U.S. Department of Health & Human Services
U.S. Food and Drug Administration
Advancing Regulatory Science at FDA

Driving Biomedical Innovation by Advancing Regulatory Science

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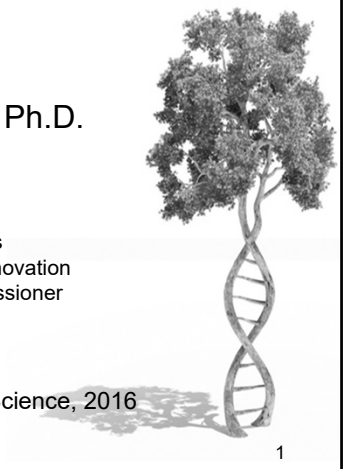
FDA



Issues and Trends in Regulatory Science, 2016

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Disclaimer

This presentation reflects the views of the authors and should not be construed to represent FDA's views or policies.

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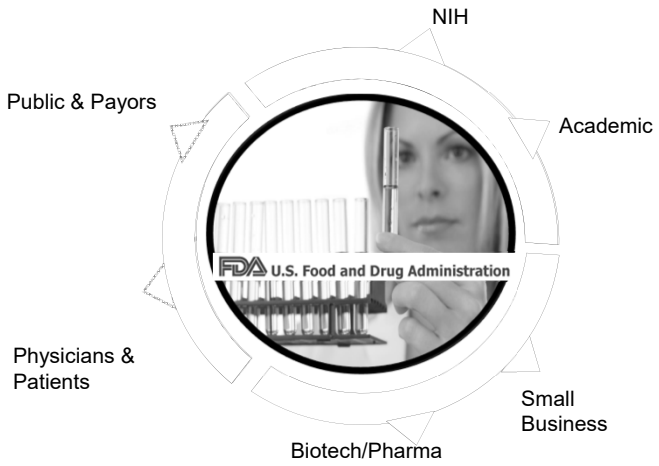
Innovation is Linked to Ecosystem and Partnerships

FDA-regulated products account for 25 cents of every consumer dollar spent in the U.S.



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Impetus for Reform

- "Public and Congress… increasingly disillusioned with the pharmaceutical industry"
- "Several new drugs… found to cause adverse reactions"
- Industry's advertising practices, its high profits, and the high cost of prescription drugs … under fire"
- Physicians …"joined in criticizing drug advertising as excessive, misleading and…inaccurate" "frustrated by the hard selling pharmaceutical sales representatives"
- " Health care costs …a subject of scrutiny in Congress and the press"

Regulatory Decision-Making Framework

- FDA decisions are its "case law"
- Each decision is made either in the context of established policy (i.e., allowable impurity level) or establishes new policy
- Science, which is a system for established, agreed-upon experimentally-based facts, cannot make decisions

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Role of Judgment and Values in Regulation

- Judgment: how does this decision comport with established policies and legal interpretation?
  - Big picture impact
  - Effect on other decisions
- Values: what each stakeholder/individual weighs most strongly (wide differences here !)
- The more uncertainty, the greater the play of judgment and values

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Need for Decision Analysis

- FDA cannot make ad hoc or one-off decisions based on how we feel about a particular matter
- Decisions must be fair and thus consistent, not arbitrary and capricious; they must be within a policy framework
- One of the triumphs of FDA medical product regulation is its contribution to evidence-based medicine

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FDA Strategic Plan for Regulatory Science

- Identify opportunity areas of regulatory science essential to the success of FDA's public health mission
- Develop/use the 21st century regulatory science tools and approaches for evaluation of 21st century products
- Promote innovation through targeted and collaborative approaches to regulatory science that enable new technologies and product development
- Build FDA's scientific capacity, infrastructure, culture and collaborations, including through scientific and professional development of FDA's scientists

Strategic Priority Areas

1. **Transform Toxicology to Enhance Safety**
2. **Stimulate Innovation in Clinical Trials and Precision Medicine**
3. **Support New Approaches to Improve Product Manufacturing and Quality**
4. **Ensure Readiness to Evaluate Innovative and Emerging Technologies**
5. **Harness Diverse Data through Information Sciences to Improve Health Outcomes**
6. **Implement New Prevention-Focused Food Safety System to Protect Public Health**
7. **Facilitate Development of MCMs to Protect U.S. and Global Health and Security**
8. **Strengthen Social and Behavioral Science to Help Consumers and Professionals Make Informed Decisions**
9. **Develop Global Product Safety and Surveillance Network** 9

