

Aggressive Therapy in the Care of the Critically Ill Patient

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DR. PAUL WARD (*Resident Physician, Department of Family Practice*): This presentation discusses the ethical issues surrounding a case of an elderly woman admitted to the hospital in cardiogenic shock, who, despite a grave prognosis, wishes for all possible intervention. The role of the family, family physician, and consultants in caring for this patient will be considered, including early resuscitation decisions, the use of mechanical ventilation and continuous positive airway pressure by mask, and establishing competency.

There are numerous examples of cases in which a patient is in critical condition but thought to have reasonable chances for a good outcome and therefore subjected to aggressive medical therapy. When the prognosis turns grim, as it sometimes will, however, it is often difficult to change our course of action. We continue heroic efforts even in the face of new data that predict a dismal outcome. I was recently involved in a case in which I found there was a similar resistance to changing the initial course of action in the face of new data. In this particular case, however, a patient, thought to have no hope for life, revived despite "benign neglect" only to find that her caretakers were unwilling to change the prognosis and take a more aggressive course of action.

The patient, an 87-year-old widow, presented to the emergency room comatose and in cardiogenic shock. She was accompanied by her friend, who stated that she had power of attorney for this patient. It was this friend's opinion that the patient would like full resuscitative measures. She provided the following history for us: the patient had previously been living independently in her own home until six weeks prior to this admission. She had been hospitalized for four weeks at another hospital with a diag-

nosis of cardiogenic shock with respiratory failure. She had been on a ventilator in the intensive care unit for much of that hospitalization. She was discharged to a nursing home and, therefore, came under the care of our faculty one week before she presented here. She had not yet been seen by a member of our staff at the time of presentation to the emergency room. She was reported to be alert, oriented, ambulatory, and able to care for her own daily personal needs at the nursing home. On the day of admission the patient was noted by nursing staff to be cyanotic, lethargic, and hypotensive with a systolic blood pressure of 30 mmHg. She was in this state for approximately one hour when the patient's friend arrived for a visit and demanded that medical attention be sought. The nursing home notified the resident on call and, after a short discussion, transferred the patient by ambulance to the emergency room.

On physical examination the patient was noted to be an obese, cyanotic, elderly woman with no palpable blood pressure. The patient had no obvious respirations, and the electrocardiogram revealed a nodal rhythm at 40 beats per minute. Her pupils were 6 mm and nonreactive to light. Her neck was supple with marked jugular venous distention. Heart sounds were distant with a grade 3/6 systolic murmur, and breath sounds were absent. The abdomen was obese and soft. She was unresponsive, and her reflexes were found to be hyperactive with bilateral upgoing toes. There was coffee-ground return from a nasogastric tube, and her stool was positive for blood. Initial blood gas determinations found her oxygen pressure (pO_2) on 100 percent oxygen to be 8.0 kPa (60 mmHg) and her carbon dioxide pressure (pCO_2) to be 13.6 kPa (102 mmHg).

The patient was intubated and vigorously resuscitated in the emergency room, according to the friend's wishes. Shortly thereafter, a consultation was requested to assist with management of the patient, who was now on a ventilator with blood pressure maintained by intravenous pressors. Upon thoroughly evaluating the case, our consultant wrote: "The prognosis of an 87-year-old woman in cardiogenic shock is virtually 0 percent survival. I in-

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formed her [the friend] that if she [the patient] were to survive this event and be discharged from the hospital, it would be very unlikely that she would have self-care or be able to speak full sentences." The friend, by authority of power of attorney, then decided to change the patient's status to "no code," specifying that no further resuscitative measures were to be done and recommending supportive care only. I'll start the discussion by saying that we agreed with that prognosis and the no code decision.

DR. CARYL HEATON (*Instructor, Department of Family Practice*): When the friend who had power of attorney originally pressed for a full code, did she state that she was following the wishes of the patient or did she make that decision on her own?

