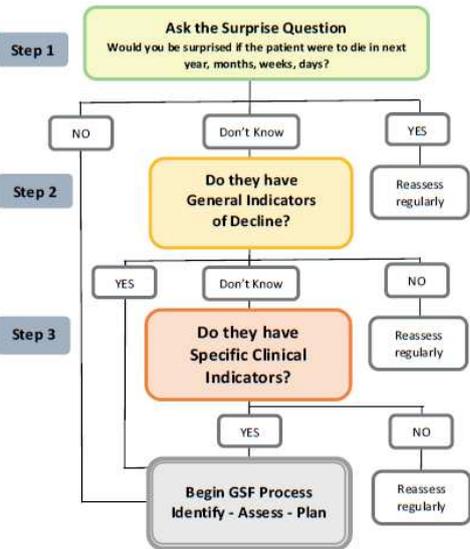
The GMC definition of End of Life Care; 'People are 'approaching the end of life' when they are likely to die within the next 12 months. This includes people whose death is imminent (expected within a few hours or days) and those with:

- Advanced, progressive, incurable conditions.
- General frailty and co-existing conditions that mean they are expected to die within 12 months.
- Existing conditions if they are at risk of dying from a sudden acute crisis in their condition.
- Life threatening acute conditions caused by sudden catastrophic events.'

NICE Guidance in End of life care 2011 Quality statement 1
<https://www.nice.org.uk/guidance/qs13/chapter/Quality-statement-1-Identification>

- 'Identification – People approaching the end of life are identified in a timely way.'
- Systems – Evidence of local systems in place to document identification of people approaching the end of life.'

Proactive Identification Guidance – GSF PIG Flow-chart



The GSF Proactive Identification Guidance (PIG) 2016 vs6 © The Gold Standards Framework Centre in End of Life Care
For more information on the development of the GSF PIG, its use in practice, evidence base, applications and when referencing it, please refer to www.goldstandardsframework.org.uk/PIG For more details contact info@gsfcentre.co.uk 01743 291891

The GSF PIG 2016 – Proactive Identification Guidance

Step 1 The Surprise Question

For patients with advanced disease or progressive life limiting conditions, would you be surprised if the patient were to die in the next year, months, weeks, days? The answer to this question should be an intuitive one, pulling together a range of clinical, social and other factors that give a whole picture of deterioration. If you would not be surprised, then what measures might be taken to improve the patient's quality of life now and in preparation for possible further decline?

Step 2 General indicators of decline and increasing needs?

- General physical decline, increasing dependence and need for support.
- Repeated unplanned hospital admissions.
- Advanced disease – unstable, deteriorating, complex symptom burden.
- Presence of significant multi-morbidities.
- Decreasing activity – functional performance status declining (e.g. Barthel score) limited self-care, in bed or chair 50% of day and increasing dependence in most activities of daily living.
- Decreasing response to treatments, decreasing reversibility.
- Patient choice for no further active treatment and focus on quality of life.
- Progressive weight loss (>10%) in past six months.
- Sentinel Event e.g. serious fall, bereavement, transfer to nursing home.
- Serum albumin <25g/l.
- Considered eligible for DS1500 payment.

Step 3 Specific Clinical Indicators related to 3 trajectories

1. Cancer

- Deteriorating performance status and functional ability due to metastatic cancer, multi-morbidities or not amenable to treatment – if spending more than 50% of time in bed/lying down, prognosis estimated in months.
- Persistent symptoms despite optimal palliative oncology. More specific prognostic predictors for cancer are available, e.g. PPS.

2. Organ Failure

Heart Disease

At least two of the indicators below:

- Patient for whom the surprise question is applicable.
- CHF NYHA Stage 3 or 4 with ongoing symptoms despite optimal HF therapy – shortness of breath at rest on minimal exertion.
- Repeated admissions with heart failure – 3 admissions in 6 months or a single admission aged over 75 (50% 1yr mortality).
- Difficult ongoing physical or psychological symptoms despite optimal tolerated therapy.
- Additional features include hyponatraemia <135mmol/l, high BP, declining renal function, anaemia, etc.

