Physician Scientist

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Misinformation, disinformation & Politicization

- Mistrust and misinformation are not new.
- But in the digital world, they are ubiquitous.
- In US a high percentage of Americans (88%) are concerned about the impact of mis- and disinformation when it comes to public health, which can come down to life and death decision-making.

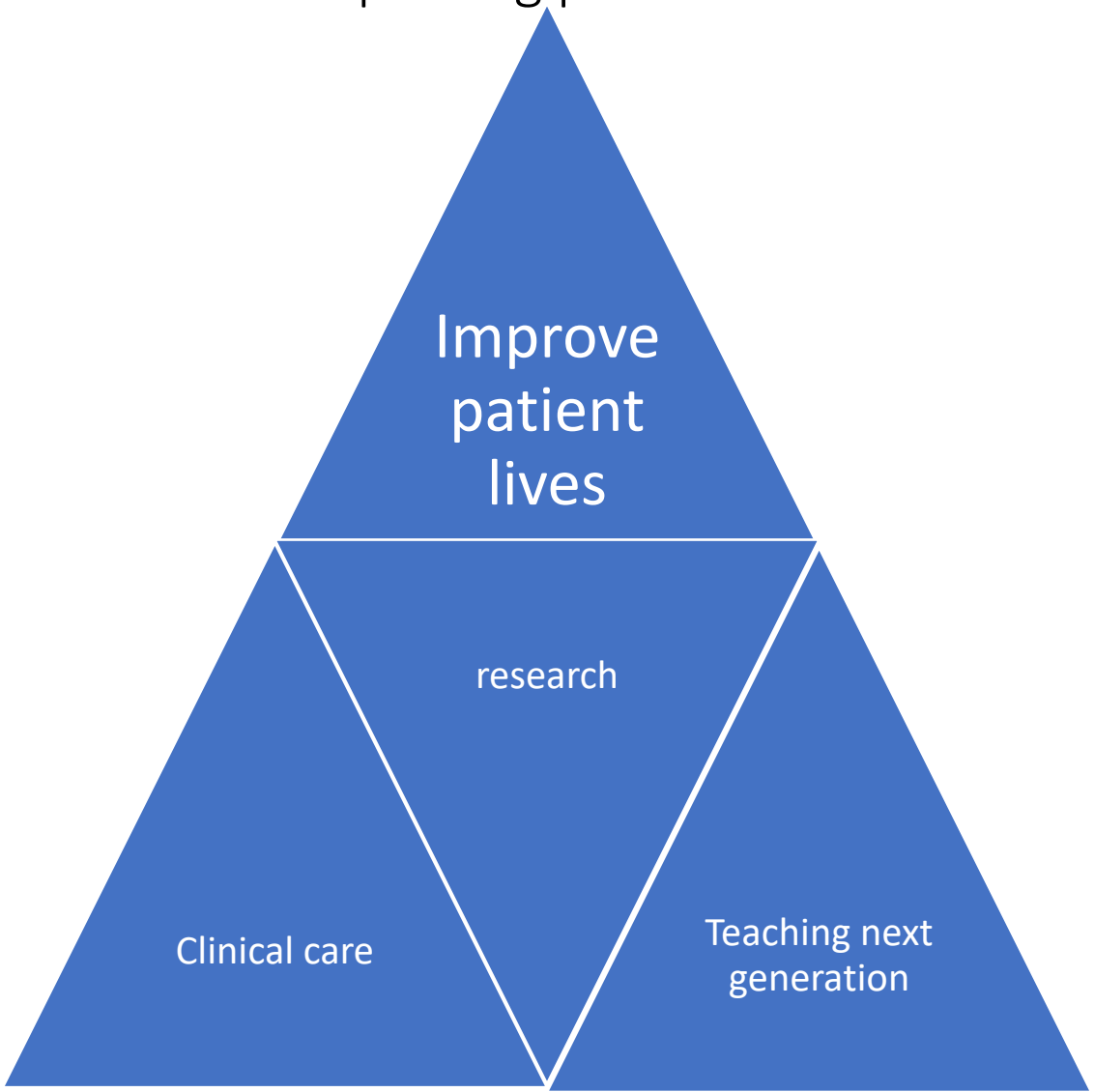
Misinformation, disinformation & Politicization

- Working together, learning from each other – we can curb the rise of mis- and disinformation.
- Our vision is to ensure that “all people have equitable access to the accurate, understandable, and relevant information necessary to make personally appropriate health choices and decisions.”
- We are in it for the long haul and encourage you to join us
- Truth always sought - at least by scientists, doctors and public health officials - whose career choices were based on a desire to gain and generate knowledge and then share it for the greater good.


