Research in Patient Safety

(with Special Attention to the APSF & NPSF Research Program)

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Objectives

- Demonstrate process and outcomes of two small grant programs in patient safety
- Make a case that progress in patient safety requires deeper understanding of how people and systems work in healthcare

The Anesthesia Patient Safety Foundation

- Founded in 1985
- Mission:

"To ensure that no patient is harmed by anesthesia"

- First program to support research in patient safety
- First grants awarded in 1986 and funded starting 1/1/87

APSF Research Grant Objectives and Strategy

Given limited resources:

- Relatively small grants for seed funding
- Create a cadre of researchers in safety
- Looking for a few great ideas
- Expect PIs will get other funding or do it without funding
  - our surveys suggest that's true

Research Priorities

Initially, highest priority given to studies that:

- concern safety of anesthesia for relatively healthy patients or
- are broadly applicable AND
- that promise improved methods of patient safety with a defined and direct path to implementation into clinical care.

After progress:

- expanded to all patients

Seeking real, unexpected innovation (but don’t get it often)

APSF Areas of Interest

- New clinical methods for prevention and/or early diagnosis of mishaps;
- Evaluation of new and/or re-evaluation of old technologies for prevention and diagnosis of mishaps;
- Identification of predictors of negative patient outcomes or anesthesiologist/anesthetist clinical errors;
- Development of innovative methods for the study of low-frequency events;
- Methods for measurement of cost effectiveness of techniques designed to increase patient safety;
- Development or testing of educational content to measure, develop and improve safe delivery of anesthetic care during the perioperative period

APSF Grant process

- Structured after NIH, but easier and friendlier
  - 10 pages double-space max (Research Plan)
- Diverse review committee
- Cycle: grants due mid June; announced in mid October for Jan 1 start.

Priority Criteria

- Technical merit, methods, research plan
- Uniqueness
- Potential for broad adoption
- Potential for quantifiable improvements
- Minimizing risk to subjects
- No other sources of funding
- For educational grants- evaluation of content and benefits

Research*

- 3-4 grants per year
- Started @ $35,000; now @ $100,000
  - no institutional overhead allowed
- after 15 years (1987-2004):
  - ~$2.7 M in grants
  - 60 projects
  - broad variety of topics

*http://www.apsf.org/resource_center/newsletter/2004/spring/06grant.htm

search APSF.org:

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resource center

- Newsletters
- Clinical Safety Tools
- Educational Tools
  - Data Dictionary Task Force
  - TEEcher
  - Video Library
  - Virtual Anesthesia Machine
- Technology Section
- Helpful Links

Resource Center

Newsletter Index

Special Issues

These Special Issues of the Newsletter are written to provide comprehensive coverage of important topics.

Safety First: Ensuring Quality Care in the Intensely Productive Environment - The HRO Model
Terrorism
Spring Information Systems
Production Pressure
Safety of Office Based Anesthesia

2004

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Most Common Topics of Grants

- Specific Injury Prevention
- Outcome assessment
- Human Factors/Performance
- Risk Assessment/factors
- Simulation
- Specific Complication
- Alarms/AI
- Monitoring
- Cognitive Impairment

Products of APSF Research

- Simulation
- Legitimized human factors in clinical anesthesia
- Introduce Crisis (Crew) Resource Management into healthcare
- Improved risk analysis methodology
- Raised awareness of fatigue and rest cycles in anesthesia

Products of APSF Research

- Making perioperative normthermia a standard of care
- Raised awareness of postoperative cognitive dysfunction (after non-cardiac surgery in the elderly)
- Influenced development of improvements in anesthesia machines, ventilators, signal processing, respiratory monitors, alarms and displays

Some Anesthesia Careers that APSF Helped to Develop

- George Blike
- Charles Berde
- Charles Cote
- David Gaba
- Sem Lampotang
- Robert Loeb
- Jakob Moller
- Robert Morell
- Howard Schwid
- Mark Warner
- Matt Weinger

NPSF Research Program

Founded in 1998 to:

- Support new ideas and seed projects;
- Create a cadre of new investigators;
- Facilitate the research and help to implement it

NPSF Research Program

- Established committee
  - Diverse disciplines; clinical + non-clinical
  - Includes public member
- Developed Research Agenda
- Defined research grant process
  - Starts with Letter of Intent
  - Applicants selected to prepare full proposals
- Catalogued patient safety research and funding

NSPF Research Agenda*

- What is patient safety and what is patient safety research?
- What are the goals of research concerning patient safety?
- How much should agenda be driven by a targeted vs. investigator driven topics?
- How much should research focus on underlying mechanisms vs. development and testing of remedies for specific safety problems?
- What strategy and agenda to improve patient safety?
- How to measure success?

