

Decision Making for Critical Care in the context of Covid-19 Background to the NICE Guidance

The Critical Care National Clinical Reference Group has a formal relationship with NHS England and was asked to look at decision support for clinicians in light of increased demand for beds in Covid-19 cases. The guidance has therefore come from NHS England but there has been consultation with Wales and Scotland, even though the guidance does not apply outside of England.

Decisions regarding provision of Critical Care resource encompass:

- Professional Clinical Opinion
- Practice within the relevant law and guidance from professional bodies eg GMC, NMC
- Ethical Considerations
- Involvement of the patient and relatives

The CRG felt very strongly that professional clinical opinion was an important factor in decision making. Hence the guidance covers escalation to critical care, decisions regarding admission to and ongoing management in critical care and de-escalation of critical care treatments. **It explicitly states that Critical Care clinicians are the primary decision makers with respect to the provision of Critical Care treatments.**

- If we are to make the best use of Critical Care resource (beds and staffing) then managing Critical Care resource needs to reflect the whole patient pathway and for the healthcare team to have an active role in managing the available Critical Care resource and demands that are placed upon it during a pandemic. We have known this for a long time, and our colleagues in general practice, emergency medicine and ward based specialties are acknowledging they have to do more. The Royal College of Physicians, London (RCP) has taken the lead on this and has convened a multiprofessional short life working party with agreed representation from general practice, emergency medicine and specialist societies to promote tools to support the recommendations in the guidance. Those tools will be released by the end of this week.
- The guidance states what ought to happen going forward, which requires admitting teams to have a greater role in identifying what patients want with regard to their treatment, particularly those who are already frail and who we know have worse outcomes when admitted to Critical Care. The additional tools will address
 - Frailty assessment
 - Patient information provision
 - More tools to document telephone discussions and clinical decision making
 - Additional resources to manage End of Life (EoL) Care
- It is not appropriate to ask clinical staff to make rationing decisions (i.e. make value judgements as to whether one person has a more established case for a treatment based on ethical considerations alone) as this introduces considerable potential for introduction of unconscious bias and inconsistency in decision making. The NHS has statutory responsibilities that require its staff to be mindful of the need to avoid discriminatory

practices e.g. using age alone as criteria for decision making. Hence the emphasis on considering an individual's frailty and other co-morbidities and the impact that Covid-19 will have not just on survival but also on their ability to achieve their stated goals. **Individual clinicians must still act in a lawful manner.**

- The focus on early decision making and discussion on presentation to hospital is important to ensure patients get access to the information they need to enable them to take part in decisions regarding their healthcare wherever possible. The guidance clearly places that responsibility 'upstream' of ICM clinicians, and our colleagues at the Royal College of Emergency Medicine (RCEM), RCP, Royal College of General Practitioners (RCGPs) and the specialist societies recognise that fully. There needs to be a fundamental and rapid change in how ward-based staff give appropriate information to patients and relatives regarding likely outcomes from Critical Care interventions. This means assessing all admissions with a clinical frailty score of 5 or more to prompt discussion and documentation of DNACPR and treatment escalation views, irrespective of age. Ward teams need to have access to relevant general Critical Care outcome data so that they can combine this with their existing experience to ensure the outcomes that might matter to a patient are clearly conveyed to patients by clinical staff. Relevant outcome data with respect to viral pneumonitis, age and respiratory and cardiovascular morbidity has been released by ICNARC and is appended to this letter.
- Critical Care staff (including outreach staff) need to be able to give advice regarding patient management and early involvement in discussions regarding escalation plans for patients who wish to be offered Critical Care treatment is recommended, so that early intervention is achieved wherever possible. However, the Critical Care human resource may be severely limited on occasion and the national and local deteriorating patient strategy needs review in light of the pandemic if it relies heavily on the Critical Care human resource as an early part of that response. Reliance on critical care as the only decision maker regarding the appropriateness of treatment escalation for the deteriorating patient cannot be maintained to the same level in the current pandemic. Depending on local resource, it may be that Critical Care services offer telephone advice only for some patients and that will require a decision support tool to document the discussion and agreed outcomes. The NICE guidance includes one example from research conducted by the University of Warwick team. Others will be following next week.
- The guidance recognises that we have a responsibility to make the best use of the Critical Care resource and this means clearly stating the desired or likely outcomes of treatment at the start, regular review of the goals of treatment and recognition that when those goals aren't being achieved, it may be appropriate to move to EoL care. FICM has already produced [guidance on care at the end of life](#) and additional guidance on managing this in light of Covid-19 will be added to the generic website <https://icmanaesthesiacovid-19.org>
- Units must work across regional boundaries if necessary. It is not appropriate to hold Critical Care beds back where there is demonstrated current need. **Our responsibility in this situation is to make central and regional NHS directors aware of the pressures occurring.**
- There may be situations where there are no resources available for all and clinicians are unable to provide recommended interventions as the facilities are simply overwhelmed. Individual/small groups of clinicians must not currently be left to determine resource allocation under those conditions without a clear operational directive from NHS England. The guidance does not explore what may occur beyond this point, but **it is strongly advised**

