Equipoise and Proton Beam Therapy

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Agenda

Definition of equipoise
Relevant ethics
History of equipoise
Grounds for equipoise
Equipoise and protons
A Definition of Equipoise

“the state of uncertainty or lack of grounded preference concerning which of two treatments options is preferable”

A Definition of Ethics

“The rules or standards governing the conduct of a person or the members of the profession.”
Principles of Biomedical Ethics

Respect for Autonomy
Non-maleficence
Beneficence
Justice

Beauchamp and Childress. Principles of Biomedical Ethics (2001)
Medical Professionalism

Expert knowledge

Self-regulation

Fiduciary responsibility

“those attitudes and behaviors that serve to maintain patient interest above physician self-interest”
The Ethics of Science

Ask a Question
Do Background Research
Construct a Hypothesis
Test Your Hypothesis
Analyze Your Data
Communicate Your Results
The Ethics of Clinical Research

Belmont Report

Respect for Persons

Beneficence

Justice
Of Mice but Not Men

“The randomized clinical trial requires doctors to act simultaneously as physicians and scientists. This puts them in a difficult and sometimes untenable ethical position.”

Hellman, NEJM 324:1585-9, 1991
Chaiten Volcano May 2, 2008
A Definition of Equipoise

“the state of uncertainty or lack of grounded preference concerning which of two treatments options is preferable”

Whose Equipoise?

- Individual physician (Fried)
- MD community (Freedman)
- Patient/Subject
Fried’s Equipoise (FE)

• Concern of research vs care
• Physician is the moral locus
• “Genuine uncertainty”
• FE used to justify lack of consent
• Interpreted as absolute uncertainty

Fried C. Medical Experimentation: Personal Integrity and Social Policy, 1974
Freedman’s Equipoise

• Fried’s E = “theoretical E”
• Impossibly demanding
• Freedman redefines E
• Moral locus is medical community
• Calls this “clinical equipoise” (CE)

Freedman B. NEJM; 317:141-5, 1987
Rehabilitating Equipoise

• FE = fiduciary duty to patient
• CE = standard for social approval
• Not competing concepts
• Complementary, both required

The Irrelevance of Equipoise

• Rejects FE and CE
• Only the subject/patient important
• Subject equipoise not required
• Informed, free, unexploited consent

Grounds for Equipoise
Grounds for Equipoise

Physician perspective

• Evidence-based medicine
• “Early adopters”
• Idiosyncratic grounds
Grounds for Equipoise

Patients/Subjects

• Shared decision making
• Idiosyncratic
• Advocacy
Proton Advocacy

“The laws of physics prove beyond a shadow of a doubt that proton radiation is better”

Robert Marckini
Founder ProtonBOB
Forbes, March 2009
Proton Equipoise

Proton Therapy

- Not a placebo
- High level evidence lacking
- Scarce Resource
- Expensive
- Evolving technology
Context Matters

Hey... do you mind? I'm a non-smoker!
“The proton therapy plan was better at sparing the rectum at doses of less than 50 Gy. However, above 50 Gy, IMRT was better at sparing the rectum.”

Zhang IJROBP 67:620, 2007
Proton Equipoise

“current or imminent conflict in the clinical community over what treatment is preferred for patients in a defined population.”

“honest, professional disagreement”

Freedman B. NEJM; 317:141-5, 1987
Protons: A Scarce Resource

2,246 photon
<10 proton

Ballas, IJROBP 66:1204, 2006
Proton Therapy is Expensive

The $150 Million Zapper
Does every cancer patient really need proton-beam therapy?
By David Whelan and Robert Langreth

Forbes, March 2009
Proton Technology is Evolving
Ignore Individual Equipoise?

“...it may be inappropriate to ask clinicians and their patients to be the principal gatekeepers of developments in practice.”

Lilford, J Royal Soc Med 88:552, 1995
Equipoise RCT
It’s the hypothesis, stupid!
Will equipoise be disturbed?
Proton Advantage

“...given that protons are a limited and expensive resource, it is important to identify the indications for which protons would probably have the greatest advantage—presumably largely for situations in which current therapies are inadequate.”

Goitein and Cox JCO, 2008 epub 4/28/08
“With very few exceptions, there is little clinical reason to argue against the use of protons for almost any patient or disease site. However, treatments that offer only marginal advantages over X-rays will not long be reimbursed…”

Goitein, IJROBP 70:654, 2008