The Role of an Investigational Drug Pharmacist

Kanika Ballani, Pharm.D.
Assistant Director of Pharmacy, Clinical Trials
Investigational Pharmacy
NYU Langone Medical Center
April 24th, 2015

Slide 2

OBJECTIVES:

- Provide an introduction to the operations of an Investigational Pharmacy
- Identify the unique roles and responsibilities of a Research Pharmacist
- Describe the process of regulatory and monitoring committee reviews of a clinical protocol
- Discuss the important role of a research pharmacist in maintaining the integrity of a clinical trial
- Assess the challenges and emergency preparedness strategies of an investigational pharmacy
- Evaluate future potential for development, expansion and growth of clinical trials and the role of an investigational pharmacist

Slide 3

DISCLAIMER

- I, Kanika Ballani, do NOT have any conflicts of interest or financial disclosures to make for this ACPE accredited educational program for the New York State Council for Health-System Pharmacists
Slide 4

**THERAPEUTIC DRUG DEVELOPMENT**

- Discovery
- Pre-clinical Studies
- Clinical Trials
- FDA Approval

- ~ 15-17 years; high cost ($$$), time and resources

---

Slide 5

**PHASE I-IV OF CLINICAL TRIALS**

---

Slide 6

**CLINICAL STUDY PROTOCOL**

- Research idea led by a primary investigator (PI)
- Development of a research hypothesis
- Recruitment of a study team
- Application for funds, grants, resources, staff
- Protocol development for committee reviews

---
Slide 7

**CLINICAL STUDY PROTOCOL**

- Protocol Review Monitoring Committee (PRMC)
  - Initial review for rationale and scientific background
  - Evaluation of protocol design and accrual goals
  - Annual assessment of active protocols and amendments
- Membership
  - Primary investigators, attending physicians

Slide 8

**CLINICAL STUDY PROTOCOL**

- Institutional Review Board (IRB)
  - Independent Ethics/Regulatory Committee
  - Reviews, approves, monitors protocols involving human subjects
  - Belmont Report: Respect for Persons, Beneficence, Justice
  - Assesses risks/benefits ratio of research
  - Safeguards the privacy, welfare, safety and rights of human subjects
  - Vulnerable subjects: pregnant women, children, prisoners
  - Office for Human Research Protections implement CFR
- Membership
  - Scientific, non-scientific, legal, non-biased, non-affiliated
  - New Protocols, Amendments, Modifications, Continuations, Reportable Events, Expanded Access and Emergency Reviews

Slide 9

**CLINICAL STUDY PROTOCOL**

- Feasibility Committee
- Clinical Services Committee
- Pre-Site Visit
- Site Initiation Visit
- Monitoring Visits
- In-services
- Audits
- Study Close-Out Visit
Slide 10

“...Phase III, double-blind, randomized, placebo-controlled, cross-over trial, evaluating the safety and efficacy of...”

Slide 11

NYU INVESTIGATIONAL PHARMACY

- **Staff:**
  - Assistant Director of Pharmacy, Clinical Trials
  - 3 Main Research Pharmacists
  - 2 Back-Up Research Pharmacists
  - 2 Research Pharmacy Technicians

- **Locations:**
  - NYU Clinical Cancer Center
  - NYU CTSA Research Pharmacy (Bellevue Hospital)

- **Hours:**
  - Monday – Friday 8 a.m. – 5 p.m.

Slide 12

NYU INVESTIGATIONAL PHARMACY

- **Services:**
  - Study Drug Receipt and Storage
  - Inventory Management
  - Accountability and Record-Keeping
  - Maintenance of Blinding
  - Placebo Matching and Compounding
  - Monitoring Visits/Audits/Site Initiation Visits
  - Adherence to GCP and GMP
Slide 13

NYU INVESTIGATIONAL PHARMACY

~ 180 Active Clinical Trials; 120 Pending Studies

* Miscellaneous: Hepatology, Dermatology, Cardiology, Transplant, Neurology, Neurogenetics, Infectious Diseases