DR. WARD: I wasn't in the emergency room, but talking to her later, she said that she did not want to make a decision that would lead to her friend's death. I think her change of heart in reversing that initial decision was actually due to the strong opinion of our consultant.

DR. NADU TAUkli (*Resident, Department of Family Practice*): Had the patient been brought into the emergency room with no one else accompanying her, would you have been as energetic in your initial resuscitation effort?

DR. WARD: It would have been a very difficult decision not to resuscitate, since we hadn't known this patient previously, and we had no idea what her wishes would have been. Nor did we understand the precipitating event. All that was known was that she had been ambulatory and able to care for herself.

DR. CHRISTINE JERPBak (*Resident, Department of Family Practice*): We did know that much when she came in that night. I was on call when the nursing home called and said that the patient was in cardiogenic shock for the second time that month. The woman accompanying her did not identify herself initially as having power of attorney. It was during the third discussion with us over the first hour when she changed her mind from the initial request for full resuscitation to a no code status. We were trying to find some relatives, when her friend said she had power of attorney, which made us all feel a little better in letting her speak on behalf of the patient.

DR. MINDY SMITH (*Instructor, Department of Family Practice*): Power of attorney is a somewhat ambiguous role because it actually applies, in most cases, only to financial decision making and not to medical care. There is a law currently in California that extends power of attorney to include health care decisions.¹ A friend acting as a proxy speaking on the patient's behalf or a living will, however, can be extremely valuable in making decisions about the best course of treatment when the patient cannot speak for herself.

DR. JOHN O'BRIEN (*Clinical Instructor, Department of Family Practice*): If her friend had not been there to

relate the history of cardiogenic shock in the past month, I would have made the decision to cease further resuscitative efforts.

DR. MARGARET DAVIES (*Assistant Professor, Department of Family Practice*): Does she have any family?

DR. WARD: The patient was widowed in 1970, and the person who had power of attorney is her long-time friend and neighbor. She has a sister nearby, but they hadn't spoken to each other for many years. She has a nephew in Toronto and two nieces, one in Montana and one in California, all of whom came to see the patient several days after admission. The family members agreed with the decision to not resuscitate the patient should she go into cardiac arrest again and to withdraw supportive care as deemed appropriate.

The morning after admission, because we had established a no code status, the intravenous pressors were allowed to run out. This action was in keeping with the decision to offer supportive care only and is consistent with several recent articles that note that the writing of a "do not resuscitate" order actually represents a broader decision on the limits of other types of care.^{2,3} The patient's blood pressure did not drop, and she did not die. In fact, she became alert and was able to follow commands and move all limbs. She was communicating with pencil and paper that she was hungry and would like to be extubated. We started nasogastric tube feedings on the morning after admission to try to optimize metabolic indicators, and began to wean her off the ventilator. She was extubated about 72 hours after admission, transfused with two units of blood, and was started on ranitidine (Zantac) for her presumed upper gastrointestinal bleeding. The chest x-ray examination was significant only for mild cardiac enlargement and a suggestion of early cardiac decompensation.

The patient did well for about 24 hours after extubation. We spoke to her then at some length. Her prognosis was still thought to be dismal, and we let her know that we didn't think she had a good chance for survival despite her remarkable recovery. The patient responded that she wanted full medical treatment, whatever was available for her, if this indeed happened again. If "full medical treatment" to save her life meant having to be reintubated, she stated that she would like to be reintubated. She did say, however, that she would like to avoid having the endotracheal tube replaced, if possible.

Over the next 36 hours she became dyspneic and cyanotic with a rising pCO₂ (pCO₂ = 10.7 kPa [80mmHg]) and decreasing oxygen saturation. We decided to try administering continuous positive airway pressure (CPAP) by mask at 5 cm of water and were able to maintain her oxygenation without reintubation.

DR. SMITH: The use of CPAP delivered by a tight-fitting mask was chosen for this patient for several reasons.

