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Physician characteristics influence the trends in resuscitation decisions at different ages

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Short title: Ethics of resuscitation at different ages

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Abbreviations: LEFO – Institute for Research on the Medical Profession; NPA – Norwegian Pediatric Association

Abstract

Aim: We examined how physicians in different medical specialties would evaluate treatment decisions for vulnerable patients in need of resuscitation.

Methods: A survey depicting six acutely ill patients from newborn infant to aged, all in need of resuscitation with similar prognoses, was distributed (in 2009) to a representative sample of 1650 members of the Norwegian Medical Association and 676 members of the Norwegian Pediatric Association.

Results: There were 1335 respondents (57% participation rate). The majority of respondents across all specialties thought resuscitation was in the best interest of a 24 week gestation preterm infant and would resuscitate the patient; but would also accept palliative care on the family's demand. Accepting a family's refusal of resuscitation was more common for the newborn infants. Specialists were overall similar in their answers, but specialty, age, and gender were associated with different answers for the patients at both ends of the age spectrum.

Conclusion: Resuscitation decisions for the very young do not always seem to follow the best interest principle. Specialty and personal characteristics still have an impact on how we consider important ethical issues. We must be cognisant of our own valuations and how they may influence care.

Key Words: Autonomy; Best interest; Ethics; Medical specialty; Resuscitation;

Key notes

- Several studies have shown that ethical decisions in acute scenarios evince considerable variation, and there was a need to explore possible explanations for this.
- We confirmed findings in previous publications that had shown discrimination of preterm and term newborn infants, in addition we found that physician characteristics added to and modulated such differences in assessment.
- Training and education in ethical analysis should be a basic requirement for all physicians.

INTRODUCTION

In acute medicine critical decisions often have to be made rapidly. If the ideals of equality and fairness are to be upheld, patients with similar prognoses should have the same right to life-saving care which is in the patient's best interest. The clinician's values and personal characteristics may have an impact on these evaluations.

Several empirical studies have suggested that patients of different ages with similar expected benefits from resuscitation were not assessed equally (1-6).

Newborn, and in particular extremely premature, infants appeared to be assessed differently from older infants, children and adults (1-9).

Previous studies, including our own (4,5), had not analysed factors that could modulate assessments. In this study we investigated whether professional and personal background could influence life-and-death decisions for incompetent patients of different ages.

MATERIAL AND METHODS

We conducted 2 separate surveys among Norwegian physicians (4,5). A mail survey was conducted among 1650 members of the Norwegian Medical Association who were participants in a cohort followed longitudinally by the Institute for Studies of the Medical Profession (LEFO) (10). The cohort was representative of all active Norwegian physicians. In the second survey all members of the Norwegian Pediatric Association (NPA) with an available e-mail address (n=676) received an electronic questionnaire, which contained the same scenarios and the same questions as the LEFO survey (4). Ethics approvals were granted by the Norwegian Social Science Data Service.

In the surveys, 6 scenarios described currently incompetent, critically ill patients of different ages in need of resuscitation, and with a potential for neurologic sequelae in case of survival. Their outcomes were explicitly described. No socio-economic information was given. All the vignettes in the questionnaire illustrated

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patients who had the potential for being interactive after resuscitation and medical interventions. The questionnaire has been used and validated in previous studies (1-3,8,9). It was translated into Norwegian by the authors. For all patients the suggested outcomes were representative of expected outcomes in industrialized countries (11-13).

All patients were described as having a 50% chance of survival. Four patients had similar outcomes if survival occurred: a preterm infant just delivered at 24 weeks of gestation, a term-born infant with a known brain malformation; a two-month-old infant with bacterial meningitis; and a 50-year-old previously healthy man with severe trauma.

Two other patients had pre-existing disabilities, both with a 50% risk of having additional disability: a seven-year-old child with multiple disabilities with a new head trauma; and an 80-year old adult with disability from moderate Alzheimer disease who had sustained a new stroke.

The physicians were asked:

- whether they would resuscitate the patients
- whether they believed that resuscitation was in the patient's best interest
- whether they would accept not resuscitating at the family's request
- whether they would want resuscitation if the patient were their own child
- whether, for the two adults, they would want resuscitation if they themselves, or their spouse, were the patient

For all questions, the response options (yes, probably, probably not, and no) were recoded into yes and no. Respondents were also asked to imagine all 6

scenario presenting at the same time in need of resuscitation and then to prioritize them in order of intervention from 1-to-6.