Slide 14

STUDY COMPLEXITIES

3 different levels of study complexity:

Low Intensity Moderate Intensity High Intensity

- Simple tablet or capsule dispensation
- Simple sterile product dispensation
- Biohazard or multiple sterile product dispensation
- Simple compounding
- Complex compounding
- IVRS Randomization

Slide 15

STUDY COMPLEXITIES

180 TOTAL STUDIES

<table>
<thead>
<tr>
<th>Low Intensity</th>
<th>Moderate Intensity</th>
<th>High Intensity</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of studies</td>
<td>36.5%</td>
<td>11.7%</td>
</tr>
<tr>
<td>RPh:Tech</td>
<td>1:1</td>
<td>1:1</td>
</tr>
<tr>
<td>% Time allocation</td>
<td>50:50</td>
<td>70:30</td>
</tr>
</tbody>
</table>
**NYU INVESTIGATIONAL PHARMACY**

- **NYU Investigational Pharmacist:**
  - Review of new study protocols, amendments and continuations
  - Participate in-site, site-initiation and in-service visits
  - Dispense in accordance to GCP and GMP
  - Verify perform final checks/respective technician dispensations
  - Keep updated records of HIPAA, CITI Research Tutorials
  - Accommodate and answer audit/monitoring visit questions
  - Comply study specific procedures for randomization and blinding

- **NYU Investigational Technician:**
  - Study drug preparation for final check by pharmacists
  - Investigational pharmacy billing
  - Study drug receipt, storage, ordering/returns and inventory management
  - Assistance with placebo compounds preparations

---

**CLINICAL TRIALS MANAGER**

- **Serve as an active voting member on:**
  - IRB, Expert Reviews, PRMC, Clinical Services, Feasibility Committees
  - Review, approve clinical research protocols

- **Create/update Standards of Practice**
  - Policies and procedures
  - Establishment plans
  - Maintain compliance with protocol specific guidelines, NYS Board of Pharmacy, DEA regulations

- **Provide in-services and clinical drug summaries**
  - "Cheat Sheets"
  - Source of clinical information

---

**CLINICAL TRIALS MANAGER**

- **Report any protocol deviations to study monitors**
  - Perform Root Cause Analysis
  - Provide follow up corrective action plans

- **Represent Investigational Pharmacy at Audits**
  - FDA and Departmental audit/monitoring visits

- **Provide Quality Control Check**
  - Placebo Manufacturing, GCP, GMP

- **Implement new innovations/technologies in workflow**
  - Enhance safe study medication dispensation and accountability
  - Grifols Carousel, WebIDS, VESTIGO
Slide 19

**STUDY DRUG BLINDING**

- Double-blind, placebo controlled studies
  - Interactive Voice/Web Response Systems (IVRS/IWRS) Registration
  - Blinded Kits, Vials, Bottles
  - Sealed envelopes with user codes/passwords
  - Blinded labels ("XXX" or 1 mg/kg OR 10 mg/kg)
  - CPOE order templates with blinded dose fields built
  - Generation of blinded tables/assignments by Investigational Pharmacists
  - Overencapsulation of study drug and matching placebo (lactose)
  - Infusion bags/syringes blinded (amber bags, foils)
  - Matching doses (drug/placebo), preparation times, kits

Slide 20

**CLINICAL TRIALS MANAGEMENT**

Slide 21

**NYU Investigational Pharmacy Billing**

- Study Drug provided free of charge
  - Drug companies, NIH, ACTG, Grants
  - IDS fees charged to the study accounts
  - Benchmarking to establish a cost-service center

NYU Investigational Pharmacy Fee Schedules:

<table>
<thead>
<tr>
<th>Service Description</th>
<th>Industry Sponsored Studies</th>
<th>PI-Initiated/Departamental Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initiation Fee:</td>
<td>$1200</td>
<td>$900</td>
</tr>
<tr>
<td>Low Intensity:</td>
<td>$50/disp</td>
<td>$50/disp</td>
</tr>
<tr>
<td>Moderate Intensity:</td>
<td>$100/disp</td>
<td>$100/disp</td>
</tr>
<tr>
<td>High Intensity:</td>
<td>$150/disp</td>
<td>$150/disp</td>
</tr>
<tr>
<td>Closure Fee:</td>
<td>$600</td>
<td>$450</td>
</tr>
<tr>
<td>Low Intensity:</td>
<td>$25/disp</td>
<td>$25/disp</td>
</tr>
<tr>
<td>Moderate Intensity:</td>
<td>$50/disp</td>
<td>$50/disp</td>
</tr>
<tr>
<td>High Intensity:</td>
<td>$75/disp</td>
<td>$75/disp</td>
</tr>
</tbody>
</table>
Slide 22

**RESEARCH COMMUNICATION**

- Interdisciplinary team
  - InfoEd/Research Navigator
    - Common drive to share study protocols, amendments, informed consents, continuations, reportable events
  - EPIC/BEACON
    - Study medication orders entry, review and verification
  - E-mail communication
    - Study coordinators, monitors, and other personnel

---

Slide 23

**EMERGENCY PREPAREDNESS**

- Hurricane Sandy
- Protocol deviations
  - Dose delays, interruptions in study cycles
  - Loss of drug inventory
- Ongoing research activities
  - Back up generators for refrigerators, freezers
  - Back up temperature monitoring devices
  - Communication with study monitors and coordinators
  - Prevention of patient visit delays

---

Slide 24

**FUTURE GOALS/DIRECTIONS**

- Accommodate increasingly complex studies
  - Performing study drug and patient randomization
  - Maintaining study blinding (Rx, kit-specific)
  - Maintaining accurate patient and drug accountability
- Optimize the use of VESTIGO into IDS workflow
  - Electronic, web-based system
  - Maintain patient and drug accountability, inventory reports
  - Label generation and Billing
- Establish a true Cost Service Center
  - Assess annual costs/revenue and adjust the two-tiered fee schedule
FUTURE GOALS/DIRECTIONS

- Standardize IDS processes and procedures across NYU facilities
  - Open new satellite research pharmacies
  - Expand NYU IDS services to serve NYU research initiatives

- Investigational Vaccine Lab
  - ~7 active ongoing studies, 5-6 studies in the pipeline
  - Immunological, Biological, HPV/HVTN

- Expand the provision of IDS Compounding Services
  - Sterile compounding, placebo over-encapsulations
  - Topical preparations: creams/ointments/solutions
  - Regulatory compliance and quality control

RESOURCES

- ClinicalTrials.gov
  - Service of U.S. National Institute of Health (NIH)
  - Registry and database of all clinical studies with human subjects conducted around the world

CONCLUSION

- Investigational Pharmacy Services:
  - Specialized field with unique responsibilities
  - Major emphasis on documentation, accountability
  - Great impact on the success of a clinical trial conduct
  - Staff dedicated to maintaining the integrity of study
  - Prioritize patient privacy, confidentiality and safety
  - Implement the institutional mission of research
QUESTION # 1

☐ An investigator aims to determine a safe dosing range of a drug compound. What Phase of the therapeutic drug development is he conducting?

☐ Preclinical Studies
☐ Phase I
☐ Phase II
☐ Phase III
☐ Phase IV

QUESTION # 2

☐ The Belmont Report summarizes ethical principles and guidelines for research involving human subjects. Which of the following are its three core principles?

☐ Respect, Beneficence, Justice
☐ Respect, Informed Consent, Justice
☐ Respect, Patient Privacy, Justice
☐ All of the above
Prior to dispensing a study medication, an investigational pharmacist MUST verify:

- Patient’s signed Informed Consent Form
- IRB study approval document
- Valid prescription, physician order entry
- Patient’s Study Cycle, Dose, Directions
- All of the above
True/False:

- An Investigational Pharmacy must incorporate back-up strategies for record maintenance, patient accountability, temperature regulations and study drug inventory in case of natural disasters

True/False:

- An Investigational Pharmacy plays a major role in maintaining the integrity of a clinical trial