mind control, ho
and fake news
disinformation
fake news
Fake news

Main Pillars of academic medicine

Improving patient care



Why Research

- contribute to the advancement of medicine and improve patient care
- access to cutting edge technology first
- distinguishes you from your peers
- even if you want to go into primary care or private practice, this is the only time to enhance your academic and research skills, it makes you a better physician in the future

Who is a physician scientist

- Physician scientists (researcher with either MD/DO or MD/DO-PH.D) play a critical role in translational medicine, public health, clinical research and trials and connect basic sciences research from bench to bedside
- Combining both medical and scientific expertise , physician scientists have tremendous potential to advance biomedical research and improve the translation on new discoveries into health care advances.
- Physician scientists have the unique potential of asking clinically relevant questions in research settings and bringing rigorous scientific inquiry to the care of patients.
- Physician who choose to engage in research as a substantial component of their practice
- Medical researchers whose goal is to better understand and treat human diseases.

So Why

- lifelong learning
- diverse activities in clinical and research disciplines
- intellectual independence and autonomy
- public service to patients
- mentorship
- huge societal need

- **We Need More Doctors Who Are Scientists**
- It's in everyone's benefit if physicians participate in research.
- Sept. 23, 2019 New York Times
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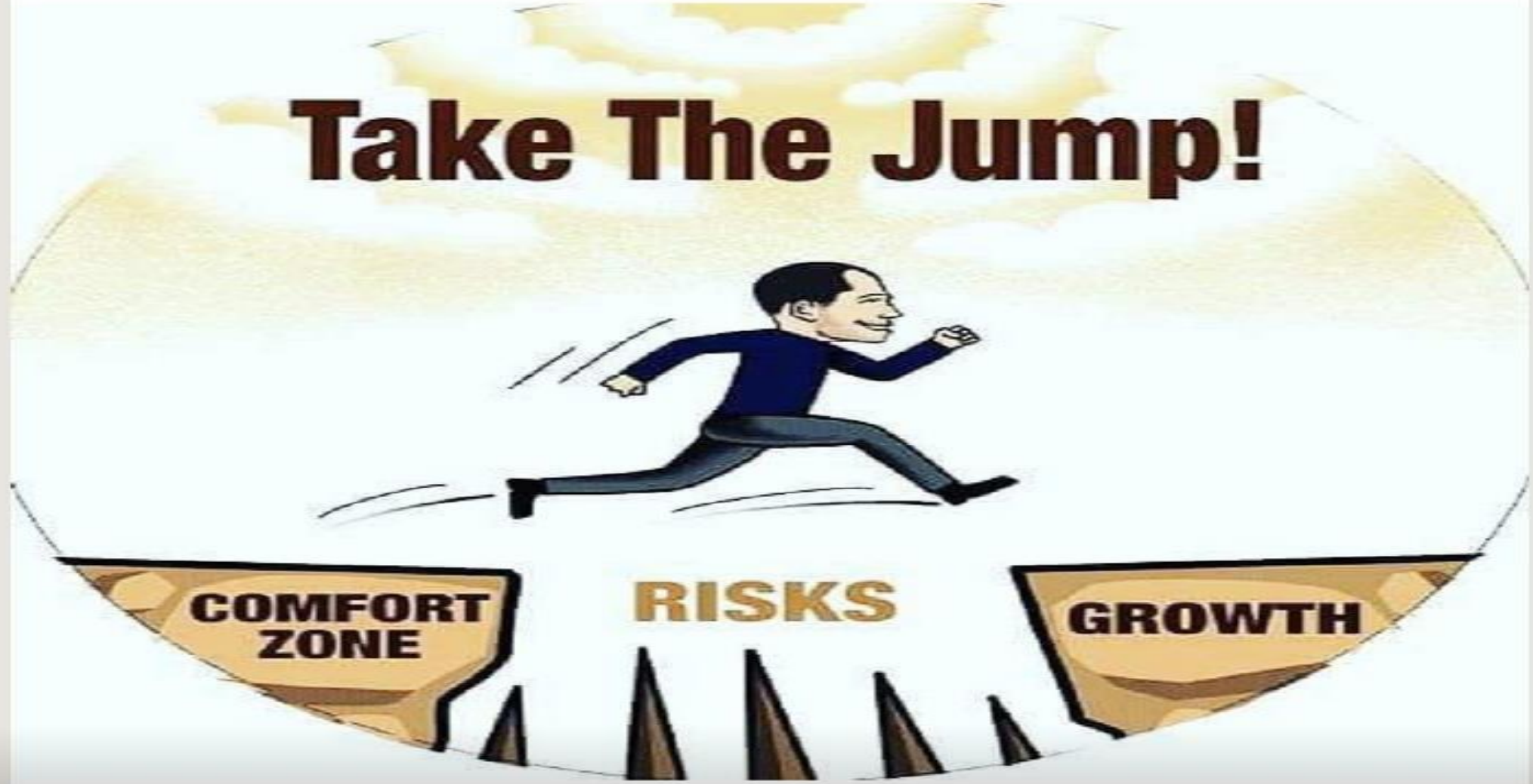
Physician-scientists have often changed the history of medicine by identifying a problem in the clinic and taking to the lab to address it


