POSTER SESSION V

A280

DO NOT RESUSCITATE (DNR) ORDERS: SHOULD THEY APPLY WHEN A PATIENT GOES TO THE OPERATING ROOM?

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The "Do Not Resuscitate" (DNR) policy in force at our medical center states that, while in the operating room area, DNR designations are suspended; full resuscitative efforts will be undertaken. DNR policies were implemented in 1988, as mandated by the JCAHO, to protect patients' rights and to minimize futile treatment. The Ethics Committee has been reconsidering whether these policies are now appropriate. Because of the importance of this issue we desired to know how widely the policy was known and how it was regarded.

Materials and Methods. Survey questionnaires were sent to 175 emergency room physicians, surgical specialists, and anesthesiologists. The responses of the emergency room physicians were compared with the answers of specialists who routinely work in the OR. The chairman of the Institutional Research Review Board determined that this survey was exempt from review and need for an informed consent procedure. The distributions of answers were analyzed using Fisher's Exact Test (FET). Any probability ≤ 0.05 was considered to be statistically significant.

TABLE 1.	Answers: Yes/Total(%)				FET
	ER	SURG	ANES	N	P
Aware of DNR Policy	2/6(33)	26/32(82)	9/9(100)	47	0.011
Agree with DNR Policy	1/6(17)	16/31(52)	9/9(100)	46	0.002
Withhold PACU CPR?	3/5(60)	14/29(48)	0/9(0)	43	0.017

Results. Questionnaires were returned by 47 permanent and resident staff physicians. Questions were left unanswered by some respondents. The first series of questions, shown in Table 1, asked about awareness of and agreement with the policy suspending DNR orders during the perioperative period. A remarkable degree of unfamiliarity of the governing policy was revealed among ER (67%) and surgical specialists (28%). The third question asked whether a patient could ever be allowed to expire while recovering from residual anesthetic effects, muscle relaxants, and sedating drugs. Profound disagreement with the position of the DNR policy was revealed. The polled anesthesiologists were firmly opposed to allowing a patient to die without resuscitation while recovering from the physiological depression due to anesthesia.

TABLE 2.	RESUSCITATE? Yes/Total(%)				FET
LOCATION	ER	SURG	ANES	N	P
ER	1/6(17)	5/32(16)	4/9(44)	47	NS
Preop Holding	1/6(17)	5/31(16)	5/9(56)	46	NS
Preop Holding after	2/6(33)	16/30(53)	9/9(100)	45	0.010
OR: Spinal Anesthesia	4/6(67)	18/31(58)	9/9(100)	46	0.045
OR: General Anesthesia	2/5(40)	15/30(50)	9/9(100)	44	0.009
OR: MAC	1/5(20)	11/30(37)	6/6(100)	41	0.005
OR: Local Anesthesia	1/6(17)	9/30(30)	6/7(86)	43	0.010
PACU	1/4(25)	16/30(53)	9/9(100)	43	0.006

NS = Not Significant. FET = Fisher's Exact Test.

The second series of questions (Table 2) revealed: (1) Outside the operating room setting, anesthesiologists have the same division of opinion typical of other specialists. (2) The anesthesiologist group uniformly disagreed with continuing DNR orders in the perioperative period.

Discussion. Maintenance of DNR policies is now required by the JCAHO; the OBRA act will require discussion of advance directives beginning in November 1991[2]. Many articles have addressed DNR orders in the hospital setting. Only recently have DNR orders in the practice of anesthesiology been reviewed.[1]

Conclusions. This survey demonstrates that anesthesiologists hold significantly different opinions regarding DNR orders than other specialists. If anesthesiologists fail to participate in the policy making process, undesirable policies and guidelines are likely to be imposed.

References. 1. Troug RD. Do Not Resuscitate orders during anesthesia and surgery. Anes 1991;74:606-608. 2. Federal Register, Oct. 26, 1990.

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TITLE: IMMUNOHISTOCHEMICAL LOCALIZATION OF MANGANESE SUPEROXIDE DISMUTASE IN HUMAN LUNG

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The lung is continuously exposed to environmental levels of oxygen and, in clinical settings, transiently exposed to elevated concentrations. Side reactions to the metabolism of oxygen in mitochondria result in dose dependent formation of various reactive oxygen species (ROS) that are capable of producing tissue damage.(1) Manganese superoxide dismutase (MnSOD) is an antioxidant enzyme that detoxifies superoxide anion, the progenitor for ROS. While biochemical studies have demonstrated that MnSOD is predominantly localized to mitochondria, it is not known which cell types of the lung may or may not be invested with this enzyme. The complement of Mn SOD for specific cell types may relate to the susceptibility of those cells to oxidant stress cytotoxicity. We analyzed human lung samples from surgical resections to determine the phenotypes of lung cells with respect to MnSOD.

Institutional approval was obtained from the Human Subjects Committee. Lung samples were collected from the population briefly described in the following chart. "Mass DX" refers to the main disease process, as determined by Surgical Pathology, that resulted in lobectomy. Tissues that looked more grossly normal were selected from the lobes for this study and the histopathology of the area of lung actually used for immunohistochemistry is listed under "Histo DX."

Case	Age	Sex	Mass Dx	Histo Dx
1	34	F	Thymoma	Normal
2	53	F	Bronchiectasis	Interstitial fibrosis
3	66	F	Adenocarcinoma	Emphysema
4	52	F	Adenocarcinoma	Interstitial fibrosis
5	64	M	Squam. Cell Ca.	Emphysema

Tissue samples were sectioned by cryotomy following brief fixation and paraffin embedding. Sections were stained for MnSOD using routine techniques for immunohistochemistry.(2) Preimmune and immune whole sera were obtained from rabbits inoculated with purified samples of human kidney MnSOD, as previously described and biochemically characterized.(3)

Predominant staining for anti-MnSOD was demonstrated by endothelial cells at all levels of the vascular tree, most notably in the parenchymal alveolar capillaries. Staining appeared to be nongranular, suggestive of cytoplasmic enzyme. Type I pneumocytes stained in a similar manner although less markedly. Type II cells demonstrated a more typically granular labeling, consistent with mitochondrial localization and the large number of mitochondria in this cell type. Interstitial tissue of the alveolar septum was generally negative. In all five cases, alveolar macrophages demonstrated a wide variety of staining reactions, from intense to nominal and from diffuse to granular. Bronchiolar epithelial cells demonstrated slight to nominal staining and cilia were negative. In the peribronchiolar and perivascular connective tissues, granular staining was apparent in smooth muscle while the acellular tissue stained prominently.

In these preliminary findings, the marked localization of MnSOD to the endothelium in human lung is clearly in contrast with findings in rat lung (4) and may, in part, explain some of the differences in hyperoxic cytotoxicity demonstrated by these two species. However, a larger study population is being obtained in order to differentiate localization due to disease processes from the normal complement that occurs in human lung.

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References
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2. Am J Pathol 137:199-214, 1990
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4. J Histochem Cytochem 38:1021, 1990