Chronic Obstructive Pulmonary Disease (COPD)

At least two of the indicators below:

- Recurrent hospital admissions (at least 3 in last year due to COPD)
- MRC grade 4/5 – shortness of breath after 100 metres on level
- Disease assessed to be very severe (e.g. FEV1 <30% predicted), persistent symptoms despite optimal therapy, too unwell for surgery or pulm rehab.
- Fulfills long term oxygen therapy criteria (PaO₂<7.3kPa).
- Required ITU/NIV during hospital admission.
- Other factors e.g., right heart failure, anorexia, cachexia, >6 weeks steroids in preceding 6 months, requires palliative medication for breathlessness still smoking.

Kidney Disease

Stage 4 or 5 Chronic Kidney Disease (CKD) whose condition is deteriorating with at least two of the indicators below:

- Patient for whom the surprise question is applicable.
- Repeated unplanned admissions (more than 3/year).
- Patients with poor tolerance of dialysis with change of modality.
- Patients choosing the 'no dialysis' option (conservative), dialysis withdrawal or not opting for dialysis if transplant has failed.
- Difficult physical or psychological symptoms that have not responded to specific treatments.
- Symptomatic Renal Failure in patients who have chosen not to dialyse – nausea and vomiting, anorexia, pruritus, reduced functional status, intractable fluid overload.

Liver Disease

Hepatocellular carcinoma.

Liver transplant contra indicated.

Advanced cirrhosis with complications including:

Liver Disease *continued*

- Refractory ascites
- Encephalopathy
- Other adverse factors including malnutrition, severe comorbidities, Hepatorenal syndrome
- Bacterial infection current bleeds, raised INR, hyponatraemia, unless they are a candidate for liver transplantation or amenable to treatment of underlying condition.

General Neurological Diseases

- Progressive deterioration in physical and/or cognitive function despite optimal therapy.
- Symptoms which are complex and too difficult to control.
- Swallowing problems (dysphagia) leading to recurrent aspiration pneumonia, sepsis, breathlessness or respiratory failure.
- Speech problems: increasing difficulty in communications and progressive dysphasia.

Parkinson's Disease

- Drug treatment less effective or increasingly complex regime of drug treatments.
- Reduced independence, needs ADL help.
- The condition is less well controlled with increasing "off" periods.
- Dyskinesias, mobility problems and falls.
- Psychiatric signs (depression, anxiety, hallucinations, psychosis).
- Similar pattern to frailty – see below.

Motor Neurone Disease

- Marked rapid decline in physical status.
- First episode of aspirational pneumonia.
- Increased cognitive difficulties.
- Weight Loss.
- Significant complex symptoms and medical complications.
- Low vital capacity (below 70% predicted spirometry), or initiation of NIV.
- Mobility problems and falls.
- Communication difficulties.

Multiple Sclerosis

- Significant complex symptoms and medical complications.
- Dysphagia + poor nutritional status.
- Communication difficulties e.g. Dysarthria + fatigue.
- Cognitive impairment notably the onset of dementia.

3. Frailty, dementia, multi-morbidity

Frailty

For older people with complexity and multiple comorbidities, the surprise question must triangulate with a tier of indicators, e.g. through Comprehensive Geriatric Assessment (CGA).

- Multiple morbidities.
- Deteriorating performance score.
- Weakness, weight loss exhaustion.
- Slow Walking Speed – takes more than 5 seconds to walk 4 m.
- TUGT – time to stand up from chair, walk 3 m, turn and walk back.
- PRISMA – at least 3 of the following:

Aged over 85, Male, Any health problems that limit activity?, Do you need someone to help you on a regular basis?, Do you have health problems that cause require you to stay at home?, In case of need can you count on someone close to you?, Do you regularly use a stick, walker or wheelchair to get about?

Dementia

Identification of moderate/severe stage dementia using a validated staging tool e.g., Functional Assessment Staging has utility in identifying the final year of life in dementia. (BGS) Triggers to consider that indicate that someone is entering a later stage are:

- Unable to walk without assistance and
- Urinary and faecal incontinence, and
- No consistently meaningful conversation and
- Unable to do Activities of Daily Living (ADL)
- Barthel score >3

Plus any of the following: Weight loss, Urinary tract Infection, Severe pressures sores – stage three or four, Recurrent fever, Reduced oral intake, Aspiration pneumonia. NB Advance Care Planning discussions should be started early at diagnosis.

