

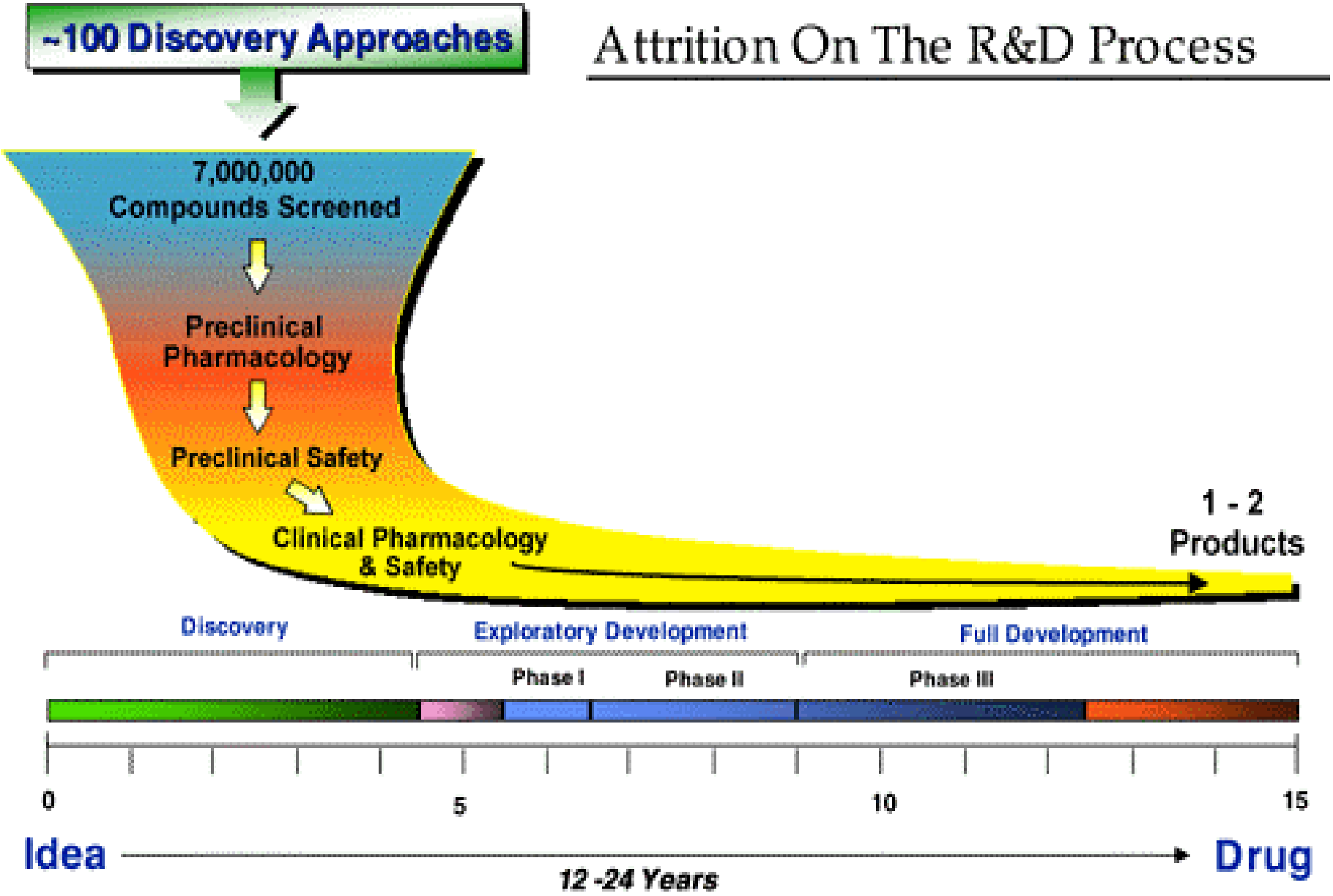
The Key Roles & Responsibilities of Pharmacists in Biosimilars Development