*Available at www.npsf.org

Why Do We Need Patient Safety Research?

Can’t we just apply what is already known from other industries?

NO:

- Many of the problems of healthcare are unique
- Many general principles and solutions may apply, but many do not immediately transfer
- It is often inadvisable, sometimes ineffective and possibly unsafe to simply make interventions without study of the safety and cost impact

What are the Types of Problems in Need of Research?

Problem "Phenotypes"

- failures in specific health areas; superficial characteristics of system rather than underlying mechanisms,
- e.g., prevalence of med. errors in all settings; wrong-side surgeries; nosocomial infections

Problem "Genotypes"

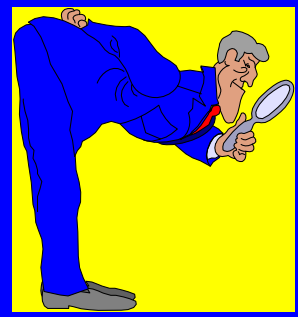
- underlying mechanisms for safety problems: more generic, deeply rooted characteristics of healthcare systems,
- e.g., safety culture and blame; fatigue and sleep deprivation; human factors

Examples of Needed PS Research

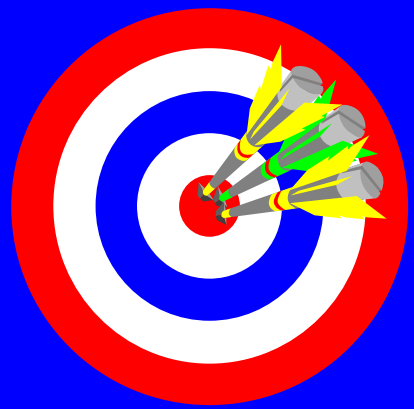
- Discovering the underlying patterns of human performance in healthcare;
- Understanding the nature of technical work;
- Learning about systemic vulnerabilities when incidents or accidents occur;
- Anticipating new areas of concern as change occurs;
- Developing, prototyping & evaluating new approaches to patient safety.

Approaches to PS R&D Funding

Investigator- driven



Targeted, Agenda- driven



Investigator Driven Research Agenda

Advantages:

- Allows individual investigators to define the scope of their projects
- Solicits ideas from the broadest possible source;
- Minimizes the risk of missing important novel ideas

Disadvantages:

- Investigators may not target the same priorities as users

Target-Driven Research Agenda

Advantage:

- Priorities identified by funders & users

Disadvantage

- Presumes that the critical topics or approaches can be articulated;
- May promote a parochial view of the broad issues of patient safety;
- likely to miss genotypical research

Why Basic Research and What Kind?

Richard Cook: Lessons from the War on Cancer: The need for basic research in patient safety

- www.ctlab.org

- The time and resources to fight the war on cancer were grossly underestimated
- The same is true for patient safety
- Interventions in patient safety have been superficial
- Basic research is needed to understand fundamental aspects of safety, how people do their work, and how our own politics affect what we do in patient safety

More Patient Safety Research Issues

- Need more agencies and private sponsors to support it
- Would help to better define Q vs. PS
- Government support seems focused on solutions rather than basic research
- We could use some REAL innovations

