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Intensive care triage under exceptional resource scarcity

Swiss Academy of Medical Sciences

Guidance on the application of section 9.3 of the SAMS Guidelines "Intensive-care interventions" (2013)

This document is available in English, French, German and Italian, cf. sams.ch/en/triage. The German text is the authentic version.

Revised version 4, 23 September 2021 [1]

I. Background

A variety of external factors (pandemics, natural disasters, hostilities) can, within a short time, bring the health system close to the limits of its capacity, with areas such as intensive care being affected particularly rapidly and seriously as a result. If existing human and/or material resources are not sufficient to meet demand, those which are available must be allocated to patients in need as effectively, equitably, transparently and consistently as possible. If resource scarcity necessitates triage decisions, efforts to expand treatment capacity must always also be pursued at the same time.

Responsibility of policymakers and society

From an ethical perspective, it should be noted that responsibility for ensuring the availability of ICU capacity does not lie solely with the hospitals concerned; these efforts rely on the participation and shared responsibility of policymakers and society. It is incumbent on the federal and cantonal authorities, together with all public and private hospitals, to take appropriate measures, within the applicable legal framework, to prevent or alleviate excessive pressure on the health system as far as possible. In a pandemic situation, this means that demonstrably effective control measures must be implemented to avoid further new infections and severe cases. The measures taken may also include the deferral of non-urgent treatments.

Deferral of non-urgent treatments

The deferral of treatments is also a form of triage. In the event of resource scarcity, the treatments to be postponed should be primarily those where no deterioration in prognosis, irreversible damage to health, or cases of premature death are to be expected as a result of the delay. Criteria for nationally harmonised deferral of treatments are not currently available; however, the development of such criteria is beyond the scope of the present guidelines. In cases where treatment is postponed, the person concerned must be informed in a transparent manner as to the reasons for the delay and about any health effects which may possibly arise as a result. If the treatment could be carried out at a different hospital, information on this option is also to be provided.

National coordination of patient transfers

In collaboration with various health system actors, the Coordinated Medical Services (CMS) of the Swiss Armed Forces has established a system for national coordination of intensive care resources so as to ensure that optimum use is made of all ICU treatment capacity available across Switzerland.[2]

Threshold for triage decisions

As specified in the document "National coordination in the event of a massive influx of patients to ICUs during the COVID-19 pandemic",[3] responsibility for patient triage lies with the individual hospital/ICU. Triage is only to be applied if other measures, such as the reduction of non-urgent treatments and transfers of patients to ICUs with free capacity,[4] are not sufficient to avoid resource scarcity. Individual hospitals cannot determine at what point a threshold has been reached at the regional or national level which triggers the application of these guidelines. This requires a national overview of the number of operable ICU beds still available and of whether non-urgent treatments have been deferred to a similar extent in all regions. Hospitals have a responsibility to notify the CMS of the resources still available and to report to what extent non urgent care has been reduced. Efforts are to be made – via cantonal agreements and with federal support – to transfer patients from one cantonal health system to another, so as to ensure that the criteria defined in these guidelines are not applied prematurely at individual hospitals, and that disproportionate underprovision of services (and associated excess mortality) does not arise at the local level.

As a national monitoring body, the CMS determines at what point the situation in Switzerland is such that triage decisions – in accordance with the criteria set out here – are unavoidable. If this situation arises, the CMS should immediately notify the cantonal public health directors and hospitals. In order to provide (legal) protection for intensive care professionals, it would be most desirable that a cantonal authority and/or the hospital should issue the subsequent declaration that, as a result of resource scarcity, triage decisions will have to be made.

If the threshold has not been reached nationally, but an acute scarcity of ICU capacity exists at the local or regional

level – despite an increase in ICU beds (with a reduction in treatment quality being accepted as a consequence), the reduction of non-urgent care and the involvement of the national coordination body for patient transfers – then this should be reported to the cantonal medical services and the cantonal health authority, and these guidelines are to be applied at the regional level.