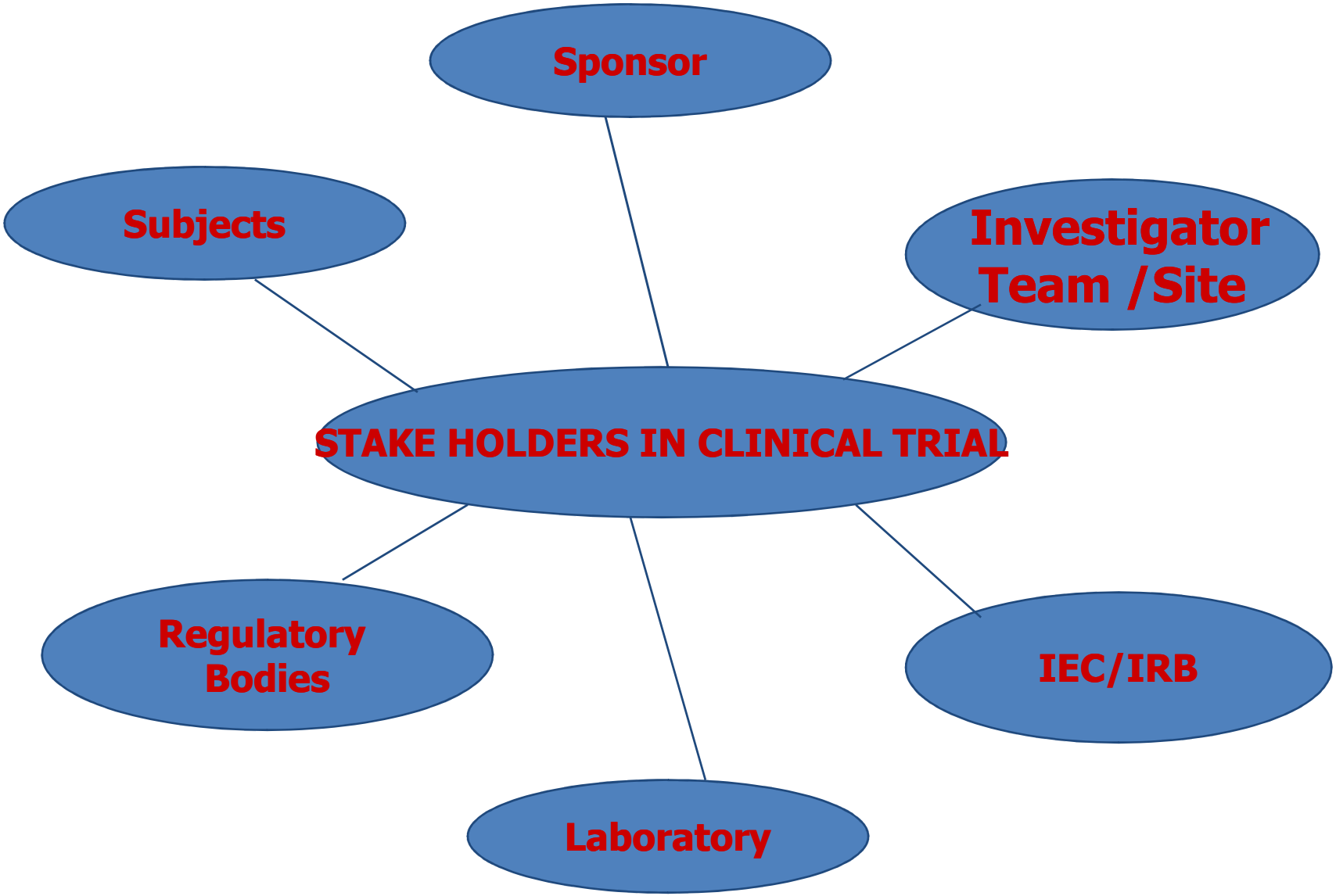
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fppt.com

Attrition On The R&D Process




Sponsor
Subjects
Investigator Team /Site
STAKE HOLDERS IN CLINICAL TRIAL
Regulatory Bodies
IEC/IRB
Laboratory