that clinicians do not engage in speculation or carry out actions currently that are not based on 'usual' clinical decision making

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Professor Jane Eddleston
Chair, NHS England Adult Critical Care Clinical Reference Group

Handwritten signature of Alison Pittard in cursive script.

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Association between mortality and severe comorbidities, dependency and organ support for admissions with pneumonia

Of 811,960 adult admissions to 227 NHS adult, general critical care units participating in the Case Mix Programme between 1 January 2015 and 31 December 2019, 77,184 (9.5%) were admitted with a primary reason for admission to the critical care unit of pneumonia (after updating with ultimate primary reason for admission, when reported).

Mortality is presented at discharge from the critical care unit and at ultimate discharge from acute hospital (excluding readmissions of the same patient within the same acute hospital stay) by age groups of <50, 50-59, 60-69, 70-79, 80+ years and overall.

Please acknowledge the source of these data in all future presentations (oral and/or written), as follows: "These data derive from the Case Mix Programme Database. The Case Mix Programme is the national clinical audit of patient outcomes from adult critical care coordinated by the Intensive Care National Audit & Research Centre (ICNARC). For more information on the representativeness and quality of these data, please contact ICNARC."

Overall

Age (years)	Critical care unit mortality	Acute hospital mortality
16-49	1,858/16,700 (11.1%)	2,244/15,305 (14.7%)
50-59	2,527/13,075 (19.3%)	3,090/11,913 (25.9%)
60-69	4,516/17,835 (25.3%)	5,471/16,257 (33.7%)
70-79	6,052/19,371 (31.2%)	7,447/17,567 (42.4%)
80+	3,736/10,183 (36.7%)	4,858/9,466 (51.3%)
All ages	18,689/77,164 (24.2%)	23,110/70,508 (32.8%)

Cardiovascular comorbidity

Age (years)	Critical care unit mortality - with cardiovascular comorbidity	Critical care unit mortality - without cardiovascular comorbidity	Acute hospital mortality - with cardiovascular comorbidity	Acute hospital mortality - without cardiovascular comorbidity
16-49	25/135 (18.5%)	1,829/16,503 (11.1%)	35/128 (27.3%)	2,204/15,118 (14.6%)
50-59	58/170 (34.1%)	2,459/12,871 (19.1%)	63/157 (40.1%)	3,017/11,722 (25.7%)
60-69	112/335 (33.4%)	4,395/17,463 (25.2%)	133/307 (43.3%)	5,329/15,914 (33.5%)
70-79	195/486 (40.1%)	5,842/18,844 (31.0%)	241/430 (56.0%)	7,189/17,098 (42.0%)
80+	148/338 (43.8%)	3,575/9,822 (36.4%)	195/312 (62.5%)	4,648/9,131 (50.9%)
All ages	538/1,464 (36.7%)	18,100/75,503 (24.0%)	667/1,334 (50.0%)	22,387/68,983 (32.5%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Cardiovascular comorbidity is defined as fatigue, claudication, dyspnoea or angina at rest due to myocardial or peripheral vascular disease (New York Heart Association functional class IV).