Take The Jump!
COMFORT ZONE
RISKS
GROWTH

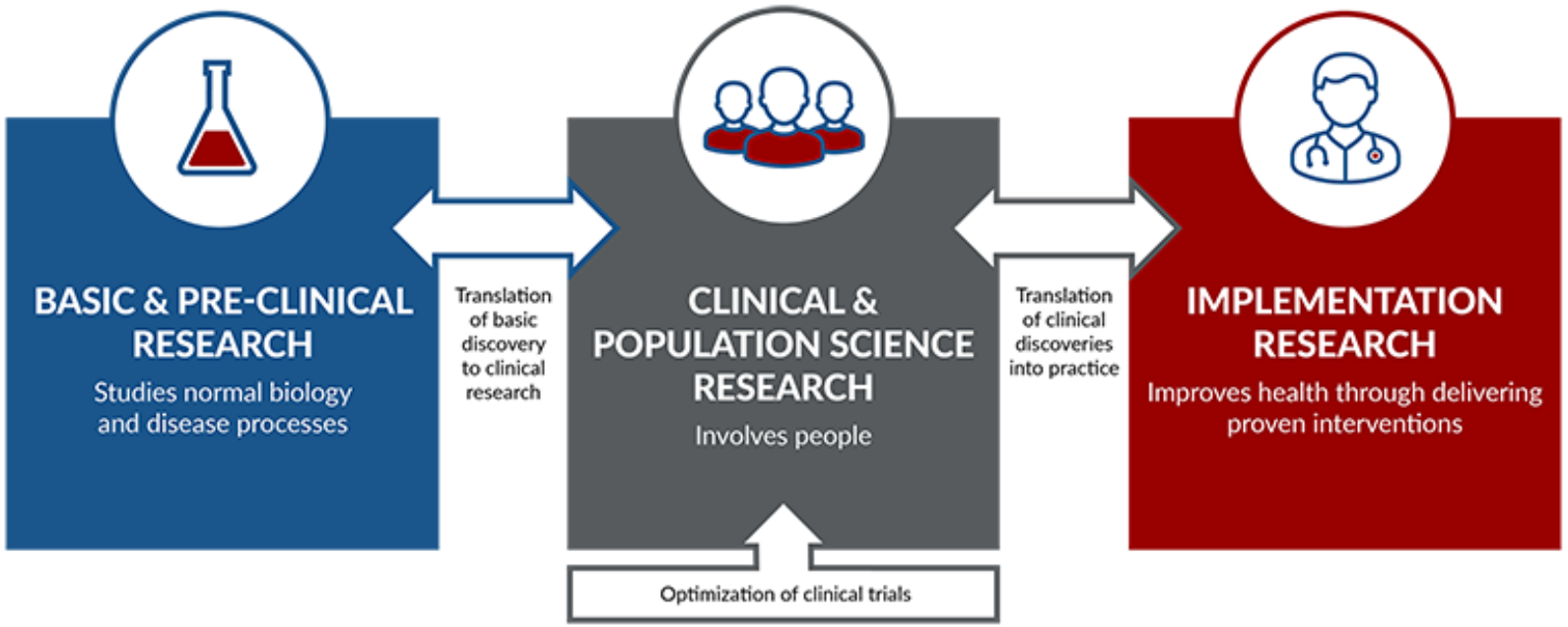
Transformation of medical research clinical evidence

Secular changes	Past	Present	Future	Desired Future
Outcomes	Placebo control	Comparative effectiveness	Cost Effective Surveillance	Economic Values
Structure	Isolated Confounded Observational Clinical trials	Complex Consolidated Randomized clinical trials	Digital hospital Clinical records Systematic reviews Controlled Observational registries	
Scope	Product Performance	Patient outcomes: Case studies/Series	Population outcomes, Evidence based med Large simple trial	
Hypothesis	Single hypothesis Static answer	Single hypothesis Static answer	Continuous update Babesyan learning Health system	

Medical research spectrum

Basic and preclinical Research	Clinical and population science research	Implementation Research
Studies normal biology and disease process	Involves people	Improve health thorough delivering medical interventions