Study Management Hierarchy



SPONSOR

PRODUCT – PROTOCOL – FUNDING - AUDIT

CLINICAL RESEARCH ORGANIZATION

MANAGEMENT - MONITORING - COMPLIANCE

CRA CRA CRA CRA CRA

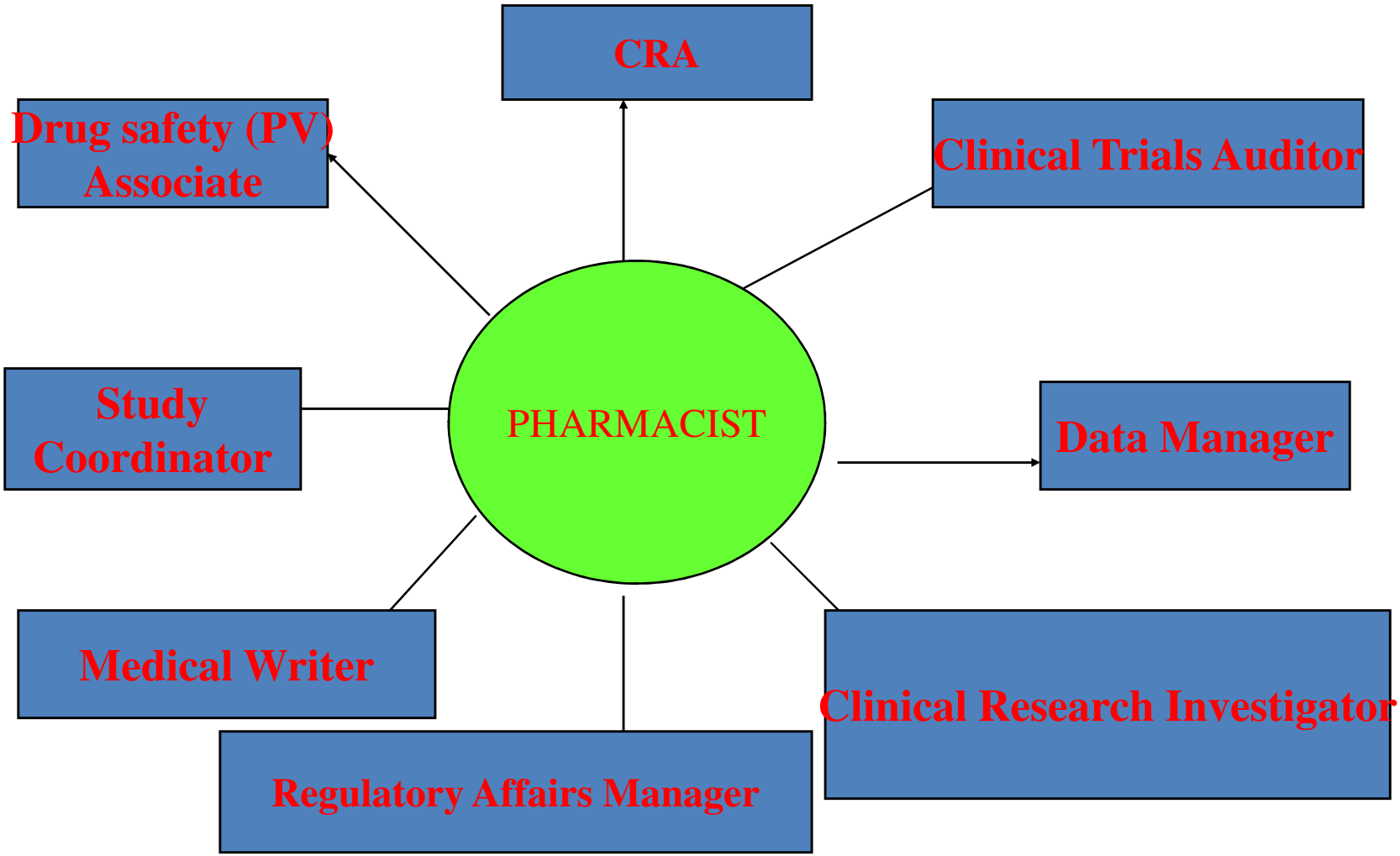
SITE 1 **SITE 2** **SITE 3** **SITE 4** **SITE 5**