Respiratory comorbidity

Age (years)	Critical care unit mortality - with respiratory comorbidity	Critical care unit mortality - without respiratory comorbidity	Acute hospital mortality - with respiratory comorbidity	Acute hospital mortality - without respiratory comorbidity
16-49	121/796 (15.2%)	1,733/15,842 (10.9%)	148/745 (19.9%)	2,091/14,501 (14.4%)
50-59	187/668 (28.0%)	2,330/12,373 (18.8%)	219/635 (34.5%)	2,861/11,244 (25.4%)
60-69	382/1,171 (32.6%)	4,125/16,627 (24.8%)	464/1,109 (41.8%)	4,998/15,112 (33.1%)
70-79	464/1,158 (40.1%)	5,573/18,172 (30.7%)	554/1,087 (51.0%)	6,876/16,441 (41.8%)
80+	173/415 (41.7%)	3,550/9,745 (36.4%)	221/391 (56.5%)	4,622/9,052 (51.1%)
All ages	1,327/4,208 (31.5%)	17,311/72,759 (23.8%)	1,606/3,967 (40.5%)	21,448/66,350 (32.3%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Respiratory comorbidity is defined as permanent shortness of breath with light activity due to pulmonary disease or use of home ventilation (excluding CPAP for sleep apnoea).

Renal comorbidity

Age (years)	Critical care unit mortality - with renal comorbidity	Critical care unit mortality - without renal comorbidity	Acute hospital mortality - with renal comorbidity	Acute hospital mortality - without renal comorbidity
16-49	28/309 (9.1%)	1,826/16,329 (11.2%)	36/272 (13.2%)	2,203/14,974 (14.7%)
50-59	58/330 (17.6%)	2,459/12,711 (19.3%)	79/292 (27.1%)	3,001/11,587 (25.9%)
60-69	102/400 (25.5%)	4,405/17,398 (25.3%)	125/352 (35.5%)	5,337/15,869 (33.6%)
70-79	130/424 (30.7%)	5,907/18,906 (31.2%)	173/394 (43.9%)	7,257/17,134 (42.4%)
80+	59/161 (36.6%)	3,664/9,999 (36.6%)	90/155 (58.1%)	4,753/9,288 (51.2%)
All ages	377/1,624 (23.2%)	18,261/75,343 (24.2%)	503/1,465 (34.3%)	22,551/68,852 (32.8%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Renal comorbidity is defined as a current requirement for chronic renal replacement therapy for irreversible renal disease.

Liver comorbidity

Age (years)	Critical care unit mortality - with liver comorbidity	Critical care unit mortality - without liver comorbidity	Acute hospital mortality - with liver comorbidity	Acute hospital mortality - without liver comorbidity
16-49	215/579 (37.1%)	1,639/16,059 (10.2%)	238/487 (48.9%)	2,001/14,759 (13.6%)
50-59	216/533 (40.5%)	2,301/12,508 (18.4%)	260/471 (55.2%)	2,820/11,408 (24.7%)
60-69	177/409 (43.3%)	4,330/17,389 (24.9%)	214/358 (59.8%)	5,248/15,863 (33.1%)
70-79	65/159 (40.9%)	5,972/19,171 (31.2%)	88/134 (65.7%)	7,342/17,394 (42.2%)
80+	12/28 (42.9%)	3,711/10,132 (36.6%)	18/27 (66.7%)	4,825/9,416 (51.2%)
All ages	685/1,708 (40.1%)	17,953/75,259 (23.9%)	818/1,477 (55.4%)	22,236/68,840 (32.3%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Liver comorbidity is defined as biopsy-proven cirrhosis, portal hypertension or hepatic encephalopathy.

