BLOCK 5 OF INSTRUCTION: Medical Research

OVERVIEW: Medical research is the beginning of hope for millions of patients suffering from life-changing and chronic diseases. It also defines the future of health care and medical education. This block discusses medical research from bench to bedside and bench to community, as well as the complex funding mechanisms that allow for this important work.

OBJECTIVES

- Provide an overview of the medical research process from bench to bedside and bench to community.
- Discuss various funding sources of medical research conducted at medical schools and teaching hospitals.
- Discuss various career options for medical researchers and the training pipeline.
- Provide various examples of current, vital medical research studies happening at your institution or past discoveries made by your medical school faculty and alumni.

SUGGESTED PRESENTERS

- Dean of Research, MD-PhD program director, dean of graduate school
- Medical research trainees
    - MD-PhD students
    - PhD graduate students
    - Postdoctoral researchers
- Medical researchers and faculty
- Patients who have benefited from medical research

SUGGESTED TIME: 1 hour

KEY MESSAGES

- Federal investment in medical research and the biomedical research workforce is the beginning of hope for patients suffering from serious illnesses such as cancer, diabetes, Alzheimer's disease, depression, and Parkinson's disease.
- Research funded by the National Institutes of Health (NIH) has pioneered many of the advances that help Americans live longer, healthier lives.
- More than 50 percent of NIH-funded extramural research is conducted at medical schools and teaching hospitals. These institutions also conduct cutting-edge research funded by the Department of Veterans Affairs (VA), Department of Defense (DOD), Centers for Disease Control and Prevention (CDC), Food and Drug Administration (FDA), Agency for Health Research and Quality (AHRQ), and other federal agencies.

KEY TOPICS

- Why is medical research important?
  - Medical research is the beginning of hope for millions of Americans suffering from life-changing diseases.
  - Medical researchers are working to understand the mechanisms of disease and develop cures for many of the illnesses and diseases Americans face.
  - In addition to improving health, federally funded medical research benefits local economies by spurring jobs and innovation.

- What are the different types of research?
  - Basic science research, which provides the foundation of knowledge for the applied science that follows.
  - Clinical research, which determines the safety and effectiveness of medications, devices, diagnostic products, and treatment regimens. This also includes health services research, which seeks to determine what factors hinder or facilitate the uptake of clinical interventions.
  - Community and population research, which characterizes, explains, and/or influences the levels and distributions of health within and across populations.
  - Translational research, which applies findings from each type of research described above and "translates" to the next stage, e.g., from basic to clinical, from clinical to community, etc.

- How do you become a medical researcher?
  - Discuss the importance of medical researchers and physician-scientists.
  - Discuss PhD and MD-PhD tracks.
  - Discuss research training in medical school and residency.
  - Discuss postdoctorate training and clinical fellowships.

- How is medical research funded?
  - Discuss the importance of sustained, predictable funding to ensure the vitality of medical research.
  - Federal support
    - NIH is the largest public funder of biomedical research.
      - Most NIH-funded research does not occur at the agency's Bethesda headquarters but at research facilities across the country. Half of all external research funded by the NIH is performed at teaching hospitals and medical schools nationwide.
    - Medical research is also funded by the VA, FDA, CDC, DOD, AHRQ, and the Patient-Centered Outcomes Research Institute (PCORI).

        - Funding from these agencies is complementary, and research is selected for funding by a thorough peer-review process, which ensures high-quality research that meets pressing health needs.
    - State funding
    - Non-profit, disease-specific organizations and foundations
    - Individual donors
    - Industry support
        - Discuss how you manage conflicts of interest, especially with regard to industry-funded research.
    - Institutional contributions to research funding
        - Discuss how your institution meets costs not covered by the NIH, VA, or industry; how much that is; and what types of costs those tend to be.
        - Discuss support for investigators, including bridge funding, pilot funds, or support from other mechanisms.
    - Discuss the timeline for going from bench to bedside and bench to community and at what point government funding occurs.

ACTIVITIES

- Give a presentation showing trends in the history of the NIH and other federal agency funding and an overview of current funding issues. Place special emphasis on how federal budget cuts and budget stagnation have limited research opportunities at your institution.

- Discuss the process of applying for an NIH grant and show how competition has increased with the decrease of federal funds.

- Have medical researchers discuss projects in a laboratory setting. Encourage hands-on participation. For example, have participants look through microscopes, examine results, conduct tests, etc.

- Host a roundtable of patients who have benefited from medical research conducted at your institution. Consider including patients from surrounding communities who have participated in and have benefited from clinical trials.

- Tour your institution's laboratories.

- During lunch or a roundtable, have PhD and MD-PhD candidates, research residents, or clinical research fellows discuss why they chose a career in research and their current research interests.

- If your institution has a relationship with an area VA hospital, discuss how this partnership is leading to cures and improving veteran care. Talk with veterans and showcase veteran-focused research.

RECOMMENDATIONS

- When recruiting presenters, select those who have a history of effective communication with lay audiences. Most PME participants come from either a political or a public policy background with little knowledge of medical science. Presenters should not make assumptions that the audience has knowledge of basic medical concepts. Stay away from medical jargon. Coach presenters before the event and encourage them to be mindful of their audience when presenting.

- Encourage presenters to interact with participants. Make this a dynamic discussion rather than a one-way flow of communication. Set this tone by encouraging participants to ask questions and engage in a dialogue. Make presentations more interactive, if possible.

- Prepare and distribute a list of significant medical discoveries or innovations in patient care from your institution. Try to focus on discoveries that directly affect patients or are easy to understand for the lay audience.

- Prepare for questions about research involving animals or human fetal tissue.

- Describe the challenges in securing funding for this complex process and the necessity and value of forming research partnerships with private-sector businesses. Also explain conflict of interest policies and the irreplaceable role of federal funding.