II. Guidelines

1. Applicability

These guidelines concerning the criteria for ICU triage are applicable for the point in time at which resource scarcity arises, treatment capacity has to be expanded and rationing decisions have to be made. They are applicable to all ICU patient categories. This means that all patients who could potentially benefit from intensive care are assessed and treated according to the same criteria.

The present guidelines supplement the SAMS Guidelines "Intensive-care interventions" (2013) as implementing provisions in the event of exceptional resource scarcity. They are concerned only with ICU admission and treatment and are not applicable to other patient groups. The guidelines are to be applied by intensive care professionals, in consultation – depending on the context – with specialists in other disciplines such as emergency medicine, internal medicine, surgery or palliative care.

2. Fundamental ethical principles

The four widely recognised principles of medical ethics[5] (beneficence, non-maleficence, respect for autonomy and equity) are also crucial under conditions of resource scarcity. It is important that the patient's wishes with regard to emergency treatment and intensive care are ascertained at an early stage, especially for individuals belonging to a risk group. Scarce resources must never be employed for treatments which a patient does not wish to receive.

If the resources available are insufficient to enable all patients to receive the ideally required treatment, then these fundamental principles are to be applied in accordance with the following rules of precedence:[6]

Equity: Available resources are to be allocated without discrimination. Patient characteristics such as age, sex, residence, nationality, race, religious affiliation, social or insurance status, personal responsibility, vaccination status or disability must not be used as triage criteria. Depending on the disease or injury, however, some of these characteristics may have an influence on the prognosis and must to this extent be taken into account as medically relevant criteria. The allocation procedure must be fair, objectively justified, transparent and comprehensible. In a situation of acute scarcity of ICU beds, equal dignity is still to be accorded to each individual. If intensive care cannot be provided, alternative treatment and care options – in particular, palliative care – are to be made available.

Preserving as many lives as possible: In the event of acute scarcity of ICU beds, all measures are guided by the aim of minimising the number of deaths. Decisions should be made in such a way as to ensure that as few people die as possible.

Protection of the professionals involved: The experience of not being able, as a result of stressful conditions and resource scarcity, to provide medically required treatment to all patients, combined with an extremely heavy workload and continued exposure to poor patient outcomes, has an impact on professionals, which is often referred to as moral injury. Decision making (cf. Section 4.1) is to be organised in such a way as to protect staff from moral injury.[7] The treatment and care team should have the opportunity to discuss stressful situations in debriefing sessions and retrospective case reviews; support programmes should be made available, e.g. for supervision or for stress management.[8] The longer a stressful situation continues, the greater is the risk of resignations and the more difficult it becomes to recruit replacement staff, leading to a reduction in treatment capacity. This leads in turn to under-provision of services, with a risk of additional patient deaths. Appropriate measures must be taken to protect professionals against disease and excessive stress. Special protection is to be provided for those professionals whose health is at greater risk.

3. Criteria for ICU triage (admission and continued occupancy) under exceptional resource scarcity

These guidelines are intended to support decision-making by professional treatment teams. Triage ultimately involves case-by-case decisions, in which the experience of the team plays a crucial role. In individual cases, medical prognostic criteria in addition to those listed here may also need to be taken into account.

As long as sufficient resources are available, patients requiring intensive care are to be admitted and treated in accordance with established criteria. Particularly resource-intensive interventions should only be undertaken in cases where the benefits have been unequivocally demonstrated. In a situation of acute resource scarcity, they run counter to the goal of saving the maximum possible number of lives. In such a context, therefore, ECMO,[9] for example, should only be used in particular situations, as specified in the SSICM guidelines,[10] after careful assessment of the resources required.[11]

It is necessary to discuss in advance – with all patients capable of doing so – the patient's wishes in the event of possible complications (resuscitation status and extent of intensive care). In the case of patients who lack capacity, this involves consideration of their presumed wishes in consultation with their authorised representatives. If intensive-care interventions are withheld, appropriate management including comprehensive palliative care must be provided in suitable wards or institutions.[12] To avoid ICU resource scarcity, it is also crucial that departments and institutions providing care for patients discharged from an ICU (or instead of intensive-care treatment) fulfil their obligations in a spirit of solidarity.