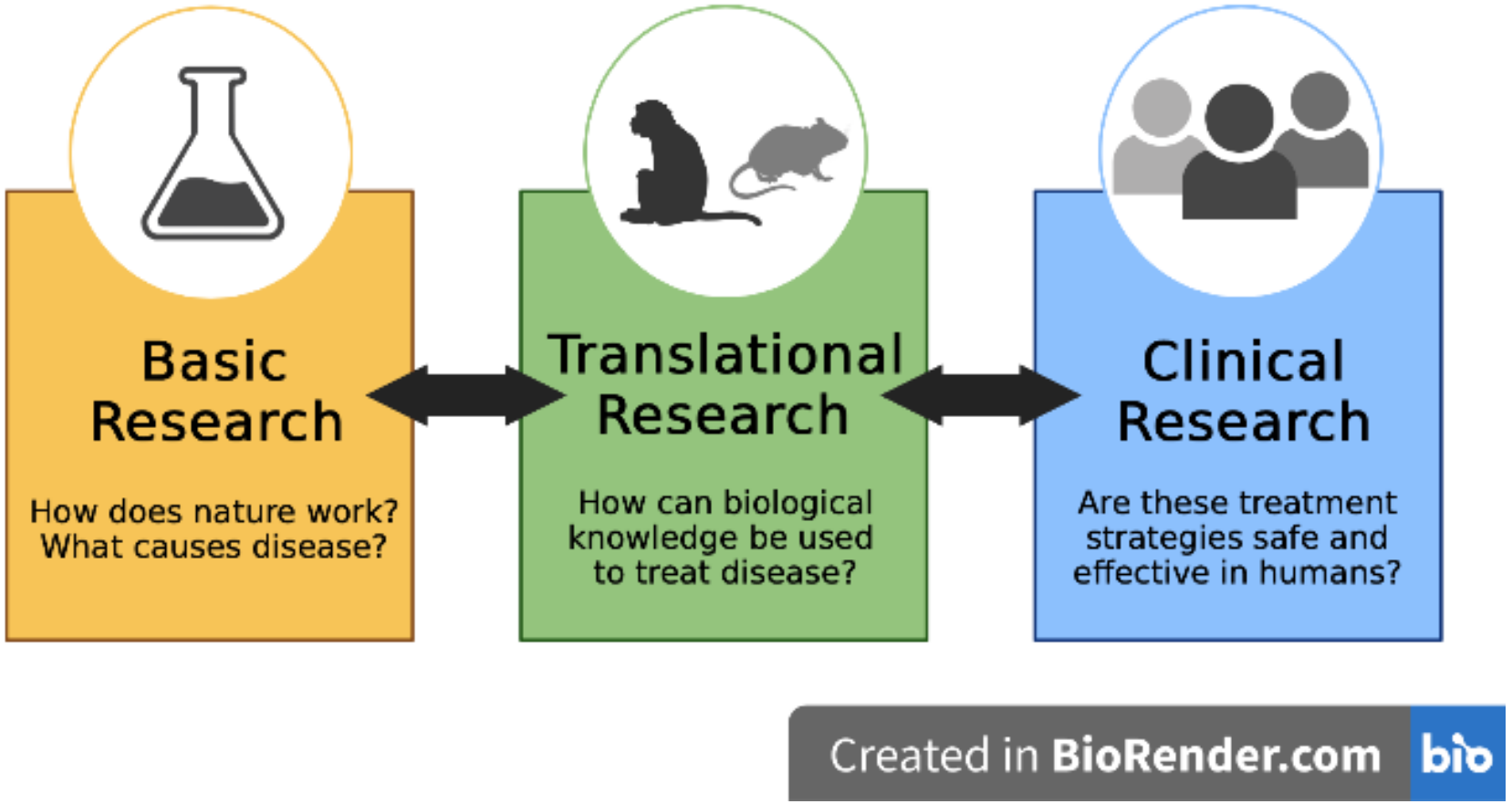
Interrelation



Interconnection

Parameters	Basic Research	Applied Research
Type of knowledge produced	Scientific Discovery (Science)	Technological Application (Technology)
Motivation	Intellectual curiosity	Solving problems
Key questions	Is it true ?	Does it work ?
Objective	To understand	To come up with solutions

