End-of-life care: considerations for the respiratory therapist
OR: End-of-life potpourri

Gabriel Bosslet MD, MA
@gbosslet
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Overview

• History of ICU medicine
• Advance directives in Indiana (POST)
• The role of oxygen therapy for dying patients
• NIV in ALS and neuromuscular disease
• Ethics and the medical palliation of dyspnea

**Some content borrowed from slides of M. Harlos and L. Embleton
http://palliative.info/teaching_material/MARRTConfApril30-2014.pptx
This is relatively new...

- First respiratory care unit Baltimore 1958
- Forrest Bird invented the first positive pressure ventilator for commercial use 1955
Origin of CPR

Cardiac Arrest

Report of Application of External Cardiac Massage on 118 Patients

James R. Jude, M.D., William B. Kouwenhoven, Dr. Ing., and G. Guy Knickerbocker, M.S.E., Baltimore

J.A.M.A., Dec. 16, 1961
Origin of DN(A)R


In 1950, 63% of Americans died at home
Today nearly 80% die in a health care facility
Advance directives

- **Power of attorney for health care** - delineates a surrogate decision-maker
- **Living Will** - written instructions on what care one would/would not desire
- **Life-prolonging procedures declaration** - remnant of conservative Indiana legislature
- **Physician Orders for Life Sustaining Treatment (POST)**
INDIANA LIFE-PROLONGING PROCEDURES DECLARATION

DECLARATION B
TO REQUEST THE USE OF LIFE-PROLONGING PROCEDURES

Declaration made this ______ day of __________________________.
   (day)                  (month, year)

I, ________________________________________________________,
   (name)
being at least eighteen (18) years old and of sound mind, willfully and voluntarily make known my desire that if at any time I have an incurable injury, disease, or illness determined to be a terminal condition, I request the use of life-prolonging procedures that would extend my life. This includes appropriate nutrition and hydration, the administration of medication, and the performance of all other medical procedures necessary to extend my life, to provide comfort care, or to alleviate pain.

In the absence of my ability to give directions regarding the use of life prolonging procedures, it is my intention that this declaration be honored by my family and physician as the final expression of my legal right to request medical or surgical treatment and accept the consequences of the request.

I understand the full import of this declaration.

Signed ___________________________________________________

City, County, and State of Residence ______________________________
Decision-making without ADs

• In the event that there is no AD, any and all of the following are decision-makers:
  – Spouse
  – Adult child
  – Parent
  – Adult sibling
  – Religious superior if the individual is a member of a religious order

• This often represents decisional chaos without a hierarchy in Indiana
The POST

• The POST (Physician Orders for Scope of Treatment) Program
  – Converts treatment preferences into immediately actionable medical orders
  – Serious illness or advanced frailty
  – Preferences to have or decline treatments
  – Transfers across treatment settings with patient
  – Recognizable, standardized form
The POST (aka POLST)

• History
  – Started in Oregon in 1991
    • Name variations
  – National POLST Paradigm Task Force
    www.polst.org
Physician Orders for Scope of Treatment (POST)

A. CARDIOPULMONARY RESUSCITATION (CPR):
- Patient has no pulse OR is not breathing.
- Check One:
  - Attempt Resuscitation/CPR
  - Do Not Attempt Resuscitation/DNR

When not in cardiopulmonary arrest, follow orders in B and C.