Metastatic disease

Age (years)	Critical care unit mortality - with metastatic disease	Critical care unit mortality - without metastatic disease	Acute hospital mortality - with metastatic disease	Acute hospital mortality - without metastatic disease
16-49	109/252 (43.3%)	1,745/16,386 (10.6%)	134/233 (57.5%)	2,105/15,013 (14.0%)
50-59	139/353 (39.4%)	2,378/12,688 (18.7%)	178/319 (55.8%)	2,902/11,560 (25.1%)
60-69	279/645 (43.3%)	4,228/17,153 (24.6%)	326/579 (56.3%)	5,136/15,642 (32.8%)
70-79	284/633 (44.9%)	5,753/18,697 (30.8%)	337/562 (60.0%)	7,093/16,966 (41.8%)
80+	59/176 (33.5%)	3,664/9,984 (36.7%)	92/158 (58.2%)	4,751/9,285 (51.2%)
All ages	870/2,059 (42.3%)	17,768/74,908 (23.7%)	1,067/1,851 (57.6%)	21,987/68,466 (32.1%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Metastatic disease is defined as the presence of distant (not regional lymph node) metastases, documented by surgery, imaging or biopsy.

Haematological disease

Age (years)	Critical care unit mortality - with haematological malignancy	Critical care unit mortality - without haematological malignancy	Acute hospital mortality - with haematological malignancy	Acute hospital mortality - without haematological malignancy
16-49	166/536 (31.0%)	1,688/16,102 (10.5%)	185/474 (39.0%)	2,054/14,772 (13.9%)
50-59	221/583 (37.9%)	2,296/12,458 (18.4%)	268/535 (50.1%)	2,812/11,344 (24.8%)
60-69	443/1,055 (42.0%)	4,064/16,743 (24.3%)	536/970 (55.3%)	4,926/15,251 (32.3%)
70-79	496/1,040 (47.7%)	5,541/18,290 (30.3%)	570/976 (58.4%)	6,860/16,552 (41.4%)
80+	129/274 (47.1%)	3,594/9,886 (36.4%)	161/264 (61.0%)	4,682/9,179 (51.0%)
All ages	1,455/3,488 (41.7%)	17,183/73,479 (23.4%)	1,720/3,219 (53.4%)	21,334/67,098 (31.8%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Haematological malignancy is defined as acute or chronic myelogenous/lymphocytic leukaemia, multiple myeloma or lymphoma.

Immunocompromised

Age (years)	Critical care unit mortality - with immunocompromise	Critical care unit mortality - without immunocompromise	Acute hospital mortality - with immunocompromise	Acute hospital mortality - without immunocompromise
16-49	348/1,377 (25.3%)	1,506/15,261 (9.9%)	408/1,225 (33.3%)	1,831/14,021 (13.1%)
50-59	466/1,466 (31.8%)	2,051/11,575 (17.7%)	573/1,319 (43.4%)	2,507/10,560 (23.7%)
60-69	869/2,340 (37.1%)	3,638/15,458 (23.5%)	1,021/2,115 (48.3%)	4,441/14,106 (31.5%)
70-79	871/2,143 (40.6%)	5,166/17,187 (30.1%)	1,035/1,955 (52.9%)	6,395/15,573 (41.1%)
80+	213/528 (40.3%)	3,510/9,632 (36.4%)	280/496 (56.5%)	4,563/8,947 (51.0%)
All ages	2,767/7,854 (35.2%)	15,871/69,113 (23.0%)	3,317/7,110 (46.7%)	19,737/63,207 (31.2%)

Definition: Severe comorbidities must have been present in the six months prior to admission to the critical care unit and documented in the patient record either at or prior to admission to the critical care unit.