Interrelation



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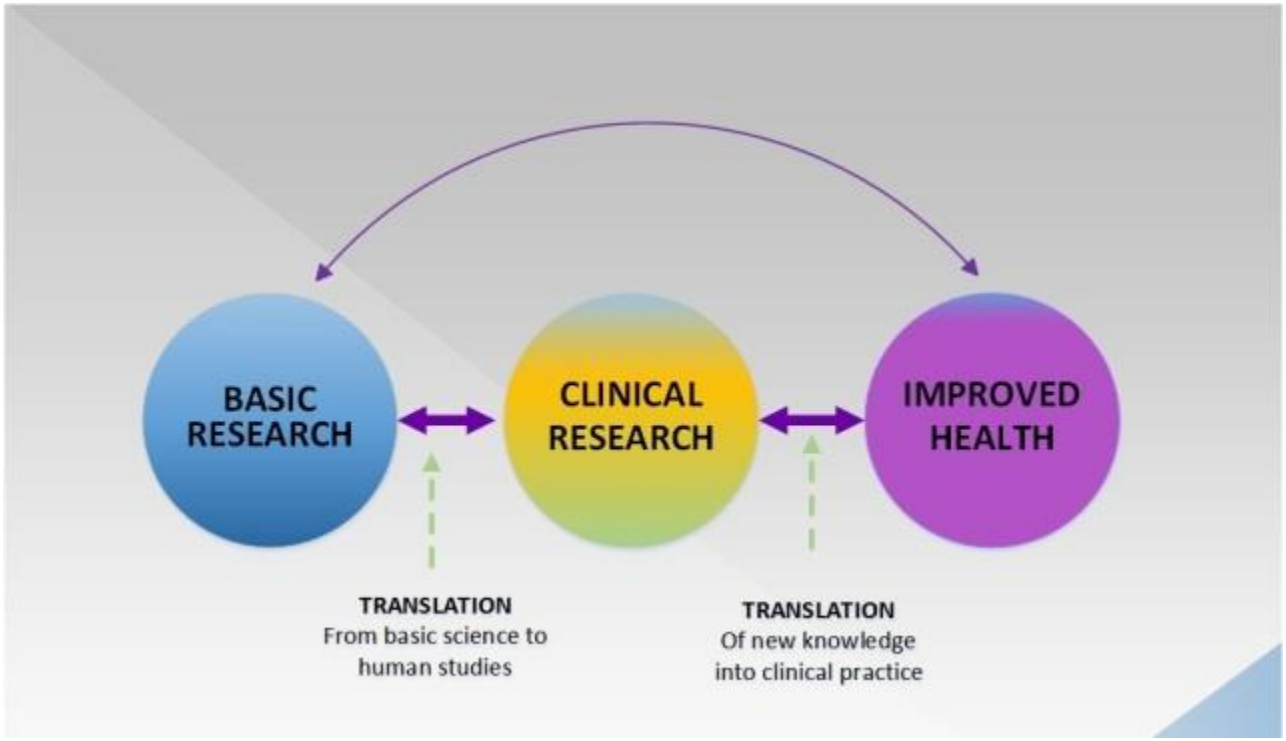


Steps

4. Patients

- Regulatory approval of new drugs for wide use in patients.
- Continued monitoring of drug safety.

3. Clinical Trials

- Tests drugs in people for safety and efficacy.
- Compares new drug to existing therapies.