B. MEDICAL INTERVENTIONS:
- If patient has pulse or is breathing.
- Check One:
  - Comfort Measures Only (Allow Natural Death):
    - Relieve pain and suffering through the use of any medication
    - by any route, positioning, wound care and other measures.
    - Use oxygen, suction and manual treatment of
    - airway obstruction as needed for comfort. Patient prefers no transfer to hospital for life-sustaining
    - treatments. Transfer to hospital if comfort needs cannot be met in current location.
    - Treatment Plan: Maximize comfort through symptom management.
  - Limited Additional Interventions
    - In addition to care described in Comfort Measures Only, use medical
    - treatment for stabilization, including antibiotics, IV fluids and cardiac monitor as indicated to meet medical
    - needs. May use basic airway management techniques. Do not use advanced airway interventions, manual
    - assisted or mechanical ventilation. Transfer to hospital if indicated to manage medical needs or comfort.
    - Avoid intensive care if possible;
    - Treatment Plan: Provide basic medical treatments.
  - Full Treatment
    - In addition to care described in Comfort Measures Only and Limited Additional Interventions,
    - use intubation, advanced airway interventions, and mechanical ventilation as indicated. Transfer to hospital
    - and/or intensive care unit if indicated to meet medical needs.
    - Treatment Plan: Full treatment including life support measures in the intensive care unit.
    - Additional Orders:

C. ANTIBIOTICS
- Check One:
  - No antibiotics. Use other measures to relieve symptoms.
  - Use antibiotics consistent with treatment goals.
  - Additional Orders:

D. ARTIFICIALLY ADMINISTERED NUTRITION:
- Offer food by mouth if feasible.
- Check One:
  - No artificial nutrition
  - Defined trial period of artificial nutrition by tube.
  - Length of trial: ____________________________
  - Goal: ____________________________
  - Long-term artificial nutrition
  - Additional Orders:

E. DOCUMENTATION OF DISCUSSION:
- Check One:
  - Patient (Patient has capacity)
  - Other /relationship
  - Physician
  - APN/PA

Orders discussed with:

Signature of Patient or Surrogate:
- Signature: required
- Name (print): ____________________________
- Relationship (write ‘self’ if patient):

F. SIGNATURE OF PHYSICIAN:
- My signature below indicates to the best of my knowledge that these orders are consistent with the patient’s current medical condition and preferences.
- Print Signing Physician Name: required
- Physician office Phone Number: ____________________________
- License Number: (optional)
- Physician Signature: required
- Date: required
- Office Use Only

SEND FORM WITH PATIENT WHENEVER TRANSFERRED OR DISCHARGED, SUBMIT COPY TO REGISTRY
<table>
<thead>
<tr>
<th>Cardiopulmonary Resuscitation (CPR): Patient has no pulse <strong>AND</strong> is not breathing</th>
</tr>
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<tbody>
<tr>
<td>□ Attempt Resuscitation/CPR</td>
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<td>□ Do Not Attempt Resuscitation/DNR</td>
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When not in cardiopulmonary arrest, follow orders in B and C and D
**Medical Interventions:** If patient has pulse AND is breathing OR has pulse and is NOT breathing.

- **Comfort Measures (Allow Natural Death).** Relieve pain and suffering through the use of any medication by any route, positioning, wound care and other measures. Use oxygen, suction and manual treatment of airway obstruction as needed for comfort. **Patient prefers no transfer to hospital** for life-sustaining treatments. **Transfer to hospital** ONLY if comfort needs cannot be met in current location. **Treatment Goal:** Maximize comfort through symptom management.

- **Limited Additional Interventions** In addition to care described in Comfort Measures Only, use medical treatment for stabilization, IV fluids (hydration) and cardiac monitor as indicated to stabilize medical condition. May use basic airway management techniques and non-invasive positive-airway pressure. **Do not intubate.** **Transfer to hospital if indicated to manage medical needs or comfort. Avoid intensive care if possible.** **Treatment Goal:** Stabilization of medical condition.

- **Full Intervention** In addition to care described in Comfort Measures Only and Limited Additional Interventions, use intubation, advanced airway interventions, and mechanical ventilation as indicated. **Transfer to hospital** and/or intensive care unit if indicated to meet medical needs. **Treatment Goal:** Full interventions including life support measures in the intensive care unit.