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The onset of chronic active hepatitis may be insidious, and patients receiving long-term therapy should be monitored periodically for changes in liver function. If hepatitis occurs, the drug should be withdrawn immediately and appropriate measures taken. Peripheral neuropathy, which may become severe or irreversible, has occurred. Fatalities have been reported. Conditions such as renal impairment (creatinine clearance under 40 ml per minute), anemia, diabetes mellitus, electrolyte imbalance, vitamin B deficiency, and debilitating disease may enhance the occurrence of peripheral neuropathy. Cases of hemolytic anemia of the primaquine sensitivity type have been induced by nitrofurantoin. Hemolysis appears to be linked to a glucose-6-phosphate dehydrogenase deficiency in the red blood cells of the affected patients. This deficiency is found in 10 percent of Negroes and a small percentage of ethnic groups of Mediterranean and Near-Eastern origin. 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Further studies of the effects of chronic administration to rodents are in progress. Results of microbial *in vitro* tests using *Escherichia coli*, *Salmonella typhimurium*, and *Aspergillus nidulans* suggest that nitrofurantoin is a weak mutagen. Results of a dominant lethal assay in the mouse were negative. **Impairment of Fertility:** The administration of high doses of nitrofurantoin to rats causes temporary spermatogenic arrest; this is reversible on discontinuing the drug. Doses of 10 mg/kg or greater in healthy human males may, in certain unpredictable instances, produce slight to moderate spermatogenic arrest with a decrease in sperm count. **Pregnancy:** The safety of Macrochantin during pregnancy and lactation has not been established. Use of this drug in women of childbearing potential requires that the anticipated benefit be weighed against the possible risks. **Labor and Delivery:** See CONTRAINDICATIONS. **Nursing Mothers:** Nitrofurantoin has been detected in breast milk, in trace amounts. Caution should be exercised when Macrochantin is administered to a nursing woman, especially if the infant is known or suspected to have a glucose-6-phosphate dehydrogenase deficiency. **Pediatric Use:** Contraindicated in infants under one month of age. (See CONTRAINDICATIONS). **ADVERSE REACTIONS: Gastrointestinal:** Hepatitis, including chronic active hepatitis, and cholestatic jaundice occur rarely. Nausea, emesis, and anorexia occur most often. Abdominal pain and diarrhea are less common gastrointestinal reactions. These dose-related reactions can be minimized by reduction of dosage. **Respiratory:** Chronic, subacute, or acute pulmonary hypersensitivity reactions may occur. Chronic pulmonary reactions are more likely to occur in patients who have received continuous treatment for six months or longer. Malaise, dyspnea on exertion, cough, and altered pulmonary function are common manifestations which can occur insidiously. Radiologic and histologic findings of diffuse interstitial pneumonitis or fibrosis, or both, are also common manifestations of the chronic pulmonary reaction. Fever is rarely prominent. The severity of chronic pulmonary reactions and their degree of resolution appear to be related to the duration of therapy after the first clinical signs appear. Pulmonary function may be impaired permanently, even after cessation of therapy. The risk is greater when chronic pulmonary reactions are not recognized early. In acute pulmonary reactions, fever and eosinophilia occur less often than in the acute form. Upon cessation of therapy, recovery may require several months. If the symptoms are not recognized as being drug-related and nitrofurantoin therapy is not stopped, the symptoms may become more severe. Acute pulmonary reactions are commonly manifested by fever, chills, cough, chest pain, dyspnea, pulmonary infiltration with consolidation or pleural effusion on x-ray, and eosinophilia. Acute reactions usually occur within the first week of treatment and are reversible with cessation of therapy. Resolution often is dramatic. **Neurologic:** Peripheral neuropathy, which may become severe or irreversible, has occurred. Fatalities have been reported. Conditions such as renal impairment (creatinine clearance under 40 ml per minute), anemia, diabetes mellitus, electrolyte imbalance, vitamin B deficiency, and debilitating diseases may increase the possibility of peripheral neuropathy. Less frequent reactions, of unknown causal relationship, are nystagmus, dizziness, headache, and drowsiness. **Dermatologic:** Exfoliative dermatitis and erythema multiforme (including Stevens-Johnson Syndrome) have been reported rarely. Transient alopecia also has been reported. **Allergic Reactions:** Lupus-like syndrome associated with pulmonary reaction to nitrofurantoin has been reported. Also, angioedema, maculopapular, erythematous or eczematous eruptions, urticaria, rash, and pruritus have occurred. Anaphylaxis, sialadenitis, pancreatitis, arthralgia, myalgia, drug fever, and chills or fever have been reported. **Hematologic:** Agranulocytosis, leukopenia, granulocytopenia, hemolytic anemia, thrombocytopenia, glucose-6-phosphate dehydrogenase deficiency anemia, megaloblastic anemia, and eosinophilia have occurred. Cessation of therapy has returned the blood picture to normal. Aplastic anemia has been reported rarely. **Miscellaneous:** As with other antimicrobial agents, superinfections by resistant organisms, e.g., *Pseudomonas*, may occur. However, these are limited to the genitourinary tract because suppression of normal bacterial flora does not occur elsewhere in the body. **OVERDOSAGE:** Occasional incidents of acute overdosage of Macrochantin have not resulted in any specific symptoms other than vomiting. In case vomiting does not occur soon after an excessive dose, induction of emesis is recommended. 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In addition to wishing to spare her the trauma of mechanical ventilation, CPAP, compared with intubation and continuous positive pressure ventilation, has less negative impact on cardiac output.⁴ The patient was also alert, and we were not worried about aspiration, one of the major complications of using the mask.⁵ We were concerned about the possibility of facial necrosis, and for that reason, had the nurses routinely deflate the mask for several minutes throughout the day. Had the patient been in adult respiratory distress syndrome, we might have more strongly considered intubation and mechanical ventilation, but the chest x-ray result was not strongly suggestive of that diagnosis.