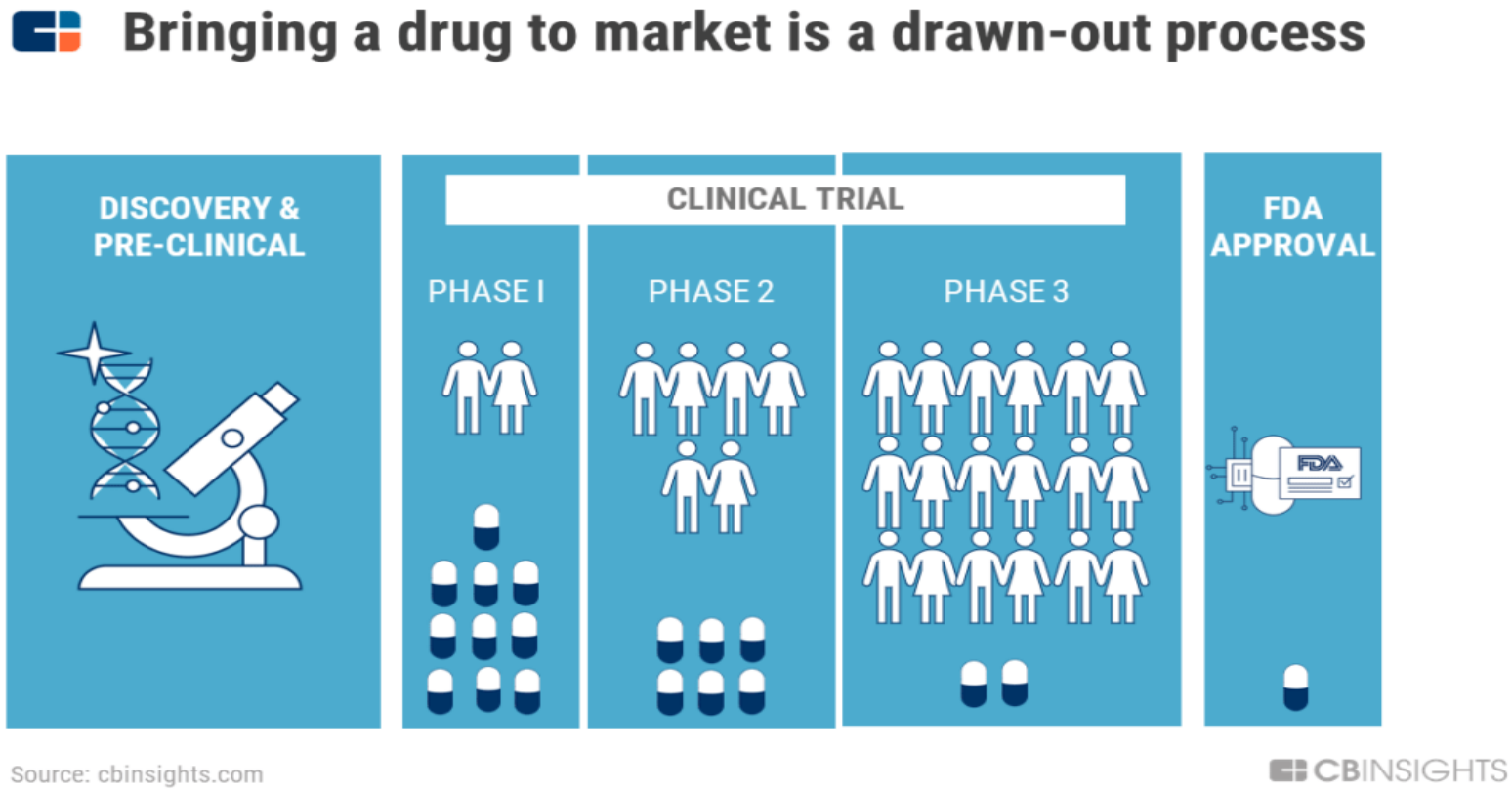
2. Pre-clinical Research

- Tests drug prototypes for efficacy and safety.
- Makes improved versions of the drug.

1. Basic Science Research

- Identifies misbehaving molecules in cancer cells and how they alter cell behaviour.
- Develops drug prototypes against these molecules.

Steps


Bringing a drug to market is a drawn-out process
DISCOVERY & PRE-CLINICAL
CLINICAL TRIAL
PHASE I
PHASE 2
PHASE 3
FDA APPROVAL
FDA
Source: cbinsights.com
CBINSIGHTS

International conference on harmonization (ICH)

History of Good Clinical Practice

- Prior to an actual set of guidelines to follow for good clinical practice, clinical studies were dangerous and could result in serous disease, or possibly death.

- ***The Nuremburg Code of 1947***

  Experiments performed in Germany during WWII opened the eyes of the world for guidance for clinical testing on humans. The code did set ethical guidelines, but it lacked legislation to back it up.

- ***Declaration of Helsinki***

  In 1964, the World Medical Association established recommendations guiding medical doctors in biomedical research involving human subjects. These guidelines influenced national legislation, but there was no set standard between nations.

GCP

- Good Clinical Practice (GCP) is an international ethical and scientific quality standard for designing, conducting, recording, and reporting trials that involve the participation of human patients.

- Compliance with this standard provides public assurance that the rights, safety and well-being of trial patients are protected and clinical trial data are credible.

International conference on harmonization (ICH)

ICH Guidelines are divided into 4 main topics:

Quality Topics – relate to chemical and pharmaceutical quality assurance
e.g. Q1 Stability Testing

Safety Topics – relate to preclinical studies
e.g. S1 Carcinogenicity Testing

Multidisciplinary Topics – cross-cutting topics

Efficacy Topics – relate to clinical studies in human subjects
e.g. E6- Good Clinical Practice;
e.g. E2A- Clinical Safety Data Management:
e.g. E9 -Statistical Principles for Clinical Trials