PATIENT POOL - ETHICS – PATIENT CARE - DATA CAPTURE

Information and Instructions

Data and Insights

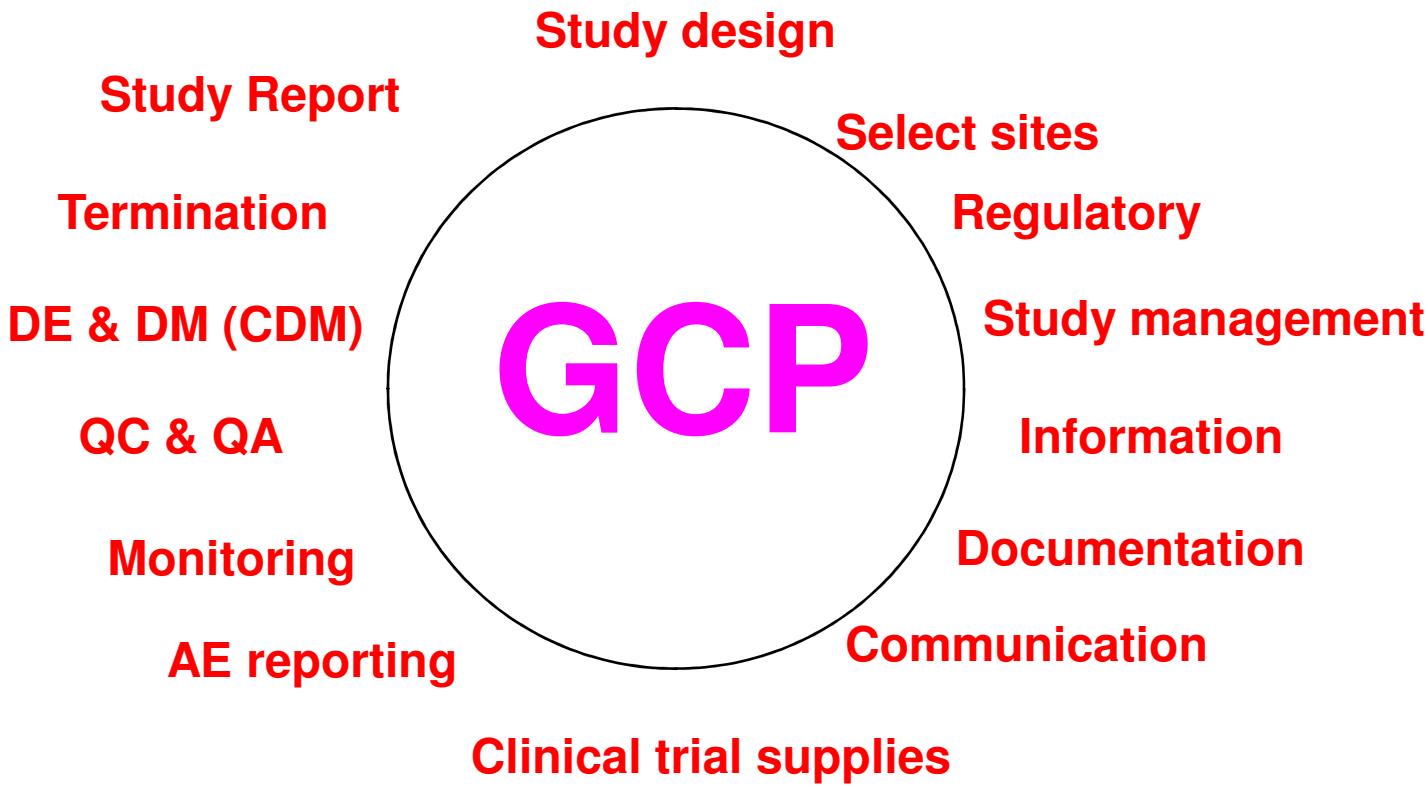
Role of Pharmacist Clinical Research



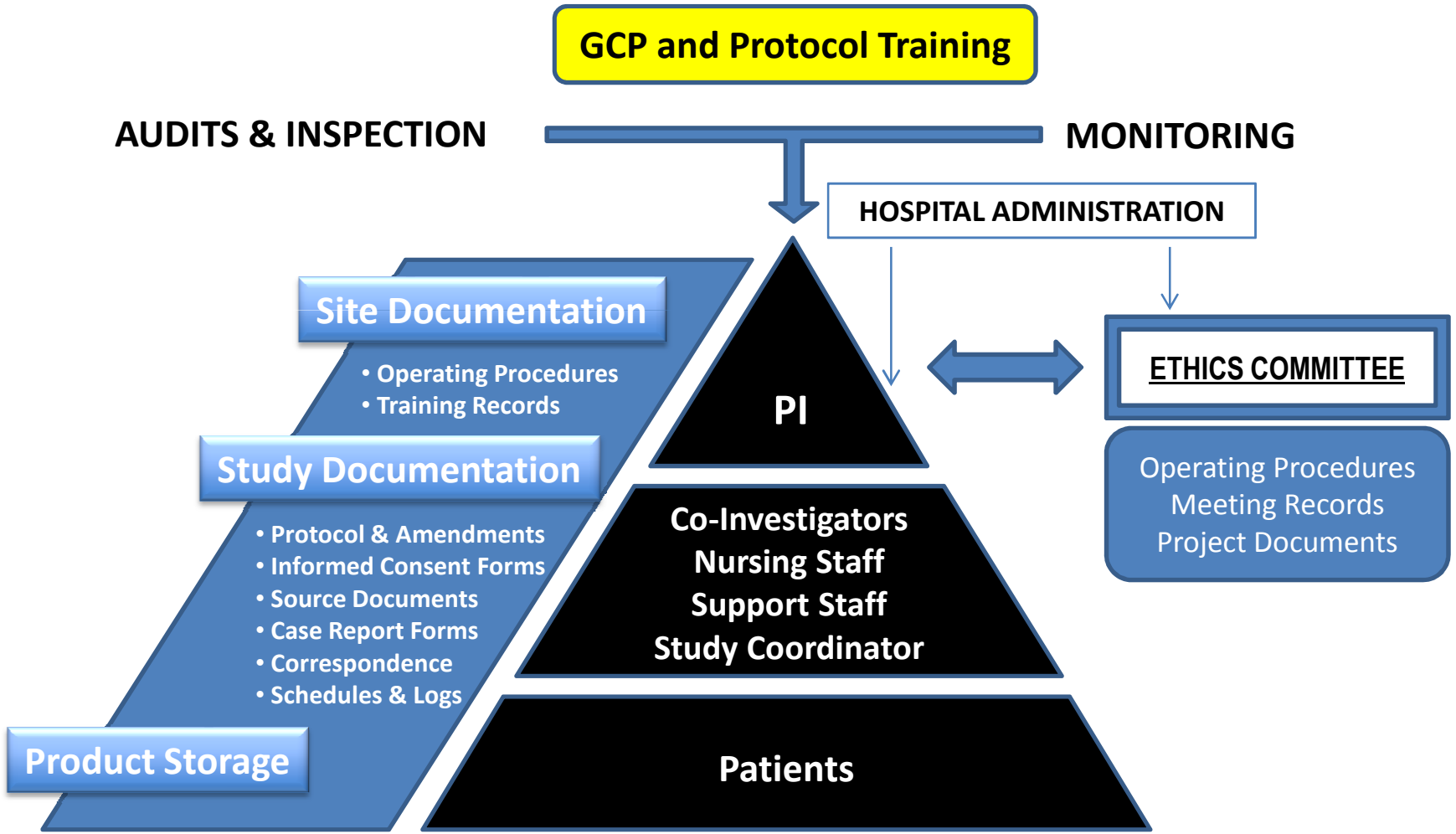
PHASES OF CLINICAL TRIALS

- **PHASE-I : HUMAN PHARMACOLOGY**
- **PHASE-II : THERAPEUTIC EXPLORATION**
- **PHASE-III : THERAPEUTIC CONFIRMATION**
- **PHASE-IV : POST-MARKETING STUDIES**

Sponsor Responsibilities



Site Environment



Common Problems

- **Sponsors**
  - Exorbitant cost; What if the drug is ineffective and/or unsafe
  - Time
- **Ethics Committee**
  - Inexperience
- **Investigators**
  - Bias, Attitude, 'Know-all'
- **Participants**
  - Don't know about clinical trials
  - Don't have access to clinical trials
  - Fear, distrust or suspicious of research
  - Risks involved
  - Language or literacy barriers





