

Available online at [www.sciencedirect.com](http://www.sciencedirect.com)

# Resuscitation Plus

journal homepage: [www.elsevier.com/locate/resuscitation-plus](http://www.elsevier.com/locate/resuscitation-plus)

## Commentary and concepts

# To withhold resuscitation – The Swedish system's rules and challenges

*Eva Piscator<sup>a,b</sup>, Therese Djarv<sup>a,c,\*</sup>*

### Abstract

The aim of this article is to describe current Swedish legislation, clinical practice and future perspectives on the medical ethical decision “Do-Not-Attempt-Cardio-Pulmonary-Resuscitation” (DNACPR) in relation to prevent futile resuscitation of in-hospital cardiac arrests. Sweden has about 2200 in-hospital cardiac arrests yearly, with an overall 30-day survival ratio of 35%. This population is highly selected, although the frequency of DNACPR orders for hospitalized patients is unknown, resuscitation is initiated in only 6–13% of patients dying in Swedish hospitals.

According to Swedish law and although shared decision making is sought, the physician is the ultimate decision-maker and consultation with the patient, her relatives and another licenced health care practitioner is mandatory. According to studies, these consultations is documented in only about 10% of the decisions. Clinicians lack tools to assess risk of IHCA, tools to predict outcome and we are not good at guessing patients own will. Future directives for clinical practice need to address difficulties for physicians in making decisions as well as the timing of decisions.

We conclude that the principles in Swedish law needs to be fulfilled by a more systematic approach to documentation and planning of meetings between patients, relatives and colleagues.

**Keywords:** IHCA, DNAR, DNACPR

## In-hospital cardiac arrests – A highly selected patient population

Survival after in-hospital cardiac arrest (IHCA) in Sweden has steadily increased over the last decade,<sup>1</sup> and today the survival ratio has reached up to 35%.<sup>2</sup> Approximately 2200 patients suffer a cardiac arrest within the walls of Swedish hospitals yearly.<sup>1</sup> About 40% occur in general wards, where they are witnessed by health professionals who immediately alert the resuscitation team (80% within 1 minute), start cardiopulmonary resuscitation (CPR, 90% within 1 minute) and attaches a defibrillator, in 86% of cases within three minutes.<sup>1</sup> In all, 94% of patients suffering from IHCA have good neurological function on admission to hospital, which is assessed as CPC (Cerebral Performance Category) 1–2 and 92% of survivors have CPC1-2 at discharge from hospital after the IHCA. However, only one out of ten who die in hospital have received CPR, and the vast majority of patients who die in hospital (89%<sup>1</sup>) have an ethical decision to withhold CPR,<sup>3,4</sup> a so called Do-Not-Attempt-Cardiopulmonary-Resuscitation (DNACPR) order. Our interpretation is that

patients who undergo CPR in a hospital are highly selected. Therefore, the aim of this article is to describe current Swedish legislation, clinical practice and future perspectives on the medical ethical decision “Do-Not-Attempt-Cardio-Pulmonary-Resuscitation” (DNACPR) in relation to prevent futile resuscitation of in-hospital cardiac arrests.

## Swedish legislation-mandatory consultations and documentations

Swedish legislation around life-sustaining treatment is valid for the whole society at large, i.e. ranging from nursing homes to hospitals. However, a decision is only valid within one setting and one situation. For example, if a patient in a nursing home has a DNACPR but chokes and an ambulance is called and they transport the patient to the hospital, the nursing homes decisions on DNACPR is not valid for either the ambulance or the hospital. In real life, a new decision can easily be taken based on the old one from another setting. The focus in this article is decision at the hospital as a way to prevent futile resuscitation of an in-hospital cardiac arrest.

\* Corresponding author.

E-mail address: [therese.djarv@ki.se](mailto:therese.djarv@ki.se) (T. Djarv).