If ICU capacity is exhausted and not all patients who require intensive care can be admitted, **the short-term survival prognosis is the primary decision criterion** for purposes of triage. For ICU admission, highest priority is to be accorded to those patients whose prognosis[13] with regard to hospital discharge is good with intensive care, but poor without it – i.e. the patients who will benefit most from in-

tensive care. The aim is to make decisions in such a way as to save the largest possible number of lives.

Also to be taken into account is the **expected effort** associated with intensive-care treatment. The length of stay and the treatment effort required to achieve a favourable outcome have an influence on the criterion of saving as many lives as possible. Accordingly, with the same survival prognosis, interventions offering the prospect of success within a short time should take precedence over interventions which will only be effective after an extended period of treatment.[14]

Age, disability or dementia in themselves are not to be applied as criteria. This would infringe the constitutional prohibition on discrimination, since people who are older, disabled or suffer from dementia would thereby be accorded less value than others. In general, for patients requiring intensive care, a poor short-term prognosis is not be automatically inferred from age, disability or dementia alone. If lower priority is to be accorded for intensive care, there must always be specific risk factors for increased mortality and hence a poor short-term prognosis.

A specific risk factor for increased mortality is, for example, **age-related frailty.** In older people, this is correlated with a poor short-term prognosis, and it is therefore a relevant criterion to be taken into account in a situation of resource scarcity. Of the various tools proposed for the evaluation of frailty, the best validated[15] is the Clinical Frailty Scale (CFS, cf. Appendix).

A disability is not in itself a factor of prognostic relevance; in persons with disabilities, there may, however, be comorbidities which are directly associated with the disability (e.g. respiratory insufficiency in a person with multiple disability) or not directly associated (e.g. cancer in a person with quadriplegia). However, in persons with disabilities, dependence on assistance for activities of daily living is not correlated with the short-term prognosis. The CFS is not validated for the assessment of frailty in persons with disabilities and is thus not relevant here. Health status is to be determined in the same way for all persons, irrespective of any disabilities. Any other approach would be discriminatory and is thus to be rejected.

Even if the resource scarcity is due to an infectious disease for which effective vaccines are available, **vaccination status** must be ruled out as a triage criterion.[16] Respect for the value of each individual life is only equal if no distinctions are made on the grounds of individuals' opinions, decisions or actions.

Consideration of additional criteria. In the literature,[17] additional criteria are discussed, such as allocation by lottery, the "first come, first served" principle, and prioritisation of persons expected to have more quality-adjusted life years or deemed socially useful. These criteria are not to be applied.

4. Triage decisions

4.1. Dimensions of decision-making

- **On admission:** extent and duration of treatment, determination of pathway (e.g. ICU treatment, intermediate care, general ward, palliative care).
- **During the ICU stay:** regular evaluation with regard to continuation of treatment, limitation of treatment intensity or duration, modification of treatment goal, transfer to general ward and palliative care.
- **Regular re-evaluation of bed availability:** In parallel with the triage process, the number of ICU beds in operation must be re-evaluated daily to ensure that no capacity is unused and that an appropriate level of treatment quality is assured.

4.2. Admission criteria

The competent federal and cantonal authorities, as well as hospitals with ICUs, are obliged to take all reasonable measures to prevent an acute shortage of ICU capacity (cf. Part 1 "Background"). This includes the expansion of ICU capacity, even if a reduction in treatment quality has to be accepted as a result.

If, in spite of such measures, ICU capacity – including additional external beds – is no longer sufficient, only patients who require organ support or replacement therapy (mechanical ventilation, hemodynamic support with vasoactive agents, continuous renal replacement therapy, etc.) are to be admitted. In such situations, the utmost restraint is to be exercised in the application of cardiopulmonary resuscitation following cardiac arrest – with the exception of situations where an excellent outcome is to be expected.[18]

If not all patients requiring intensive care according to the above-mentioned criteria can be admitted to an ICU, decisions need to be made concerning patient admission to, or transfer from, the ICU. These are to be made according to the criteria of **short-term survival prognosis** and **expected ICU treatment effort**, as explained in detail below. The criteria are linked to two stages (A and B), becoming more stringent as capacity pressures increase. All less intensive treatments should be carried out in intermediate care units (IMCUs) or general wards.