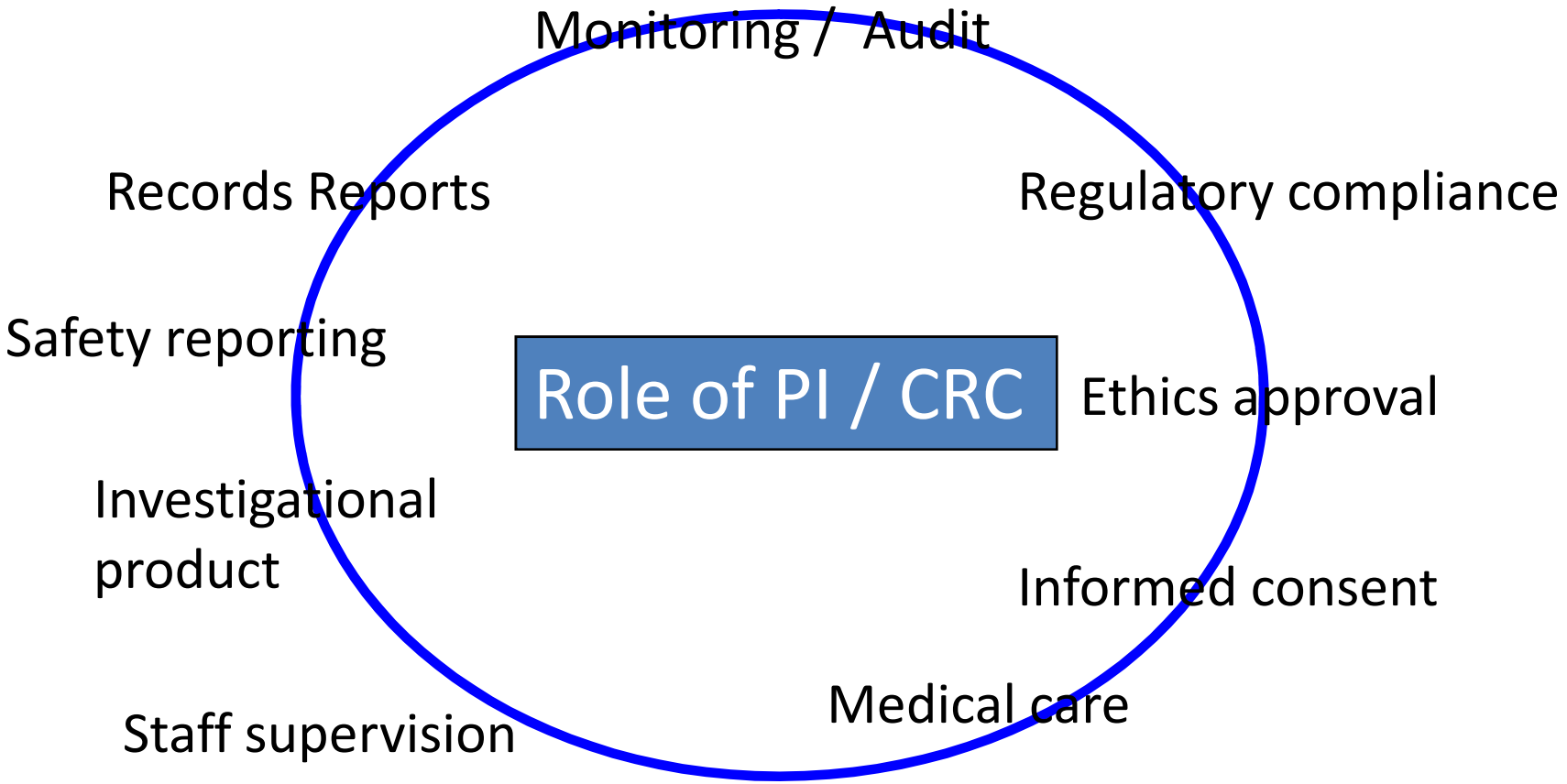


Quality in clinical research may be defined as…

- **Reliability and credibility of information**
- **The output from the clinical research process is information**



Functions of PI & CRC



Resources in Trial Site

- **PERSONNEL**
  - **Co-investigator,** Study Coordinator**, Nurse**
  - **Delegate Significant Trial Related Duties**
- **SPACE**
  - **For study team, examination**
  - **Study materials, drug, archiving**
- **TIME**
  - **For Discussion, Documentation & Review**