**Additional Orders:**
<table>
<thead>
<tr>
<th>Check One</th>
<th><strong>ANTIBIOTICS:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ Use antibiotics for infection only if comfort cannot be achieved fully through other means.</td>
</tr>
<tr>
<td></td>
<td>☐ Use antibiotics consistent with treatment goals.</td>
</tr>
</tbody>
</table>

*Additional Orders:*
<table>
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<td>□ No artificial nutrition.</td>
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*Additional Orders:*
Questions about advance directives or POST?
PALLIATIVE CARE ISSUES IN RESPIRATORY THERAPY
Role of $O_2$ In Palliative Patients

- not a straightforward issue
- the awake hypoxic patient feels less air hunger and does better physiologically with $O_2$ supplementation
- the unconscious/comatose patient does not likely experience air hunger
- what about the awake, dyspneic, non-hypoxic palliative patient?
• N = 32 non-dyspneic patients with Palliative Performance Scale ≤ 30% (median survival 9 days or less), at risk of developing dyspnea (CA lung, CHF, COPD, pneumonia)
• SpO₂, end-tidal CO₂ measured; dyspnea assessed using Respiratory Distress Observation Scale
• patients were rotated blindly from O₂, medical air, no-flow cannulae
• no difference in comfort between interventions
• $O_2$ need not be prescribed to patients who are near death and not exhibiting respiratory distress \textit{regardless of oxygen saturation}.

• $O_2$ can often be withdrawn when the patient makes a transition from terminal illness to imminent death, particularly as consciousness decreases.

• most patients tolerated a crossover from oxygen to air or no flow
  • Need to watch clinically- if it provides subjective comfort, provide it!!!
  • Good $O_2$ sats, uncomfortable patient= trial of oxygen!!
  • Poor $O_2$ sats, comfortable patient, leave them alone
Noninvasive Ventilation in ALS

- improved quality of life and survival
- bulbar patients less tolerant of NIV (mouth leaks, sialorrhea)

Table 3. Criteria for initiation of respiratory support in ALS patients

<table>
<thead>
<tr>
<th>Presence of symptoms related to respiratory failure associated with one of the following objective criteria:</th>
<th>PaCO2 greater than 45 mm Hg and/or</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Vital capacity less than 50% of normal and/or</td>
</tr>
<tr>
<td></td>
<td>Max. sniff nasal inspiratory pressure &lt; 60% normal and/or</td>
</tr>
<tr>
<td></td>
<td>Nocturnal O2 desat. &lt; 90% &gt; 5% of the time</td>
</tr>
</tbody>
</table>

Effects of non-invasive ventilation on survival and quality of life in patients with amyotrophic lateral sclerosis: a randomised controlled trial

Stephen C Bourke, Mark Tomlinson, Tim L Williams, Robert E Bullock, Pamela J Shaw, G John Gibson

*Lancet Neurol* 2006; 5: 140–47
ALS/MND → Respiratory symptoms and signs (table 8) → Discuss respiratory treatment options with patient and family → NIPPV initiation → NIPPV intolerant → Propose invasive mechanical ventilation → Palliative care → Declines NIPPV

If severe bulbar weakness → NIPPV initiation

Palliative Considerations Regarding NIV

- conversations around end-of-life issues should be included when discussing any ventilatory support
- tendency to gradually increase its use – eventually to 24/7; the implications of this does not seem to be commonly discussed
- patient may be completely dependent on NIV, and unable to remove mask in event of machine or power failure
- care setting for patients dependent on NIV need to address:
  - risk management around power / machine failure
  - ability to address symptoms in context of acute distress
  - ability to ensure comfort in context of withdrawal
AVAPS

• Average Volume Assured Pressure Support
• Automatically adjusts IPAP to targeted tidal volume
  – $V_{T_e} = 8$ cc/kg IBW
  – EPAP = 2-5 cm H2O
  – IPAP min = EPAP + 4
  – IPAP max = 25
  – Breaths= pt. RR - 4
### Opioids And Dyspnea