In summary, by the fifth day following admission we still had little understanding of the reason for the recurrent respiratory failure. The question of management came up again. With the prognosis looking grave, the patient continued to be hopeful and wanted everything possible done.

DR. KEVIN WEBER (*Resident, Department of Family Practice*): Our pulmonary consultant, whom we asked to examine this patient, brought up the physician's role in trying to convince the patient of the most appropriate course of action. His feeling, in cases that appear hopeless, was that the patient to receive aggressive therapy is basically a medical decision. He believed that a valid management decision can only be made by a physician taking the medical issues into consideration. His position was that physicians caring for a patient such as this should decide whether it's appropriate to continue. It is then the physician's responsibility to educate patients and families about that decision. If they are successful, therapy would be withdrawn.

DR. GREEN: This pulmonologist's general opinion is "it's not a question of heroic measures, but of whether we have anything to offer these people; and in most cases we don't." If an attempted therapeutic maneuver cannot possibly make a difference, it's not different from shaking bones and rattles.

DR. THOMAS SCHWENK (*Associate Professor and Interim Chairman, Department of Family Practice*): The pulmonologist's comment begs the issue. You can have all the evidence you want about the prognosis and what's going to happen, but if that's in conflict with a competent patient's wishes, there is nothing you can do about it.

DR. O'BRIEN: I disagree. I don't think that you are forced into medical futility because of an individual's wishes.

DR. SCHWENK: Then you are forced to admit to the patient that you are unable to care for them and find somebody who will do that immediately. If a patient says, "I don't care what you're telling me, I want you to do everything. I know how dismal it is, I know how painful it is; I know it's going to leave \$100,000 in debt to my family, but I want you to do everything" and you say "I

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can't do that," then I think you have to get somebody right away who can.

DR. O'BRIEN: Would another physician accept this patient in transfer?

DR. SCHWENK: I think one of us would have to help the attending physician out if he felt unable to continue to provide care.