BUT- There are not short term fixes to real progress in patient safety

We have to be in it for the long haul

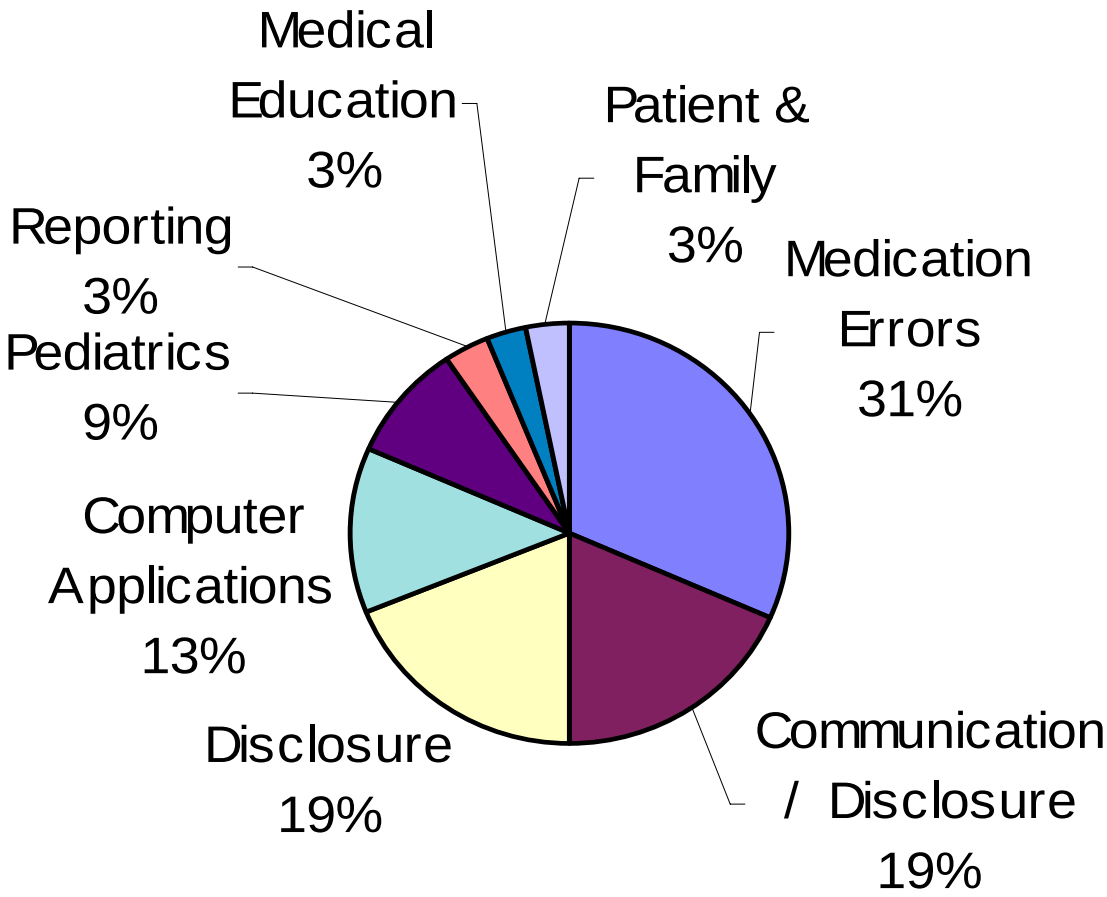
NPSF Criteria for judging Proposals

1. Have high leverage (large output for small input)
2. Have a broad impact on the population
3. Improve understanding of preventable problems, especially those brought about by human error and system failures
4. Propose innovative and creative methods of study or solutions to problems
5. Involve inter-disciplinary research teams.
6. Understanding or solving problems for which there are not other sources of funding.

Grants

- > 600 Letters of Intent received
- 21 projects funded
  - $2Mill +
- 13 completed; others in progress

NPSF Grants by Topic



Superficial Grant Outcomes

- Pediatric Sedation Improvement
- Surgical learning curve measurement
- Testing surgical checklists
- Debriefing after surgery
- Learning about fixation errors
- Understanding process of ED handoffs

Superficial Grant Outcomes

- Identifying Adverse events from patient databases
- Creating a process for naming drugs with dissimilar names
- Learning about how to use auditory warning signals
- Measuring the progression of clinical expertise

Cadre of investigators and future leaders:

- Calland & Gurlein (UVA)
- Blike (Dartmouth)
- Rudolph (Boston College/BU)
- Perry (UFL)
- Novick (Ottawa)
- Escobar (Kaiser)
- Graber (Dept of Veterans Affairs)

Example of Unexpected Innovations from Investigator Driven proposals

- Using video for clinical research
- First conference: U MD, Sept, ’02
- 6/16 presenters NPSF funded

Current Research on Patient Safety in the United States
Database and Report

- Inventory and analysis of current research projects and the landscape of funding in the U.S. in 1999- 2001
- Total funding 1999-2001: ~$191M
- Total projects: 226
- http://www.npsf.org/html/current_research.html

Patient Safety Research Issues

- There's much more we need to learn
- It's not easy to do
- We need a balance between:
  - work on genotype and phenotype issues, basic and applied
  - targeted- and investigator- driven

END