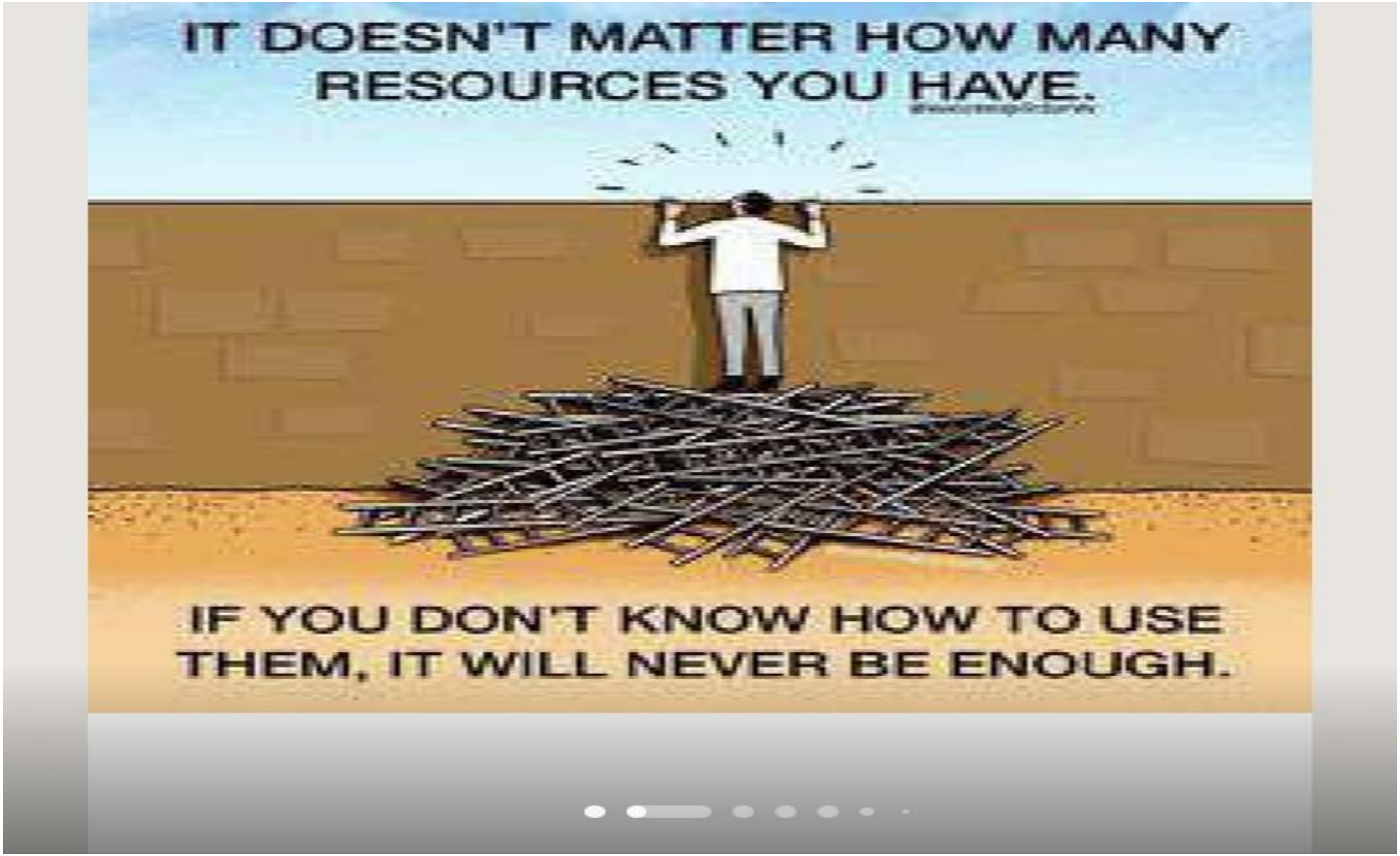
International conference on harmonization (ICH)

Principles of ICH GCP

- Conduct trials according to GCP
- Weigh risks vs. benefits
- Protect the subjects
- Have adequate information to justify trial
- Write a sound protocol
- Receive IRB/IEC approval
- Use qualified physicians
- Use qualified support staff
- Obtain informed consent
- Record information appropriately

How did I find my niche

- True passion for clinical investigation, mentor, mentors
- All opportunities that you see in a cath. lab , pulmonary lab, basic science lab with amazing physicians with desire for innovation.
- Then it hard work, perseverance , curiosity for important questions and following passion to make a difference


IT DOESN'T MATTER HOW MANY RESOURCES YOU HAVE.
IF YOU DON'T KNOW HOW TO USE THEM, IT WILL NEVER BE ENOUGH.

Afmr.org

- Established in 1940, the American Federation for Medical Research (AFMR) is an international, multi-disciplinary association of scientists engaged in all areas of biomedical and patient-oriented research, from the laboratory, to translational to clinical

- Members of the AFMR are located at government facilities; medical centers; universities and medical schools; research institutions; and private industry.