DR. WEBER: Legally, we don't have any grounds to withdraw medical care from someone who refuses to have therapy withdrawn. It would be hard to imagine a case wherein any court or any legislature would back you up for withdrawing therapy against a patient's wishes.

DR. SUSAN IVEY (*Resident, Department of Family Practice*): If this patient is competent, she is the only one who can make this decision regarding her own life regardless of whether she agrees with medical therapy and the family's opinion. The physician should act as the patient would wish.⁶

DR. JAMES PEGGS (*Clinical Assistant Professor, Department of Family Practice*): Concerning the question of mental competency, were you implying that once this patient was extubated and able to communicate, she appeared to be able to make decisions?

DR. WARD: We tried to make decisions based on the information that she gave us when she was well oxygenated. She appeared to meet even the most stringent standard of competency in being able to appreciate the nature and consequences of her decision.⁷ The most perturbing point for me was when she got into trouble again, we had to restart the intravenous pressors and were still unable to wean her off the CPAP mask. We discussed with her that we could not continue this level of support indefinitely and that we might soon have to reintubate her.

DR. HEATON: Drane⁷ has proposed a sliding scale for the physician in establishing competency of the patient. He proposes that if a patient wishes to go along with what the physician and society in general think is appropriate, then the physician's responsibility in establishing competency is lessened. But if the patient wants to go completely against what we, as physicians, feel is appropriate for that patient, then we have to establish their competency. In that case, we have to establish their reasons for wanting what they want, to try to make them as informed as possible, and then perhaps to explore their specific reasons for fearing death.

DR. SMITH: We were again at a decision-making point. We had a patient who was barely oxygenated on a CPAP mask and whose blood pressure was maintained with intravenous pressors. We had no idea about her fluid status, and we needed to decide whether to take an aggressive approach and put in a Swan-Ganz catheter to determine what we needed to do next. We also wondered whether there was another option that we weren't considering. We had a group discussion of these issues in

which we each voiced our opinions. This group included our students, two house officers, myself, and a social worker. At the end of the discussion, we came to a consensus as to how to proceed.

DR. WARD: My point of view was that, while I agreed that her prognosis was poor, we were faced with a patient who was sitting up and saying, "I feel good, I really don't feel short of breath, I don't have any pain, I think I'm going to get better and please do what ever you can." Although I wasn't convinced that it was going to prolong her life, I didn't feel that this was the time to give up on her. I wanted to push for putting in a Swan-Ganz catheter.

DR. WEBER: This situation was clearly different from when she arrived in the emergency room. I also felt we really had to shift gears here and be aggressive. I was concerned with the issue of accountability, with everybody saying that aggressive therapy was inappropriate. If she died, nobody was going to say "he did the wrong thing." Her family was supporting a less aggressive approach, and certainly none of the physicians were going to point fingers at each other. In a sense we held all the cards, yet just because there was no mechanism for accountability, we couldn't do whatever we wanted to. I was uncomfortable not taking the patient's wishes into consideration.

MARIAN COHEN (*Social Worker, Department of Family Practice*): I also thought that because she was able to express her feelings, that was most important. It is also useful to comment on another issue often raised in these cases, that is, Medicare coverage and what it costs society. We are still in a system that spends a lot of money on individual people, but questions are raised about whether that is appropriate in this kind of situation. I didn't feel comfortable in this woman's case to make the decision that "this isn't a good way as a society to spend our money." Several commentaries have supported the role of physicians in delivering high-quality care to patients despite economic considerations.^{8,9}

DR. TERENCE DAVIES: There is an interesting parallel currently in California. An ethics committee, which you constitute at this point, decided against a patient's wishes to keep her alive, and the patient then sued for the right to refuse treatment. In this case, however, if you were to act against the patient's wishes, she wouldn't be around to file suit.

DR. SMITH: The group consensus was to go forward with placement of a Swan-Ganz catheter pending a cardiology consultation, despite some dissenting viewpoints, one of which was that of the attending physician.