<https://doi.org/10.1016/j.resplu.2023.100501>

2666-5204/© 2023 The Author(s). Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Swedish legislations states that healthcare should be carried out in consultation the patients and that their autonomy should be respected as much as possible.<sup>5</sup> The decision to withhold CPR is part of the larger concept of the limitations of life-sustaining treatments ranging from withdrawal or withholding of treatment to full life-prolonging treatment that keeps the patient alive until the underlying condition has resolved. In withholding treatment, DNACPR is by far the most common limitation, followed by withholding intensive care and mechanical ventilation. Swedish regularisation/legislation requires that decisions to withhold treatment are preceded by consultation with the patient, but does not require consent (Fig. 1). Unless secrecy applies, relatives should be involved in healthcare planning.<sup>5</sup> If consultation with the patient is not possible, the reason should be documented and relatives should be consulted as far as possible.<sup>5</sup> Further, consultation with at least one other licenced caregiver is mandatory. Ethical guidelines recommend that this should be a senior physician, but in clinical practice, it can be the registered nurse caring for the patient. A DNACPR order can be placed when (1) CPR is not in accordance with the patient's will, (2) CPR is considered not to benefit the patient, or (3) CPR is very unlikely to be successful because the patient is dying from an irreversible condition.<sup>6,7</sup> Since the chance of survival after IHCA are highly dependent on pre-and peri-arrest factors, such as aetiology and initial rhythm,<sup>8</sup> the decision to initiate CPR can be conditioned. An example of the most common conditional decision is to initiate CPR and give up to three defibrillations in the case of a shockable initial rhythm, but not to prolong treatment if the arrhythmia is refractory and to withhold CPR in the case of a non-shockable initial rhythm.<sup>7</sup> The patient's and their relatives' values and preferences regarding resuscitation as well

as all consultations and the medical reasons for withholding treatment should be documented in the medical file.<sup>5</sup>

### Studies on current clinical practice reveals lack of shared decision making

In making the medical assessment of the benefits and burdens of CPR, in Sweden, physicians are the ultimate decision-makers for DNACPR orders.<sup>5,7</sup> Although shared decision making is sought,<sup>9</sup> the majority of cases in clinical practice does not live up to this.<sup>3,10–12</sup> The reason for the lack of consultation with the patient is partly because, when the decision is being made, the patient is often in a state of impaired cognition, altered level of consciousness or acute stressful situation that make consultation unfeasible.<sup>11,13</sup> Clinicians have difficulty accurately guessing patients' preferences regarding CPR<sup>14</sup> and a decision based solely on the fact that the patient do not want CPR is as rare as 1%, but the patient often accepts or agrees to a medical decision to withhold CPR.<sup>11</sup> If the patient's own will is the basis for the DNACPR order, the physician must ensure that the patient is given clear information about the consequences, and ensure that the patient has understood them. In terms of the reason that CPR is considered "not to benefit", it means that the benefit of the treatment results in survival, but the complications or consequences of the treatment (i.e CPR and, likely the following post-resuscitation care) do not align with the patients overall life situation.<sup>6,7</sup> To summarize, the ground for the DNACPR order is a multifactorial medical assessment made by the physician, in most cases without the desired shared decision-making that we strive for.

Principle	Clinical problem	Possible solution
Consultation with patient	Patient unconscious, sedated, critically ill	Discuss goals of treatment on multiple occasions and settings, i.e from primary care to acute hospital admissions  Consultation with relatives to understand the patients preferences
Consultation with licensed caregiver	Decisions are requested by ward staff on on-call hours	Schedule daytime meetings with patient, relatives and colleagues
Written documentation of the grounds for decision	No form or standard exits	Standardized forms with mandatory boxes

**Fig. 1 – Overview of principles in Swedish patient law regarding Do-Not-Attempt-CardioPulmonary Resuscitation, common clinical problems and possible solutions to them.**