- Develop and mentor tomorrow's leaders in medical research

Six members have been honored as Nobel Prize winners in Physiology, Medicine and Chemistry

- 2012: Robert J. Lefkowitz – *G-protein-coupled receptors*
- 2011: Bruce A. Beutler – *activation of innate immunity*
- 2005: Barry Marshall – *Helicobacter pylori and its role in gastritis and peptic ulcer disease*
- 1998: Ferid Murad – *nitric oxide as a signalling molecule in the cardiovascular system*
- 1990: Joseph E. Murray – *organ and cell transplantation in the treatment of human disease*
- 1985: Michael S. Brown & Joseph L. Goldstein – *regulation of cholesterol metabolism*

Research rewards

- enriches our understanding of the value of specific therapies (in general and nuances)
- improves our clinical insights : the evidence based medicine process
- sharpens our skills as a clinical practitioner (both operator skills and clinical decision making)
- stimulates the intellectual and professional level of our clinical working environment – promotes clinical excellence
- provide access to the newest therapies for our patients at the earliest time
- creates an opportunity for global leadership via publications and presentations at scientific symposia
- satisfies our academic curiosity and fosters meaningful contributions to clinical trial science and methodology
- enables us to become a participant rather than a spectator!


Some people want it to happen.
Some wish it would happen.
Others make it happen.
@successpictures

What are the challenges

- nu true incentives for physician
- IRB/Regulatory hurdles
- Regulatory / compliance oversight by internal and external audits
- workflow disturbance
- liability to the physicians, patient loss of trust
- TIME away from clinical work
- Payers – CMS reimbursement
- Limited resources
- Funding

5 key points to success

- 1. time management
- 2. find a mentor
- 3. work in the area that interest you
- 4. be flexible, read and stay focused
- 5. cooperate and collaborate with others

Time management

- Keep a day planner and allocate time for research
- Start the day early (1-2 hours before clinical duties)
- Set dead lines for projects
- Targeted meetings for abstract submission can help you finish the project
- Work life balance is essential to move forward

Find a mentor

- Find a mentor early in your medical school/residency/fellowship who can help guide your research path
- A good mentor is a role model, adviser and motivator
- NO limit to the number of mentors you can have

Work in the area that interest you

- Do not force yourself to work on something that you have no interest
- Pursuing a topic you like will make it easy for you to work after hours
- *Passion will drive you!*
- Engage yourself in 1 project that is relatively easy and 1 project that is more challenging
- Cardio/nephro/hemato/oncology/critical care/pulm/endo/ID/gastro etc.

Be flexible , read and stay focused

- To be successful in research it must become a way of life!
- Be open to criticism and constructive feed back
- Learn from your mistakes, don’t let rejections discourage you!
- Read, Read and Read! Stay up to date in your field and relevant fields.
- Set goals for the year ahead, and reassess and evaluate yourself at the end of each year

Cooperate and collaborate with others

- No research task cab be achieved without cooperation of fellows, residents and medical students
- Reach out to researchers at other institutions!
- Advice to my younger self
- You can do that
- Read and ask Questions
- Know your strength and weaknesses
- It will be difficult at times
- Find the stress “ sweet spot “
- Take advice but think independently
- Time is the most valuable asset

Principles And Practice of Mechanical Ventilation
by Martin J. Tobin, MD

According to the American Thoracic Society, Tobin is "the supreme scholar of critical care medicine and editor or author of seven extraordinary textbooks on the subject." *The Lancet* described his textbook *Principles And Practice of Mechanical Ventilation* as the "Bible" of the field of mechanical ventilation.

Expert Witness Pinpoints Floyd's Final Breath and Dismisses Talk of Overdose

A pulmonologist told jurors that Derek Chauvin pressed 86.9 pounds onto the neck of George Floyd, who tried to push himself off the pavement with his fingertips.

*An Irish medical expert has made global headlines with his expert evidence for the prosecution at the trial of former police officer **Derek Chauvin**, accused of murdering **George Floyd**.*

"Well, when I was asked to do the case, uh, I thought I might have some knowledge that would be helpful to explain how Mr. Floyd died," he said. "And since I'd never done this type of work in this nature before, I decided I didn't wish to be paid for it."

Global Engagement

Global Health:
Education and Service

Diversity:
Patients and Colleagues

Global Community

Global Advocacy

Physician Wellbeing

Globally Informed


Global Health Initiatives
Education
Research
Public Health
Clinical Service
Policy


United Nations
WHO
WFSA
National Societies
State Societies
Academia, Private Practice, Individuals
Global Advocacy

Thank You