DR. WEBER: The cardiologist suggested that the only possibility for real improvement was if the patient had critical aortic stenosis. In those cases patients may have dramatic improvement with balloon valvuloplasty. He suggested that we obtain an echocardiogram. He felt that if she had an ejection fraction below 30 percent and no

evidence of aortic stenosis, we could not expect any therapeutic success. In fact, the echocardiogram revealed a normal left ventricular function and an ejection fraction of 60 percent.

DR. SMITH: With that information I agreed to pursue an aggressive course, and we placed the Swan-Ganz catheter. The group process had been helpful in reaching this decision.

DR. MARGARET DAVIES: I am curious as to why an 87-year-old would want to live so badly? What unfinished business is there that's keeping her going? Most of my elderly patients tell me, "Now look, I've had a good life . . .," this kind of thing. This woman's approach seems very unusual, and differs from that of her own family and friends. Did someone talk to her about that?

DR. WARD: I did ask for a pastoral consultation. In fact, it was most disturbing that throughout our difficult decision making, when we finally ended up on the side of the patient, we had alienated the patient. She felt that she was our adversary and did not consider us to be advocates when we came into the room; in fact, she even asked her friend in confidence to transfer her to another hospital where she could get some "real care."

REV. ROBERT WEIKERT (*Pastoral Consultant, Department of Family Practice*): The thanatology literature says that people will die as they have lived. I wonder what her lifestyle was, how she coped with crises in the past, and whether this experience was an extension of her style or whether there was something totally different going on. I also wonder what constituted a good death for her, how she wanted to die. One advantage of family practice is that we have the opportunity to follow the patient over time. I just wonder what all of this meant to this woman. Did she have some unfinished business, or did she want to die in a different place? The meaning of death and her illness at this time has a lot to say about what she wants.

DR. SCHWENK: You seemed surprised that she became suspicious of your care. It seems to me the main problem is that you were trying to deal in theory with a situation that for better or worse was not the way you wished it to be. The group was agonizing and putting tremendous energy into this case. You were concerned about the consequent debt to the family, the family's wishes, your good information about the very poor prognosis, and your fear of causing her pain. When she woke up, you certainly had no choice because there wasn't a shred of evidence that she was incompetent. It seems to me that you were agonizing and struggling with something that you basically had no control over. This lack of control caused you to demonstrate ambivalent behaviors, and you related to her in a way that caused the relationship to deteriorate.

REV. WEIKERT: It sounds as though you were called

on to care for her when you didn't see cure as being feasible. Part of your dilemma, however, is who cares for you? I wonder whether she didn't feel cared for because you had some needs, and it was hard to get your needs met, too. This difficult situation is one in which an ethics committee might offer the caring, maybe not the answer, but the sense of caring that you needed.

DR. WEBER: Returning to our patient, her cardiac index was between 1.6 L/min·m² and 2.3 L/min·m² with a pulmonary artery wedge pressure of 2.7 kPa (20 mmHg). Her therapy from that point consisted of vigorous diuresis, and she was eventually weaned off the CPAP. We tried afterload reduction but found that her cardiac index dropped when we used captopril (Capoten). With her persistent hypoventilation, we decided to consult the cardiologist to consider catheterization, and he accepted her in transfer.

DR. SMITH: Following transfer, the patient underwent cardiac catheterization, which did not reveal aortic stenosis. She also developed intermittent multifocal tachycardia secondary to her underlying pulmonary disease. She was evaluated by the pulmonary medicine service and was found to be hypothyroid, with a total thyroxin level (T₄) of 50 nmol/L (3.9 µg/dL) and a thyroid-stimulating hormone level (TSH) of 22 mU/L (22.1 µU/mL). The consultants believed her hypoventilation to be secondary to hypothyroidism, and she was treated with thyroid supplement and bronchodilators, which improved her carbon dioxide retention. She also developed a small antral prepyloric ulcer, identified on gastroscopy, which was treated medically. She was discharged to the nursing home, after a 24-day hospitalization, on home oxygen by nasal cannula.

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