### Difficulty in assessing the chance of survival

Regarding medical assessment, it has been challenging for doctors to estimate outcome after a cardiac arrest scenario accurately, in studies, the guesses can vary widely, ranging from a 1 to 95% chance of survival for the same patient.<sup>15–17</sup> Further, the variability in medical-ethical decisions among Swedish physicians working in intensive care is partly linked to the doctor's personality, values and traits.<sup>18</sup>

Another option is to estimate outcomes using prediction models; currently, there are no established risk profiles identifying only cardiac arrest patients among all hospitalized patients. Furthermore, a recent systematic review has found that currently, no prediction tool is suitable for clinical practice.<sup>19</sup> The problems with existing prediction tools are partly due to the lack of external validation, but most importantly, they do not have sufficient specificity, meaning they fail to accurately identify the group with a low chance of survival (often defined as 1%). To illustrate the heterogeneous outcome, we would like to use Swedish data revealing both surprisingly good and surprisingly poor outcomes; for instance, 90-year-olds have a 41% survival ratio in cardiac arrests with shockable rhythm,<sup>20</sup> while a patient with a cardiac arrest following aspiration in a hospital ward has a less than 8% survival ratio.<sup>21</sup>

In summary, the challenge clinicians face is that we cannot predict in advance whether a cardiac arrest will occur, the characteristics of the cardiac arrest and what the outcome will be.

## Life after a cardiac arrest or a DNACPR

The question that arises during discussions about a DNACPR decision in the clinic is often “to what kind of life are we resuscitating the patient?”. Consistent with international guidelines,<sup>22</sup> good neurological function is assessed as CPC 1–2, while 3–5 are classified as poor. According to an annual report from the Swedish Registry for Cardiopulmonary Resuscitation, 92% of IHCA are discharged with good neurological function.<sup>1</sup> Further, among those discharged with CPC 3, a smaller hospital-based study revealed that the vast majority were admitted to the hospital with CPC 3.<sup>23</sup> On a group level, it is challenging to argue against attempting to resuscitate patients to the same life they had at admission in the case of a cardiac arrest during their hospital stay. Similarly, reports on life satisfaction after IHCA are comparable to those of the general population.<sup>24</sup> This challenges DNACPR decisions for the group that receive them on the ground that CPR is not beneficial but also leaves the clinical question of whether it is a dignified life unanswered.

Currently, little is known about life after a DNACPR decision, but about 60–70% of patients with a DNACPR decision who are discharged from hospitals pass after one year.<sup>13,25</sup>

## Future directives for improvement in the Swedish and similar systems on DNACPR orders

In this clinical grey area without risk or prediction models, clinicians are left with qualified guessing, but that does not mean we can or should avoid making these medical decisions. Modern resuscitation training for doctors should include knowledge about prognostic factors for favourable outcome, discussions about the complexity of decisions and the ethical framework to facilitate clinical practice.

In every-day clinical practice, the complexity and need for consultation with caregivers and caretakers in order to make an elaborate decision, should be appraised. Hospitals need to plan for this kind of decision-making and defer them to rounds rather than accepting them to be made during on-call hours. Some critical situations require a prompt assessment of the benefits of CPR, but most commonly there is no rush to make these decisions.<sup>25</sup> If an acute situation that was not anticipated does arise, the advice is to initiate resuscitation and if successful, admit the patient to the Intensive Care Unit. This approach may lead to a few more patients being admitted to the intensive care unit, but it has the advantage that some who might have been disqualified from returning to their normal lives can actually do so. For others, a well-founded decision to withdraw life-sustaining care can be made in a calmer setting and in consultation with several clinical specialties, something that Swedish intensivists have emphasised as an area for improvement.<sup>26</sup>

In conclusion, the principles in Swedish law needs to, and could, be fulfilled by a more systematic approach to documentation and planning of meetings between patients, relatives and colleagues (Fig. 1).

## CRedit authorship contribution statement

**Eva Piscator:** Conceptualization, Methodology, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Visu-

alization. **Therese Djarv:** Conceptualization, Methodology, Investigation, Writing – review & editing, Visualization, Supervision.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Acknowledgement

The study was supported by Karolinska Institutet. Scribendi was used for English proofreading.