Stage A: ICU beds available, but national capacity is limited, and there is reason to believe that, within a few days, ICU beds may become unavailable in Switzerland and transfers to ICUs abroad may not be possible to a sufficient extent.

Stage B: No ICU beds available.

4.3. Initial triage: criteria for ICU admission [19]

Step 1:

Does the patient meet any of the following inclusion criteria?

- Requirement for invasive ventilatory support?
- Requirement for hemodynamic support with vasoactive agents (e.g. noradrenaline-equivalent dose >0.1 µg/kg/min)?
- Requirement for another specific intensive-care intervention (e.g. continuous renal replacement therapy)?

If one of these inclusion criteria is fulfilled → Step 2

Step 2:

Does the patient meet any of the following exclusion criteria?

Stage A (cf. above)

- Patient's wishes (advance directive, etc.) opposed to ICU treatment
- Age-related CFS score ≥7 and age >65
- Age-related CFS score ≥6 and age >85
- Unwitnessed cardiac arrest, recurrent cardiac arrest, cardiac arrest with no return of spontaneous circulation
- Severe, rapidly progressive, incurable disease (e.g. neurodegenerative disease or cancer) with high short-term mortality similar to the other patient groups mentioned in Stage A
- Chronic conditions, such as:
  - NYHA class IV heart failure despite optimal treatment
  - COPD GOLD 4 (D) leading to more than two hospital admissions in one year
  - Liver cirrhosis, Child-Pugh class C
  - Charlson comorbidity score ≥5
- Severe circulatory failure, which, despite management of acute disease, including increased vasoactive dose, is treatment-resistant (hypotension and/or persistent inadequate organ perfusion)
- Poor prognosis with a very high likelihood of ICU treatment being prolonged and resource-intensive.

Stage B (cf. above)

- Patient's wishes (advance directive, etc.) opposed to ICU treatment
- Age-related CFS score ≥6 and age >65
- Unwitnessed cardiac arrest, recurrent cardiac arrest, cardiac arrest with no return of spontaneous circulation
- Severe, rapidly progressive, incurable disease (e.g. neurodegenerative disease or cancer) with high short-term mortality similar to the other patient groups mentioned in Stage B
- Severe trauma with high short-term mortality
- Severe burns with inhalation injury[20]
- NIHSS score >14 after appropriate acute treatment for stroke[21]
- Chronic conditions:
  - NYHA class III or IV heart failure despite optimal treatment
  - COPD GOLD 4 (D) or COPD A–D with either FEV1 <25% or cor pulmonale, or home oxygen therapy (long-term oxygen therapy)
  - Liver cirrhosis, Child-Pugh class B or C, with refractory ascites or encephalopathy > stage I
  - Charlson comorbidity score ≥4
- Age >75 and at least one of the following criteria:
  - Liver cirrhosis, Child-Pugh class B or C
  - Stage IV chronic kidney disease (KDIGO) (eGFR <30 mL/min/1.73 m^2)
  - NYHA class III or IV heart failure
  - Age-related CFS score ≥5
- Poor prognosis with a high likelihood of ICU treatment being prolonged and resource intensive.

In Stage B, no cardiopulmonary resuscitation is to be performed in the ICU.

4.4. Subsequent triage during ICU stay

The following criteria are relevant for the continuation of ICU treatment:

The health status of patients in the ICU is to be assessed regularly and interprofessionally. The progress of treatment is to be initially assessed no later than 72 hours after admission, with further assessments being carried out at least daily.

Here, the medical utility of intensive care is be evaluated on the basis of the clinical course – partly to allow decisions to be taken regarding a possible transition from curative to less invasive treatment or palliative care. This applies uniformly to all patients receiving ICU treatment when resources are exhausted. The more acute resource scarcity becomes, the more stringently the following criteria are to be applied.

Step 1:

Presence of a criterion for transfer from the ICU:

- Careful re-evaluation of whether continuation of intensive-care treatment corresponds to the patient's (presumed) wishes
- Patient extubated or with spontaneous breathing after tracheotomy → Patient transferred from ICU as soon as possible for further treatment.