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Opportunity is in Complexity

- Successful drug (product) regulation requires that FDA perform at a high level in
  - Science
  - Law
  - Medicine
  - Policy
  - Management and execution
  - Political and stakeholder engagement

Partnerships and Collaboration

- Today's challenges are too complex for any one party or sector to solve
- Urgent public health situations have *required* robust public-private partnering, formal or informal, for timely success
- Such challenges provide models for innovative partnering, *and for culture change, both inside and outside government*
- FDA is actively engaged and welcomes more ideas/models

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FDA-CERSI Collaborative Centers Overall Goals

- Strengthen the science needed to transform product development and evaluation
- Scientific exchange, and training for FDA, Academia, and all other stakeholders; nationally and internationally.
- Collaborative research in the priority areas of regulatory and translational science.

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New CERSI Cooperative Agreement (U01) RFA (04-19-2016) released (04/2016)

- Synchronize administrative/funding logistics for existing Centers (re-applications) and expand to 5-year award
- Build-in capacity for adding funding for projects from FDA Center, training, etc (lift ceiling for total annual $ add-on, restricted to 25% by OAGS/HHS)
- Add new CERSIs into network to address RS priorities and geographic opportunities
- Annual opportunity for applications from now on (submission in June; award in September)

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CERSIs serve as communication and action platforms for all stakeholders “across the isles”:

- Dialogue and culture change – strategic alliance beyond single projects
- Research prioritization/direction
- Problem solution on specific issues and/or broad basis
- Conflict mitigation, harmonization and (consensus) standardization
- Information, education, training; FDA workforce and national professional development

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Building on Existing Infrastructures & Resources

- Core facilities & educational offerings
- NSF: Innovation Corps (I-Corps)
- NSF: Industry / University Cooperative Research Centers (I/UCRC) Program
- NIST: the National Network for Manufacturing Innovation (NNMI)
- Various NIH funded Centers of Excellence
  - NCATS: Clinical and Translational Science Awards (CTSA) Program
  - NHLBI: Collaborating Centers of Excellence
  - NHLBI: The NIH Centers for Accelerated Innovations (NCAIs)

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CERSI Workshops

Workshop Topic	CERSI	Event Date/Location
Building the National Evaluation System for Medical Devices: Using Real-World Evidence to Improve Device Safety and Effectiveness	UM CERSI	March 24, 2016 UMD School of Pharmacy 20 N. Pine Street, Rm. N103
Quantitative Assessment of Assumptions to Support Extrapolation of Efficacy in Pediatrics	UM CERSI	June 1, 2016 FDA White Oak
Pediatric Master Protocols	UM CERSI	Sept. 23, 2016 FDA White Oak
Substitutability of Generic Drugs: Perceptions and Reality	JHU CERSI	November 18, 2016 FDA White Oak
Patient Preference Study Methods	All CERSIs	April 2017 FDA White Oak
Natural Language Processing: Potential to Improve the Quality and Completeness of Data Used in Pharmacoepidemiologic Electronic Health Record Studies	UCSF-Stanford CERSI	June 2017 FDA White Oak

Prioritization

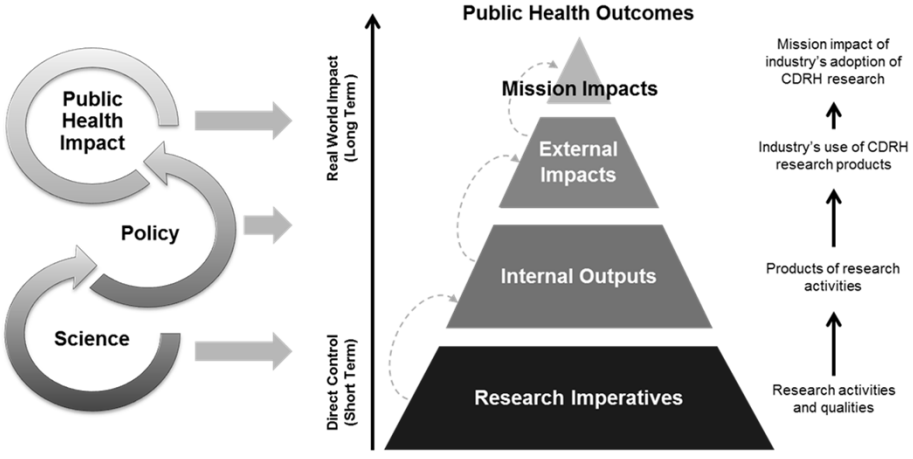
at FDA **Center** level:
Regulatory Science Subcommittees
(Critical Path Steering Committees)

- Vetting via internal advisory boards made up of staff from all the Center offices and all levels
- Identify scientific needs and balance with emerging needs to establish priorities for the Centers

FDA-wide:

Scientific Working Groups and Councils
Senior Science Council
CERSI Steering Committee
Executive Leadership Council
Commissioner

Evaluation: Metrics



Decision Making in Drug (product) Regulation:
Intersection of Law, Policy, Science, Medicine and Social Values

Change the culture !