Stroke

- Use of validated scale such as NIHSS recommended.
- Persistent vegetative, minimal conscious state or intense paralysis.
- Medical complications, or lack of improvement within 3 months of onset.
- Cognitive impairment / Post-stroke dementia.
- Other factors e.g. old age, male, heart disease, stroke sub-type, hyperglycaemia, dementia, renal failure.

Supplement 5

Appendix 3. Ethical context in a pandemic.

Those using this document for the first time MUST read this appendix before making decisions.

There is a need to consider broader ethical considerations when resources are limited. We are using a model based on the article: *Fair Allocation of Scarce Medical Resources in the Time of Covid-19*. Emanuel EJ, Persad G, Upshur R. *NEJM* March 23, 2020. This sets out 6 recommendations which we have adapted into considerations. We also refer to the BMA's article: *COVID-19 – ethical issues. A guidance note* (BMA 2020).

BMA states that “good decisions will be as inclusive, transparent and reasonable as possible. They should be rational, evidence-based, the result of a reasonable process and practical in the circumstances.” It is essential that these principles are considered as part of the decision-making process.

Consideration 1

Aim to save more lives and more years of life.

We counsel against incorporating a clinician's view on the patients' future quality of life, during decision-making because it is unlikely that clinicians can reliably judge the patient's quality of life, which is personal judgement. However, the patient's view on quality of life is important.

Age should not be used as a sole determinant of priority for admission to ICU.

Emanuel (2020) states “Saving more lives and more years of life is a consensus value across expert reports. It is consistent both with utilitarian ethical perspectives that emphasize population outcomes and with non-utilitarian views that emphasize the paramount value of each human life.” and “Limited time and information during an emergency also counsel against incorporating patients' future quality of life, and quality-adjusted life-years.” and “Maximizing benefits requires consideration of prognosis — how long the patient is likely to live if treated — which may mean giving priority to younger patients and those with fewer coexisting conditions.”

The BMA states “The focus of health professionals' attention during triage will be on delivering the greatest medical benefit to the greatest number of people” and “The obligation to persevere in the face of an extremely ill patient would be challenged by quantitative decisions based on maximising the overall reduction of mortality and morbidity, and the need to maintain vital social functions” and “if there is radically reduced capacity to meet all serious health needs, it is both lawful and ethical for a doctor, following appropriate prioritisation policies, to refuse someone potentially life-saving treatment where someone else has a higher priority for the available treatment” and “It is essential therefore that the principles underlying the decisions are systematically applied. In these circumstances it is likely that priority will ordinarily be given to those whose conditions are the most urgent, the least complex, and who are likely to live the longest, thereby maximising overall benefit in terms of reduced mortality and morbidity.” This concept is also used by Pittsburgh University (Pittsburgh 2020). Neuberger (1998) reported that in situations of absolute scarcity of life-sustaining resources, most believe younger patients should be prioritised over older patients.

Importantly the BMA states “Although work has not been done yet to establish whether this reflects an actual effect of age, or simply a correlation between age and co-morbidities that will affect survival rates, it is likely that the most challenging triage decisions will be made for these groups.....If they become necessary, these decisions must not be solely based on age. Ethically, triage requires identification of clinically relevant facts about individual patients and their likelihood of benefiting from available resources. Younger patients will not automatically be prioritised over older ones.”

Consideration 2

Patients with COVID-19 and other medical conditions should be treated equally.

Emanuel (2020) states “There should be no difference in allocating scarce resources between patients with Covid-19 and those with other medical conditions.” The BMA (2020) states “A pandemic will obviously not prevent people being ill in other ways. Triage decisions will therefore not only relate to those patients directly suffering from COVID-19. Similar criteria will need to be applied to all varieties of medical need. Consequently, thresholds for granting access to, for example, intensive care or ventilation will have to be changed for all patients with all presenting criteria.”