Demographic information was obtained for all respondents: age, gender, specialty or subspecialty background, including, for the paediatricians in the NPA study, current experience with neonatal care.

The general results of this study have been published elsewhere (4,5), including the detailed methodology. Overall, those results confirmed the findings from other studies using the same scenarios (1-3,6,8).

Statistics

Group differences are illustrated with percentages, and possible statistically significant differences are calculated with binary logistic regressions with gender and age as co-variables and dichotomized versions of the vignette as result variables. The reported p-values pertain to the effect of the given subgroup, typically for one specialty versus all other groups combined. SPSS Statistics version 24 (IBM Corporation, New York, USA) was used. We used p-value plots, as described by Schweder and Spjøtvoll (14) to check for multiplicity and p-value validity. The estimated number of p-values to be rejected was 4.8 while 13.2 should not be rejected, which aligned well with the observed findings.

RESULTS

Of the 1,650 participants in the LEFO panel, 1,069 responded to the mail survey (response rate 66%). The respondents were grouped according to their present or future specialty (Table 1). The electronic survey of the 676 NPA members yielded responses from 266 (response rate 39%).

Many responses were consistent across specialties, ages, and gender. Thus, while less than 80% of respondents in all categories found resuscitation of the two newborn scenario patients to be in their best interest, more than 90% thought that resuscitation was in the best interest of the two older children. Also consistent across the categories was that willingness to treat the two newborn patients was greater than the assessment of their best interest. Assessments of the two month and seven year old showed limited variation across specialties, both as regards wanting to treat (94-100% of respondents), considering treatment in their best interest (91-100%), accepting parental request for non-intervention (4-21%), and willingness to treat own child (94-100%). These responses were similar to those for the octogenarian.

Rankings for order of resuscitation were also quite similar, with the octogenarian allocated last by respondents in all specialties. The premature newborn infant was ranked next-to-last by all specialist groups except paediatricians in the LEFO survey and neonatologists in the NPA survey. The two month old and the seven year old were prioritized first or second by all specialty groups except public health physicians.

Both gender and age were significantly associated with some of the responses: female physicians significantly more often would intervene for the very young (98 versus 92%, $p=0.003$) and the very old (39 versus 27%, $p=0.002$). The

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preference for treating the newborn infant diminished significantly with physician age, controlled for gender ($p<0.001$). The same trends were present in the panel of paediatricians and trainee members of the NPA.

In the LEFO panel some of the responses differed between specialty groups (Figure 1). The proportion of paediatricians who would resuscitate the 24 week premature infant was only slightly higher than among surgeons. However, opinions were much more divided on the question of best interest. Thus, significantly fewer surgeons than paediatricians found treatment in this infant's best interest (52 versus 85%, $p<0.001$). Thinking was also different regarding the emphasis on parental autonomy. Among paediatricians, 41% would accept parents' request for comfort care, significantly fewer than the 58% among all other specialty groups combined ($p<0.001$).

When asked to consider how they would have acted if this premature infant were their own, only 51% of surgeons, compared to 78% of psychiatrists, would resuscitate, both significantly different from all other groups combined ($p<0.001$). For the term infant with brain malformation, 59% of paediatricians would want treatment for their own child, versus 61% of surgeons, 81% of psychiatrists, and 83% of those in public health. For the two month old with meningitis, the willingness to accept parental refusal of treatment varied from 4% of paediatricians, 17% of those in public health, to 21% of psychiatrists.

Among NPA paediatricians there were differences between those working with neurology and habilitation, and those working in neonatology. For the 24 week preterm infant more paediatricians and trainees with regular neonatology exposure would treat ($p=0.028$), and more found treatment to be in the infant's best interest

($p=0.001$). Neonatologists and paediatricians in part-time neonatal practice had a very high assessment of best interest (80%), but also gave high consideration to parental autonomy (70%).

In the panel of paediatricians, the physicians working with child neurology or rehabilitation were less inclined to treat ($p=0.011$) and more inclined to accept parental refusal ($p=0.041$) for the preterm infant. Fewer child neurology or rehabilitation specialists judged treatment of the preterm infant to be in the child's best interest ($p<0.001$).

DISCUSSION

In many acute events insufficient information is available to make on-the-spot decisions while maintaining due respect for patients' rights (15). However, many guidelines for management of preterm infants have recommended *a priori* abstention from resuscitation and life support at the margins of viability (16). Such guidelines may have influenced clinical practice (8,17), but less is known about how physicians outside paediatrics reflect on these questions, or how personal characteristics such as age and gender may influence thinking.

