Dear Editor,

In the last decades, cardiopulmonary resuscitation (CPR) and life-support technologies have enabled us to prolong the life of patients. To avoid a prolonged process of dying or life with severe neurological damage, do-not-resuscitate (DNR) orders have been instituted. Only 20% of patients who die in the intensive care unit (ICU) undergo CPR [1].

Recently, accumulating evidence has indicated that DNR orders independently increase mortality. Observational studies report a 3–25 times increased mortality in patients with DNR orders after adjustment for confounders. A matched cohort study using propensity scores confirmed these results [2].

What causes this increase in mortality in patients with DNR orders? First, patients may be able but unwilling to sustain the burden of life-supporting interventions and therefore prefer not to have CPR. Second, DNR orders can be instituted because treatment is judged to be futile by the medical team, but this assumes that the prognosis of the specific patient is known. However, predicted mortality may vary by more than 50% [3] among physicians. Therefore, prognostic models have been developed, but these demonstrate good agreement only for patients in aggregate, not for individual patients [4]. They appear to underestimate the chances of survival in non-DNR patients.

Third, having a DNR order may inappropriately affect that patient’s level of care, whereas only CPR should be withdrawn; for instance, during a busy shift when confronted with several sick patients at the same time, the health care worker may decide to focus on patients without DNR first. This may result in a prolonged period with disturbed function of vital organs, affecting the prognosis of that patient. Although there are no scientific data to confirm this supposition, each health care worker will recognize this scenario.

What measures can be taken to reduce unwanted mortality due to assignment of DNR orders? Physicians should discuss treatment limitations at an early phase with the patient and his family. When these difficult decisions have to be made during an emergency admission, there might not be enough time to cautiously contemplate and discuss the chances of survival and good functional outcome with the agony of repeated resuscitation efforts. When patients have already been admitted to the ICU without a code order, treatment limitations should be a multidisciplinary decision with involvement of other experienced colleagues, preferably intensivists, as they may be better prepared for prognostication [5]. Prognostic models may aid in calibration, but should not be used as sole determinant for DNR decision-making.

It is important for each hospital to develop clear guidelines about DNR orders, by preference based on national guidelines. Guidelines should emphasize that the DNR order has to be viewed in isolation from other treatment decisions. Whenever other treatments have been restricted, these should be specified and clearly recorded in the patient’s notes. To avoid ambiguity specific code forms can be used, specifically indicating which therapies will be withheld, such as renal replacement therapy, mechanical ventilation, vaso-active drugs or blood products.

It is important for physicians to be aware of the impact of DNR orders, with their independent effect on mortality. The uncertainty of prognosis, the large variability in DNR policy between physicians, and the self-reinforcing prophecy of treatment limitations urges us to exercise caution prior to recommending limitations of care.

Conflicts of interest The authors declare that they have no competing interests.

References

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