## Data sharing statement

No additional data exists that is suitable for publication.

## Author details

<sup>a</sup>Department of Medicine Solna, Karolinska Institutet, Stockholm, Sweden <sup>b</sup>Emergency Department, Capio Sankt Görans Hospital, Stockholm, Sweden <sup>c</sup>Emergency Department, Karolinska University Hospital, Stockholm, Sweden

## REFERENCES

- Herlitz J. Swedish Cardio-Pulmonary Registry-yearly report. 2021 [in Swedish].
- Jerkeman M, Sultanian P, Lundgren P, et al. Trends in survival after cardiac arrest: a Swedish nationwide study over 30 years. *Eur Heart J* 2022;43:4817–29. <https://doi.org/10.1093/eurheartj/ehac414> [published Online First: 2022/08/05].
- Bertilsson E, Semark B, Schildmeijer K, et al. Usage of do-not-attempt-to-resuscitate orders in a Swedish community hospital – patient involvement, documentation and compliance. *BMC Med Ethics* 2020;21:67. <https://doi.org/10.1186/s12910-020-00510-5> [published Online First: 2020/08/03].
- Aune S, Herlitz J, Bang A. Characteristics of patients who die in hospital with no attempt at resuscitation. *Resuscitation* 2005;65:291–9. <https://doi.org/10.1016/j.resuscitation.2004.11.028>.
- Swedish Government. Regeringskansliet. Patientlag (2014:821) 2014;2014 [in Swedish].
- Mentzelopoulos SD, Couper K, Voorde PV, et al. European Resuscitation Council Guidelines 2021: Ethics of resuscitation and end of life decisions. *Resuscitation* 2021;161:408–32. <https://doi.org/10.1016/j.resuscitation.2021.02.017> [published Online First: 2021/03/29].
- Swedish Medical Association. Svenska Läkaresällskapet, Svenska rådet för hjärt-lungräddning Etiska riktlinjer för hjärt-lungräddning (HLR) 2:a upplagan (2021) version 2. 2021 [in Swedish].
- Grasner JT, Herlitz J, Tjelmeland IBM, et al. European Resuscitation Council Guidelines 2021: Epidemiology of cardiac arrest in Europe. *Resuscitation* 2021;161:61–79. <https://doi.org/10.1016/j.resuscitation.2021.02.007> [published Online First: 20210324].
- Bremer A, Arestedt K, Rosengren E, et al. Do-not-attempt-resuscitation orders: attitudes, perceptions and practices of Swedish physicians and nurses. *BMC Med Ethics* 2021;22:34. <https://doi.org/10.1186/s12910-021-00604-8> [published Online First: 20210330].