In previous studies in different countries and cultures survey respondents have been less inclined to intervene with life-saving measures and more inclined to accept proxy refusal of intervention at either end of life (1-9,18,19). The present study appears to be the first to address these questions in nationwide surveys covering all medical specialties (4,5). We found that physician characteristics

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modulate the responses to the case scenarios. The responses to our vignettes reflect attitudes towards several important bioethical questions such as life worth living, decision-making authority of relatives or proxies, and dilemmas related to resource allocation (20). Our findings indicate that such attitudes are also influenced by other factors than medical knowledge (19). In countries with publicly financed health care, where priorities in healthcare are discussed in the public arena, even insufficiently informed thinking may gain political traction. Therefore, such differences should be discussed to increase understanding.

Variations in responses regarding willingness to treat versus assessment of best interest appear particularly interesting. One possible explanation for this could be that different time perspectives were applied to the two questions. Thus, intervening in the acute situation gives time to gather facts, while a poor long term prognosis may motivate a negative assessment of best interest (15). The discrepancy between willingness to treat and assessment of best interest may merit further study.

Our results offer another perspective on the role of parents. Physicians assuming the role of parents were less inclined to want resuscitation for the two neonates. This was more pronounced in such specialties as surgery and general practice than in e.g. psychiatry. If survival with functional limitations and reduced quality of life are deemed unacceptable, it is challenging if we as professionals think differently about such burdens carried by others versus ourselves. This might perhaps be an added argument in favour of parents' role in decision-making.

Rebagliato et al studied the variability of neonatal physicians' attitudes among 10 European countries and the relationship with self-reported practice of end-of-life decisions (18). Physicians' attitudes were strongly related to how likely they were to limit intensive interventions in cases of poor neurological prognosis. The findings herein, showing differences between choices by paediatricians involved primarily in neurology and habilitation versus other paediatricians, also support the impact of beliefs about long term prognosis on choices made in acute scenarios.

One of the key principles in bioethics is the expectation for justice (22). In Norway, expectations are that patients with largely similar prognoses should have the same right to be treated (23). The apparent devaluation of the two newborn infants in our scenarios seems to fall short of the ideal of justice (9). Similar overall responses have been obtained from physicians in very different health care systems, and seem to transcend culture and economics (2-8). The 2 neonatal vignettes illustrate issues very much in the forefront of paediatric bioethics, i.e. limits of intervention in immaturity/prematurity, questions related to brain disease and consciousness, and the question of personhood (17,19,24). Thus, the discrepancy in responses to the 24 week gestation infant scenario would probably have been much greater if the gestational age had been described as 21-23 weeks (17,24). Similarly, both different perspectives on what constitutes personhood and what having that quality entails as far as rights, as well as the emergence of consciousness and its implications may well have influenced response patterns (19,24).

Although case patients were described in similar terms with respect to prognosis, respondents may have weighed other factors than those specifically described, or discarded the descriptions in favour of prior knowledge or impressions (8,19). Such factors may reflect a bias not necessarily founded in factual knowledge

(25-30). Although for some of the physicians in the LEFO panel the case scenarios were far removed from their everyday life as physicians, our findings nevertheless suggest that if the ideal is equal rights and access to care for all patients, we have work to do.

The strength of this study is that it is representative of a national corps of physicians across different specialties. A possible limitation in all questionnaire studies involving hypothetical case scenarios is that answers to questions may not necessarily predict real-life actions. Although the response rates differed between the LEFO and the NPA studies, the similar response patterns in both samples indicate good data reliability.

CONCLUSION

Our findings reported here expand on previous studies showing variation in how patients in need of emergency, life-saving care are assessed by healthcare workers with different backgrounds. From a paediatric perspective it is particularly worrisome that newborn infants appear to be devalued. This strongly suggests an urgent need to train healthcare personnel in the basic rules of ethical discourse and thinking. Such training should preferably begin in medical and nursing schools, and continue as a part of specialist training.

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FINANCE

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to declare.

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Figure 1. Probabilities of resuscitation for different specialty groups in different scenarios (LEFO data only).

Table 1. Present and/or future specialty of the LEFO respondents

Specialty	N
Paediatrics	46
Family practice and primary health care	271
Service- and laboratory specialties	85
Internal medicine subspecialties and neurology	287
Surgical specialties and subspecialties	195
Psychiatry	133
Public health	36
Missing information	16