Consideration 3

In determining allocation of limited resources, it is fair to consider how long an individual patient will require those resources, as this will impact on the availability of those resources for other individuals during the pandemic.

This is consistent with the ethical concept of fairness as proposed by the joint intercollegiate group (RCP 2020). The BMA states “priority will ordinarily be given to those whose conditions are the most urgent, the least complex thereby maximising overall benefit in terms of reduced mortality and morbidity” and “Difficult decisions will arise where strenuous intervention could reduce mortality significantly but would mean that individual patients use resources that could lead to better outcomes for a larger number of other patients.”

Consideration 4

“This framework should respond to changing scientific evidence.” (Emanuel 2020)

Consideration 5

Removing a patient from a ventilator or an ICU bed to provide it to others in need may be ethically justifiable but requires a legal opinion at this time.

There is a reasonably widespread ethical view that withdrawal of treatment from one individual in order to provide it for another may be ethically justified in a resource-limited setting (BMA 2020, Emanuel 2020, Cohen 2020, Pittsburgh University 2020, RCP 2020,). However, this is a high consequence action (Cohen 2020, RCP 2020, Truog 2020) and the legal position in the UK is currently under review. Current advice is to seek an urgent legal opinion. This document will be updated when that determination is available.

Emanuel (2020) states “we believe that removing a patient from a ventilator or an ICU bed to provide it to others in need is also justifiable and that patients should be made aware of this possibility at admission.” The BMA states “Health professionals may be obliged to withdraw treatment from some

patients to enable treatment of other patients with a higher survival probability. This may involve withdrawing treatment from an individual who is stable or even improving but whose objective assessment indicates a worse prognosis than another patient who requires the same resource” and “However, there is no ethically significant difference between decisions to withhold life-sustaining treatment or to withdraw it, other clinically relevant factors being equal.” Emanuel also states “The decision to withdraw a scarce resource to save others is not an act of killing and does not require the patient’s consent.” This concept is also described as appropriate Pittsburgh University (Pittsburgh 2020).

Consideration 6

For patients with similar prognosis, who cannot be separated in other ways (eg by all four parts of the assessment) a random allocation, such as a lottery may be used. The four-stage assessment means this is likely to be rarely required.

Emanuel (2020) states “For patients with similar prognoses, equality should be invoked and operationalized through random allocation, such as a lottery.” In this matter clinician judgement may also be a factor. The four-stage assessment means this is likely to be rarely required. This concept is also used as a tie-breaker by Pittsburgh University (Pittsburgh 2020).

Consideration 7

Other ethical considerations are more complex and opinions differ considerably. Some judge that an individual’s potential to contribute to maintenance of the critical infra-structure throughout the epidemic may be considered in determining priority for allocation of ICU care.

Emanuel states “Critical Covid-19 interventions — testing, PPE, ICU beds, ventilators, therapeutics, and vaccines — should go first to front-line health care workers and others who care for ill patients and who keep critical infra structure operating, particularly workers who face a high risk of infection and whose training makes them difficult to replace. These workers should be given priority not because they are somehow more worthy, but because of their instrumental value: they are essential to pandemic response.” The concept of value to the pandemic response is also used as a tie-breaker by Pittsburgh University (Pittsburgh 2020).

The BMA states that “decisions about which groups will have first call on scarce resources may also need to take account of the need to maintain essential services, in a situation where the workforce providing those services is severely depleted. This may mean giving some priority to those who are responsible for delivering those services and who have a good chance of recovery” but also “In our view it will be for Government to define the categories of essential workers and the tests to be applied. This is not a responsibility that should lie with doctors.” We are not aware of any such advice provided by government: as such ethical views appear to agree on the principle but diverge on the role doctors should take.

Emanuel (2020) also argues that “People who participate in research to prove the safety and effectiveness of vaccines and therapeutics should receive some priority for Covid-19 interventions. Their assumption of risk during their participation in research helps future patients, and they should be rewarded for that contribution. These rewards will also encourage other patients to participate in clinical trials. Research participation, however, should serve only as a tiebreaker among patients with

similar prognoses.” We note that not all people have opportunity to take part in research for several reasons, including research inclusion and exclusion criteria.