Take responsibility !

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FDA INFORMATION REPOSITORY

An Improved Library of Everything on FDA's websites

- An Organized View of the Entire FDA Website
- A Better Search Engine & Display of Documents
- More Content
- Updated Monthly
- Free Sign-up and Use

Structured Table of Contents For Browsing

- Documents are organized into logical folders, subfolders, and files by subject matter just like the table of contents of a textbook or treatise

Better Search Engine & Document Display

- Ability to Browse entire site
- Search templates to help structure searches
- Following a search the number of hits in each category, folder and subfolder is displayed
- Following the search the document titles and an excerpt of the document showing the words searched (keywords) in context
- All words are indexed (not just titles)

More Content – Items not on the FDA Web Site

- The Code of Federal Regulation
  - Plus the full text of all Proposed and Final Regulations –
    - Includes Preambles
- Authoritative Texts and Articles Describing FDA's legal and regulatory responsibilities
  - FDA Blue Book of 1998
  - Congressional Research Service Reports on Amendments to the FD& C Act and monographs on FDA Centers, Office of Regulatory Affairs, and their functions since 2000
- NIH-IRB Guide Book
- NIH-Office of Human Research Protection
- Good Clinical Practices – Response to Inquiries
- The CDER Handbook
- DESI Final Report
- Transcripts of AV presentations (not on FDA website)

ABILITY TO ADD OTHER PUBLIC OR PROPRIETARY INFORMATION

- Can add Courseware Curriculum or other Class Materials to be simultaneously searched with all public domain documents that:
  - You wish to share with colleagues or the public
  - You wish to share only with students (password protected)
- Platform is available for other publishers on a public or restricted basis
- Will be adding all documents requested under FOIA (Currently FDA only posts documents requested three times.)
- Will serve as a clearing house for AGRE members who wish to obtain any FDA documents.

Support Materials For Students

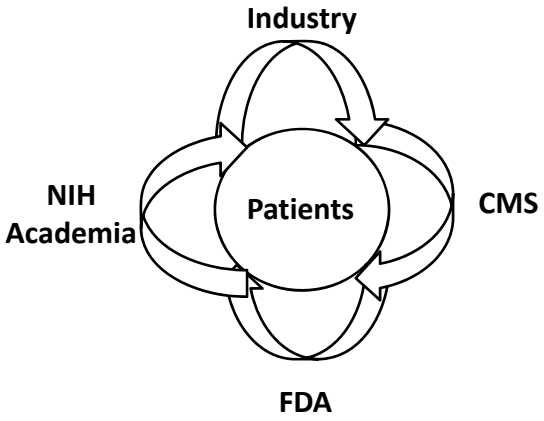
- A Few Words About FDA IRAI
- Outline of IRAI Features and Content for Classes
- User Manual on IRAIONLINE.ORG

These items have been sent to You.

An Organized View of the Entire FDA Website

AGRE MEETING SEPTEMBER 17, 2016

New Paradigm for Product Development



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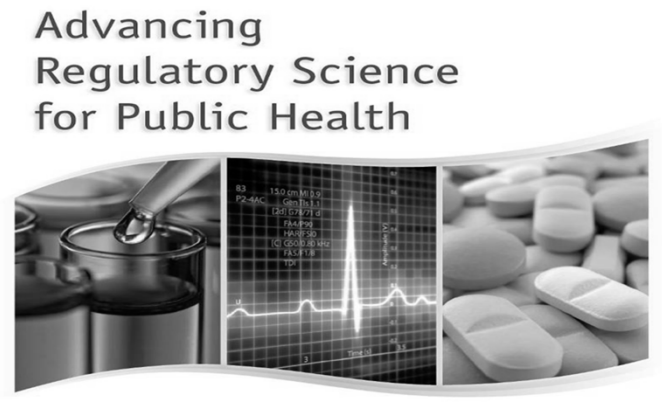

THANK YOU

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