Step 2:

Following a period of stabilisation in accordance with the particular condition:

Presence of the following three criteria:

- Stabilisation or improvement of oxygenation and ventilation
- Stabilisation or improvement of hemodynamics
- Stabilisation or improvement of underlying organ dysfunctions

All three criteria must be met for ICU treatment to be continued.

Step 3:

Applicable in Stages A and B:

In **Stage A** (cf. above), ICU treatment should be discontinued if one of the following criteria applies, even though all three criteria specified in Step 2 were met.

- Recurrent cardiac arrest during ICU stay, in spite of initially successful resuscitation;
- Occurrence of an additional significant organ failure during ICU stay, leading to further deterioration of the short-term prognosis.
- Poor prognosis with a very high likelihood of ICU treatment being prolonged and re-source intensive.

In **Stage B** (cf. above), ICU treatment should be discontinued if one of the following criteria applies, even though all three criteria specified in Step 2 were initially met:

- No improvement in respiratory or hemodynamic status (stabilisation is not sufficient)

– Occurrence of cardiac arrest during ICU stay: in Stage B, cardiopulmonary resuscitation should not be attempted
– Presence of persistent or progressive failure of two organs in addition to the lungs
– Poor prognosis with a high likelihood of ICU treatment being prolonged and resource-intensive

In a triage situation which persists despite lower priority being accorded to patients with an extremely poor prognosis, lower priority must as a next step be accorded to those patients who are expected to continue tying up considerable ICU resources for an extended period, as opposed to patients with the same survival prognosis who are likely to require only a short ICU stay.

The presence of one these criteria and the discontinuation of ICU treatment leads to the patient receiving general ward or palliative care. The reasons for the treatment and transfer decisions are to be documented in writing. Should death occur, it will not generally be classified as a case of "unusual death".

N.B. From a legal perspective, there is some uncertainty as to whether deaths occurring as a result of non-admission to, or transfer from, an ICU, in accordance with the criteria specified in these guidelines, are to be recorded as an "unnatural death" (i.e. an unclear or unusual death) in the medical death certificate. In this regard, the SAMS and the SSICM would welcome legal clarification in the interests of legal certainty for the medical profession. The SAMS and the SSICM currently recommend that the specific circumstances of these deaths should be documented, but that they should not be classified as unusual deaths. This remains subject to orders or decisions made by competent authorities or courts, requiring such cases to be reported as unusual deaths.

5. Decision-making processes

In triage decisions, confidence must be maintained under the most difficult conditions. For this reason, fair prioritisation criteria and fair processes must be transparently applied at all times, both at the local and national level. Clear reasons for according (or failing to accord) priority must be documented and updated as the situation develops. The same applies to the processes whereby such decisions are made. Individual decisions must be amenable to examination: they must be documented in writing and include a statement of reasons and the name of the person responsible. Any deviation from the specified criteria must be similarly documented. In addition, mechanisms should be in place for subsequent review of conflicts.

The decision-making process must be managed by experienced professionals. Whenever possible, decisions must be made within an interprofessional team, rather than by individuals. Ultimately, however, responsibility is borne by the most senior intensive care specialist present. Bodies providing support for treatment teams (e.g. ethics support, multiprofessional team) may be helpful. However, the ICU must be able to make rapid, independent decisions at any time on patient admissions and transfers. The legal requirements concerning the duty to provide regular reports on the total number and occupancy of ICU beds are to be complied with.

If, owing to a triage situation, ICU treatment is not offered or is discontinued, this must be communicated in a transparent manner. It is not permissible to justify the treatment decision to the patient on the grounds that such treatment is not indicated, if a different decision would have been taken had sufficient resources been available. The patient with capacity, or the relatives authorised to represent a patient lacking capacity, are to be openly informed about the decision-making process. If possible, opportunities for further discussions should be offered, e.g. in the form of hospital pastoral care or psychological support. The treatment team must also remain available for discussions with relatives.