10. Padoan S, Olofsson A, Dybkowska K, et al. Difficulties and shortcomings in decisions on treatment restrictions. *Lakartidningen* 2020;117 [published Online First: 2020/04/08].
11. Piscator E, Djarv T, Rakovic K, et al. Low adherence to legislation regarding Do-Not-Attempt-Cardiopulmonary-Resuscitation orders in a Swedish University Hospital. *Resusc Plus* 2021;6:100128. <https://doi.org/10.1016/j.resplu.2021.100128> [published Online First: 20210429].
12. Pettersson M, Hoglund AT, Hedstrom M. Perspectives on the DNR decision process: A survey of nurses and physicians in hematology and oncology. *PLoS One* 2018;13:e0206550. <https://doi.org/10.1371/journal.pone.0206550> [published Online First: 20181121].
13. Akerman A, Borna C, Bleckert J, et al. Poor compliance with guidelines for decisions regarding treatment restrictions. *Lakartidningen* 2021;118 [published Online First: 2021/02/25].
14. Covinsky KE, Fuller JD, Yaffe K, et al. Communication and decision-making in seriously ill patients: findings of the SUPPORT project. The study to understand prognoses and preferences for outcomes and risks of treatments. *J Am Geriatr Soc* 2000;48:S187–93. <https://doi.org/10.1111/j.1532-5415.2000.tb03131.x> [published Online First: 2000/05/16].
15. Ebell MH, Bergus GR, Warbasse L, et al. The inability of physicians to predict the outcome of in-hospital resuscitation. *J Gen Intern Med* 1996;11:16–22. <https://doi.org/10.1007/BF02603480> [published Online First: 1996/01/01].
16. Jones K, Garg M, Bali D, et al. The knowledge and perceptions of medical personnel relating to outcome after cardiac arrest. *Resuscitation* 2006;69:235–9. <https://doi.org/10.1016/j.resuscitation.2005.07.023> [published Online First: 20060202].
17. Kidd AC, Honney K, Bowker LK, et al. Doctors are inconsistent in estimating survival after CPR and are not using such predictions consistently in determining DNACPR decisions. *Geriatrics (Basel)* 2019;4. <https://doi.org/10.3390/geriatrics4020033> [published Online First: 2019/05/07].
18. Nordenskjold Syrous A, Malmgren J, Odenstedt Herges H, et al. Reasons for physician-related variability in end-of-life decision-making in intensive care. *Acta Anaesthesiol Scand* 2021;65:1102–18. <https://doi.org/10.1111/aas.13842> [published Online First: 2021/05/09].
19. Lauridsen KG, Djarv T, Breckwoldt J, et al. Pre-arrest prediction of survival following in-hospital cardiac arrest: A systematic review of diagnostic test accuracy studies. *Resuscitation* 2022;179:141–51. <https://doi.org/10.1016/j.resuscitation.2022.07.041> [published Online First: 20220804].
20. Hirlekar G, Karlsson T, Aune S, et al. Survival and neurological outcome in the elderly after in-hospital cardiac arrest. *Resuscitation* 2017;118:101–16. <https://doi.org/10.1016/j.resuscitation.2017.07.013>.
21. Albert M, Herlitz J, Rawshani A, et al. Cardiac arrest after pulmonary aspiration in hospitalised patients: a national observational study. *BMJ Open* 2020;10:e032264. <https://doi.org/10.1136/bmjopen-2019-032264> [published Online First: 2020/03/22].
22. Haywood K, Whitehead L, Nadkarni VM, et al. COSCA (Core Outcome Set for Cardiac Arrest) in adults: An advisory statement from the International Liaison Committee on Resuscitation. *Resuscitation* 2018;127:147–63. <https://doi.org/10.1016/j.resuscitation.2018.03.022>.
23. Jonsson H, Piscator E, Israelsson J, et al. Is frailty associated with long-term survival, neurological function and patient-reported outcomes after in-hospital cardiac arrest? – A Swedish cohort study. *Resuscitation* 2022. <https://doi.org/10.1016/j.resuscitation.2022.07.013> [published Online First: 2022/07/18].
24. Aregger Lundh S, Israelsson J, Hagell P, et al. Life satisfaction in cardiac arrest survivors: A nationwide Swedish registry study. *Resusc Plus* 2023;15:100451. <https://doi.org/10.1016/j.resplu.2023.100451> [published Online First: 2023/09/04].
25. Piscator E, Goransson K, Forsberg S, et al. Do-Not-Attempt-Cardiopulmonary-Resuscitation (DNACPR) decisions in patients admitted through the emergency department in a Swedish University Hospital – An observational study of outcome, patient characteristics and changes in DNACPR decisions. *Resusc Plus* 2022;9:100209. <https://doi.org/10.1016/j.resplu.2022.100209> [published Online First: 20220204].
26. Nordenskjold Syrous A, Agard A, Kock Redfors M, et al. Swedish intensivists' experiences and attitudes regarding end-of-life decisions. *Acta Anaesthesiol Scand* 2020;64:656–62. <https://doi.org/10.1111/aas.13549> [published Online First: 2020/01/19].