Monitor

Sponsor



Investigator

Monitor

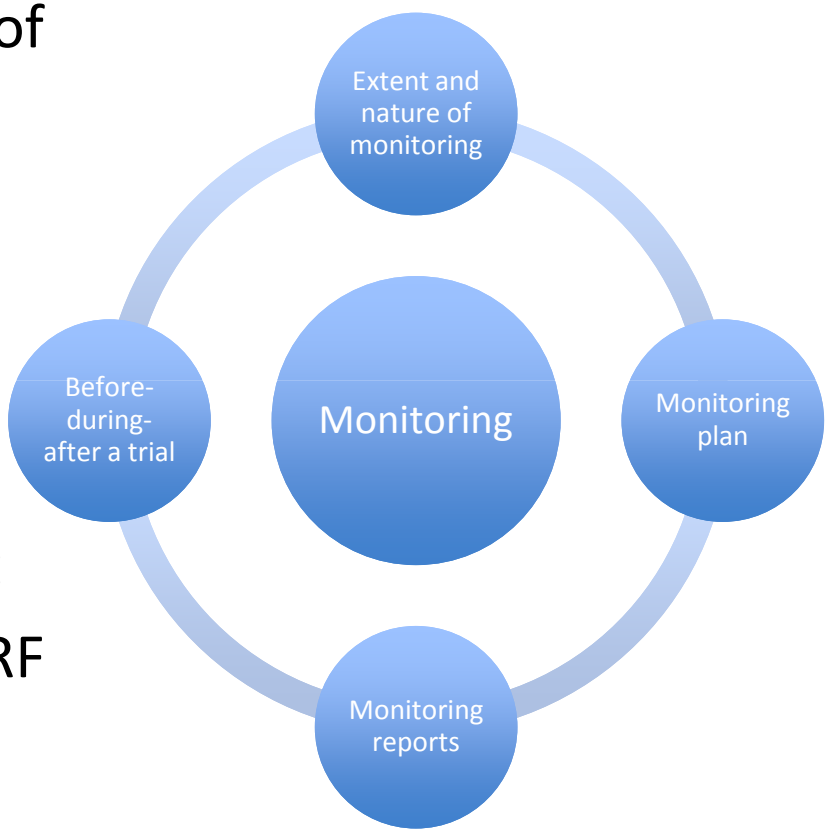
Why Monitoring?

- To improve quality & promote high standards in conducting, recording and reporting
- To identify non-compliance with SOP's, GCP, Protocol, Regulations
- To identify research misconduct/ fraud
- Ensures safety of trial participar

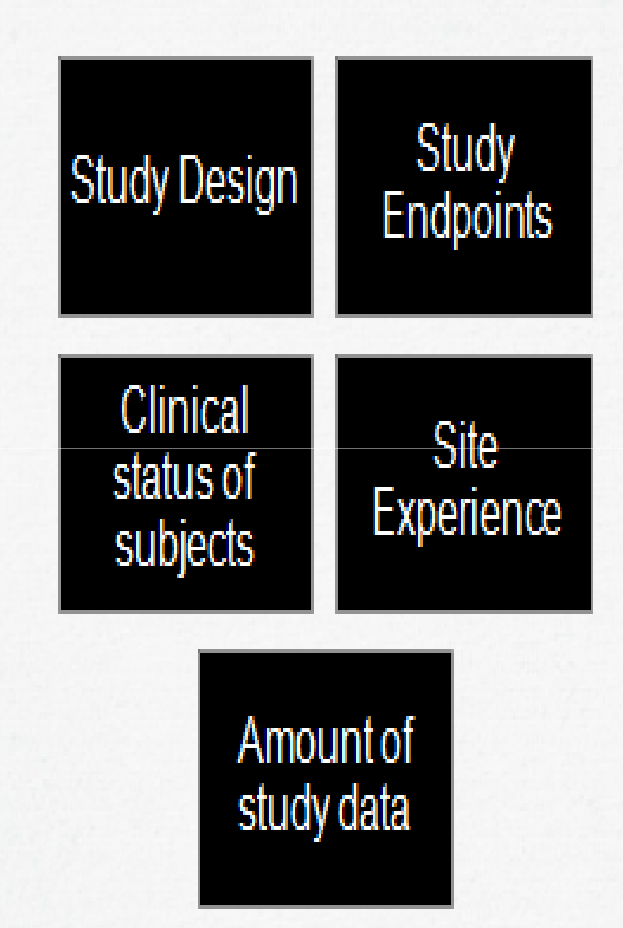


Monitoring -Essential Elements

- Conduct and documentation of the trial
- Use of a valid protocol
- Ensuring Protocol Compliance
- Informed Consent Forms
- Investigational Product
- SAE reporting and management
- Source data Verification and CRF checks