We do not support Emanuel’s narrow view that healthcare workers should be prioritised. The essential contribution to pandemic response should be considered in its broadest sense (and specifically does not prioritise healthcare workers over others). It should only be used when pandemic infrastructure is stressed to the extent that this is a justifiable action. If either of the above factors is included in decision-making they should likely be, only when all other factors are in balance, and only when pandemic infrastructure is stressed to the extent that this is a justifiable action. The individual’s opportunity to contribute should be carefully weighed: for instance, their opportunity to contribute to the pandemic response or to take part in research. Inclusion of such factors may be reserved to times when this is a nationally applied principle.

A note on resuscitation status for patients who would not benefit from ICU.

If patients have sufficient background illness, co-morbidity and/or frailty that they would not be admitted to ICU, it is appropriate also to make a decision as to whether cardio-pulmonary resuscitation would be started in the event of collapse

The BMA (2020) states “If patients have sufficient background illness, co-morbidity and/or frailty that they would not be admitted to intensive care (because of the necessary restrictions on admissions), it is important that cardio-pulmonary resuscitation is not commenced in the event of a collapse. Performing advanced resuscitation for a patient for whom post-resuscitation intensive care cannot be provided would potentially cause harm to the patient, consume limited resources at a time of considerable strain, and potentially put the resuscitation team at unnecessary personal risk.”

Supplement 6.

References used in the document.

Biddison 2019: Biddison ELD, Faden R, Gwon HS, Schon-Spena M, Schwartz J, Toner ES. Too Many Patients...A Framework to Guide Statewide Allocation of Scarce Mechanical Ventilation During Disasters. *Chest* 2019;155:848-854

BMA 2020: British Medical Association. COVID-19 – ethical issues. A guidance note. April 2020. <https://www.bma.org.uk/media/2226/bma-covid-19-ethics-guidance.pdf>

Cohen 2020: Cohen IG, Crespo AM, White DB. Potential Legal Liability for Withdrawing or Withholding Ventilators During COVID-19 Assessing the Risks and Identifying Needed Reforms. *JAMA* 2020;323:1901–1902.

Emanuel 2020: Emanuel EJ, Persad G, Upshur R. Fair Allocation of Scarce Medical Resources in the Time of Covid-19. *N Engl J Med* 2020;382:2049-2055

NICE 2020a: Supporting clinical decision making. NICE critical care guidelines (NG159). <https://www.criticalcare.nice.org.uk/clinical-guidelines>

NICE 2020b: COVID-19 rapid guideline: critical care in adults. <https://www.nice.org.uk/guidance/NG159>

Pittsburgh University 2020: White DB, Katz M, Luce J, Lo B. Allocation of Scarce Critical Care Resources During a Public Health Emergency. Pittsburgh University, March 2020 Available at <http://bioethics.pitt.edu/sites/default/files/Univ%20Pittsburgh%20-%20Allocation%20of%20Scarce%20Critical%20Care%20Resources%20During%20a%20Public%20Health%20Emergency.pdf>

RCP 2020: Royal College of Physicians, London 2020. Ethical dimensions of COVID-19 for front-line staff. <https://www.rcplondon.ac.uk/news/ethical-guidance-published-frontline-staff-dealing-pandemic>

Truog 2020: Truog RD, Mitchell C, Daley GQ. The Toughest Triage — Allocating Ventilators in a Pandemic. *N Engl J Med* 2020;382:1973-1975

Szakmany 2019: Szakmany T, Walters AM, Pugh R, Battle C, Berridge DM, Lyons RA. Risk Factors for 1-Year Mortality and Hospital Utilization Patterns in Critical Care Survivors: A Retrospective, Observational, Population-Based Data Linkage Study. *Crit Care Med*. 2019;47:15-22

Neuberger 1998: Neuberger J, Adams D, MacMaster P, Maidment A, Speed M. Assessing priorities for allocation of donor liver grafts: survey of public and clinicians. *BMJ* 1998;317:172-5.