Immunocompromise is defined as chemotherapy, radiotherapy or high dose steroid treatment ($\geq 0.3 \text{ mg kg}^{-1}$ prednisolone or equivalent daily for the prior six months), HIV/AIDS or congenital immune deficiency.

Dependency

Age (years)	Critical care unit mortality - no dependency	Critical care unit mortality - some dependency	Critical care unit mortality - total dependency	Acute hospital mortality - no dependency	Acute hospital mortality - some dependency	Acute hospital mortality - total dependency
16-49	1,134/12,123 (9.4%)	570/3,366 (16.9%)	150/1,148 (13.1%)	1,355/11,144 (12.2%)	690/3,038 (22.7%)	194/1,063 (18.3%)
50-59	1,537/8,928 (17.2%)	919/3,794 (24.2%)	61/316 (19.3%)	1,878/8,108 (23.2%)	1,121/3,476 (32.2%)	81/294 (27.6%)
60-69	2,658/11,771 (22.6%)	1,775/5,681 (31.2%)	74/345 (21.4%)	3,181/10,692 (29.8%)	2,178/5,211 (41.8%)	103/317 (32.5%)
70-79	3,562/12,337 (28.9%)	2,420/6,771 (35.7%)	55/220 (25.0%)	4,287/11,132 (38.5%)	3,062/6,195 (49.4%)	81/199 (40.7%)
80+	2,129/5,993 (35.5%)	1,570/4,089 (38.4%)	24/78 (30.8%)	2,655/5,547 (47.9%)	2,148/3,822 (56.2%)	40/74 (54.1%)
All ages	11,020/51,152 (21.5%)	7,254/23,701 (30.6%)	364/2,107 (17.3%)	13,356/46,623 (28.6%)	9,199/21,742 (42.3%)	499/1,947 (25.6%)

Definition: Dependency is assessed as best description for the dependency of this admission in the two weeks prior to admission to acute hospital and prior to the onset of the acute illness, i.e. “usual” dependency, according to the requirement for assistance with daily activities

Organ support

Age (years)	Critical care unit mortality - single or no organ support	Critical care unit mortality - two organs supported	Critical care unit mortality - three or more organs supported	Acute hospital mortality - single or no organ support	Acute hospital mortality - two organs supported	Acute hospital mortality - three or more organs supported
16-49	281/8,107 (3.5%)	661/5,168 (12.8%)	916/3,425 (26.7%)	441/7,538 (5.9%)	817/4,661 (17.5%)	986/3,106 (31.7%)
50-59	511/5,620 (9.1%)	892/4,126 (21.6%)	1,124/3,329 (33.8%)	764/5,122 (14.9%)	1,061/3,735 (28.4%)	1,265/3,056 (41.4%)
60-69	1,051/7,899 (13.3%)	1,611/5,446 (29.6%)	1,854/4,490 (41.3%)	1,511/7,181 (21.0%)	1,911/4,930 (38.8%)	2,049/4,146 (49.4%)
70-79	1,660/9,050 (18.3%)	2,189/5,921 (37.0%)	2,203/4,400 (50.1%)	2,389/8,155 (29.3%)	2,610/5,362 (48.7%)	2,448/4,050 (60.4%)
80+	1,552/5,830 (26.6%)	1,258/2,720 (46.3%)	926/1,633 (56.7%)	2,271/5,432 (41.8%)	1,511/2,490 (60.7%)	1,076/1,544 (69.7%)
All ages	5,055/36,506 (13.8%)	6,611/23,381 (28.3%)	7,023/17,277 (40.6%)	7,376/33,428 (22.1%)	7,910/21,178 (37.4%)	7,824/15,902 (49.2%)

Definition: Organ support is assessed according to the HRG grouper algorithm based on the Critical Care Minimum Dataset (CCMDS)

Single or no organ support corresponds to HRGs XC06Z, XC07Z and UZ01Z; two organs supported corresponds to HRG XC05Z; three or more organs supported corresponds to HRGs XC01Z, XC02Z, XC03Z and XC04Z