III. Footnotes

[1] In March 2020, as a result of numerous cases of infection with the coronavirus (SARS-CoV-2) in Switzerland, acute hospitals experienced a massive influx of patients. In view of this situation, the Swiss Academy of Medical Sciences (SAMS) and the Swiss Society of Intensive Care Medicine (SSICM) issued guidelines on triage for intensive-care treatment under resource scarcity. In the course of the pandemic, the guidelines were updated several times in the light of the experience accumulated and new scientific findings. All the versions can be found at http://www.samw.ch/en/triage-history

[2] Further information and contact details can be found at: http://www.vtg.admin.ch/de/organisation/astab/san/ksd/nki.html (accessed on 21 September 2021).

[3] Available in French/German (accessed on 21 September 2021).

[4] In situations of particularly high pressure, transfers to neighbouring countries are to be considered. Conversely, if sufficient resources are available, Swiss ICUs should admit patients from neighbouring countries facing triage situations.

[5] For a more detailed discussion of the ethical principles, see Section 2 of the SAMS Guidelines "Intensive-care interventions" (2013).

[6] Cf. also Swiss Influenza Pandemic Plan, 2018, Part II, Section 6.1, and especially Part III, Section 6 "Ethical issues".

[7] Cf. HeaR-MI (2021).

[8] Cf. Section 11 of the SAMS Medical-ethical guidelines "Intensive-care interventions" (2013).

[9] Extracorporeal membrane oxygenation.

[10] Cf. SSICM, ECMO in COVID-19 related severe ARDS. ECMO Guidelines for non-ECMO Centers, 2020.

[11] Cf. Bartlett et al. (2020).

[12] Cf. palliative.ch guidelines: Therapeutische Massnahmen bei Patienten mit Covid-19 mit zu erwartender ungünstiger Prognose (http://www.palliative.ch, accessed on 21 September 2021).

[13] For a more detailed discussion of prognosis, see Section 5.1 of the SAMS G uidelines "Intensive-care interventions" (2013).

[14] However, even for experienced physicians, it is easier to predict who is likely to stay in the ICU for a short time than to predict at the time of admission that a lengthy stay will be required. Cf. Verburg et al. (2017); Vicente et al. (2004).

[15] Cf. Hewitt et al. (2020).

[16] Cf. also NEK (2021).

[17] Cf., for example, Persad et al. (2009).

[18] Cf. the recommendations of the Swiss Society of Emergency and Rescue Medicine (SSERM): https://www.sgnor.ch/fileadmin/user_upload/Dokumente/SGNOR-Empfehlung_COVID19-Triage_V3.0-EN_20201118.pdf V3, cf. http://www.sgnor.ch/home/covid-19 (accessed on 21 September 2021).

[19] Cf. Christian et al. (2006).

[20] The justification for this criterion is the highly resource-intensive treatment required by patients with severe burns. In decision-making, the individual patient's short-term survival prognosis is to be carefully considered and an assessment is to be made in accordance with capacity at the two Burn Units (USZ and CHUV).

[21] Cf. Li et al. (2020)

[22] Cf. Flaatten et al. (2017); Muscedere et al. (2017); Rockwood et al. (2020); Surkan et al. (2020).

[23] Cf. http://www.dal.ca/sites/gmr/our-tools/clinical-frailty-scale.html

IV. Information on the preparation of these guidelines

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Approval

The guidelines – approved by the Central Ethics Committee (CEC), the Executive Board of the SAMS and the Board of the Swiss Society of Intensive Care Medicine (SSICM) – came into effect on 20 March 2020. The revised version 4 was approved by the CEC, the Executive Board of the SAMS and the Board of the SSICM on 20 September 2021.

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Appendix

Clinical Frailty Scale (CFS)

The Clinical Frailty Scale (version 2.0) assists health professionals in assessing short-term survival prognosis in elderly patients. Its prognostic value is confirmed by numerous publications.[22] At the same time, limited evidence is available concerning the most appropriate thresholds, which means that the scale needs to be used carefully, in combination with good clinical judgement on the part of the professionals concerned. The scale is to be employed by appropriately trained health professionals; training materials are available online.[23] (Reprinted with permission from Dalhousie University)

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