Extent and Nature of Monitoring



- Determination of the extent and nature of monitoring should be based on considerations
  - Objective, Purpose, Design, Complexity, Blinding, Size and Endpoints of the trial
- On-site monitoring needed before, during and after the trial
- Central monitoring in conjunction with procedures such as investigators' training and meetings and extensive written guidance can assure appropriate conduct of the trial in accordance with GCP
- Statistically controlled sampling may be an acceptable method for selecting the data to be verified

ICH-GCP 5.18.3


Pre-study evaluations; Site Feasibility, SAV/ SSV
Managing site activities through frequent visits & contacts
Clinical Trial Monitor
Assisting sites at Start-up Phase
Conducting site initiations

Study Monitoring Will Keep You Out Of Trouble !



Don’t Drop The Ball!

Pharmacist Role in Pharmacovigilance

Why do Pharmacovigilance?

- During clinical trials only small numbers of patients
  - Clinical trials = x1,000's of patients receive drug
  - Marketed use = x1,000,000's of patients receive drug
  - Clinical trials – specific patient criteria (e.g. specific disease, age range etc.)
  - Serious / rare reactions might only occur

    1:10,000 1:100,000 1:250,000
- Serious / rare reactions hardly ever seen in pre-marketing studies
  - At time of marketing authorisation, safety information only conditional (likely to change)
- Then.....
  - WHAT ABOUT BIOSIMILAR STUDIES

Why do Pharmacovigilance?

Populations not studied in the pre-authorisation phase:

- Children, the elderly, pregnant and lactating women
- Patients with relevant co-morbidity such as hepatitis or renal disorders
- Patients with disease severity different from that studies in clinical trials
- Sub-populations carrying known and relevant genetic polymorphism
- Patients of different racial and/or ethnic origins

Withdrawn Due to Good Pharmacovigilance Practices

Triazolam	1991
Temafloxacin	1992
Flosequinan (Manoplax)	1993
Alpidem (Ananxyl)	1996
Chlormezanone (Trancopal)	1996
Fen-phen (popular combination of fenfluramine and phentermine)	1997
Tolrestat (Alredase)	1997
Terfenadine (Seldane, Triludan)	1998
Mibefradil (Posicor)	1998
Etretinate	1990s
Terodiline (Micturin)	1991
Tolcapone (Tasmar)	1998
Temazepam (Restoril, Euhypnos, Normison, Remestan, Tenox, Norkotral)	1999
Astemizole (Hismanal)	1999
Grepafloxacin (Raxar)	1999
Troglitazone (Rezulin)	2000
Alosetron (Lotronex)	2000
Cisapride (Propulsid)	2000s
Amineptine (Survector)	2000
Phenylpropanolamine (Propagest, Dexatrim)	2000
Trovafloxacin (Trovan)	2001
Cerivastatin (Baycol,	2001
Rapacuronium (Raplon)	2001
Rofecoxib (Vioxx)	2004
Co-proxamol (Distalgesic)	2004
mixed amphetamine salts (Adderall XR)	2005
hydromorphone extended-release (Palladone)	2005
Thioridazine (Melleril)	2005
Pemoline (Cylert)	2005
Natalizumab (Tysabri)	2005-2006
Ximelagatran (Exanta)	2006
Pergolide (Permax)	2007
Tegaserod (Zelnorm)	2007
Aprotinin (Trasylol)	2007
Inhaled insulin (Exubera)	2007
Lumiracoxib (Prexige)	2007-2008
Rimonabant (Accomplia)	2008
Efalizumab (Raptiva)	2009
Sibutramine (Reductil)	2010
Gemtuzumab ozogamicin (Mylotarg)	2010

Key Messages :-

- Clinical investigators play a critical role in ensuring high quality studies
- Good Care of Patients is not the same as Good Clinical Practices (GCP) in research
  - It is important have a clear understanding of responsibilities under CDSCO regulations
- At stake is public confidence and participation in the clinical trials and ultimately the availability of safe and effective products.


THANK YOU