**Table 1**

**Current Knowledge**

<table>
<thead>
<tr>
<th>Areas With Initial Evidence From Rigorously Designed Studies Focusing on Regularly Administered, Low-Dose Opioids to Treat Breathlessness</th>
<th>Areas in Which Further Rigorously Designed Studies Are Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Efficacy(^{17-19})</td>
<td>1. Is there a class effect from opioids? Do mu-opioid agonists deliver the most benefit?</td>
</tr>
<tr>
<td>2. Effective routes of administration (oral, parenteral)(^{17})</td>
<td>2. Can we define particular subgroups of people for whom opioids are more beneficial? (^{23})</td>
</tr>
<tr>
<td>3. Safety and tolerability(^{20})</td>
<td>3. What is the true role of opioids in the relief of breathlessness in clinical practice?</td>
</tr>
<tr>
<td>4. Minimal change in efficacy required for patient-defined benefit (minimal clinically important difference)(^{21,22})</td>
<td>4. What is the role of other routes of administration such as intranasal, buccal, transdermal, or nebulized?</td>
</tr>
<tr>
<td>5. Definition of a central mechanism of action(^{23,24})</td>
<td>5. What other opioid mechanisms help to ameliorate breathlessness?</td>
</tr>
</tbody>
</table>

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Common Concerns About Aggressive Use of Opioids at End-Of-Life

• How do you know that the aggressive use of opioids for dyspnea doesn't actually bring about or speed up the patient's death?

• “I gave the last dose of morphine and he died a few minutes later… did the medication cause the death?”
Regarding fear of respiratory depression –

- higher doses of opioids and benzodiazepines used in the withdrawal of life-sustaining treatment were not associated with a decreased time from withdrawal of life support to death

Recommend that:

- Oral and/or parenteral opioids provide relief of dyspnea.
- Opioids should be dosed and titrated for the individual patient with consideration of multiple factors (e.g., renal, hepatic, pulmonary function, and current and past opioid use) for relief of dyspnea.
Opioids have been the most widely studied agent in the treatment of dyspnea. Short-term administration reduces breathlessness in patients with a variety of conditions, including advanced COPD, interstitial lung disease, cancer, and chronic heart failure.
The principle of double effect

- The act must be morally good or neutral
- Must INTEND the good effect, even if bad effects are possible/foreseen
- May not use the bad effect to achieve the good effect
- Benefits of good effect > burdens of the bad effect
<table>
<thead>
<tr>
<th>Principle</th>
<th>Example in opioids for dyspnea</th>
</tr>
</thead>
<tbody>
<tr>
<td>The act must be morally good or neutral</td>
<td>Relief of pain/suffering</td>
</tr>
<tr>
<td>Must INTEND the good effect</td>
<td>Intention: relief of suffering</td>
</tr>
<tr>
<td></td>
<td>Possible bad effect: resp depression</td>
</tr>
<tr>
<td>May not use the bad effect to achieve the good effect</td>
<td>Cannot use death intentionally to relieve suffering</td>
</tr>
<tr>
<td>Benefits of good effect &gt; burdens of the bad effect</td>
<td>Relieving suffering&gt;&gt; respiratory depression</td>
</tr>
</tbody>
</table>
may reduce overall oxygen demand

“The administration of sedatives (midazolam and morphine) has been associated with decreases in oxygen demand and the attenuation of the cardiopulmonary response associated with increased work of breathing”

see also: Endoh H et al; *Effects of naloxone and morphine on acute hypoxic survival in mice*. Crit Care Med; 1999;27(9):1929-33

- significantly lower oxygen consumption and improved survival in morphine treated rats subjected to acute hypoxic hypoxia
Withdrawal Of Ventilatory Support

- Team sport!!
  - RT not always included in the decision-making process, yet may still be involved – can be a difficult role to serve
- No real “evidence-based” way to do this
- “terminal wean” is a misnomer
- medical control of dyspnea and discontinue
- May require “palliative sedation” - only very rarely
Conclusions

• Use POST!!
• Oxygen at the end of life only needed for symptoms, not hypoxia
• NIV for NMD prolongs survival, very few ALS patients elect for tracheostomy
• Opioids are the most effective medical treatment for dyspnea in terminal illness and are ethically justified
• “Terminal wean” requires close collaboration between RT, RN, MD