AWI-Gen

Implementation of Good Clinical Laboratory Practices (GCLP) compliance in H3Africa Projects

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AWI-Gen, Overall Coordinator

AWI-Gen Project, 2012-2017
SBIMB,
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wellcome trust

Genomic and environmental risk factors for cardiometabolic disease in Africans

AWI-Gen

Outline

- AWI-Gen Overview objectives and progress

- Key Elements in GCLP in AWI-Gen study across sites

➢ Organization and Personnel

➢ Facilities, equipment, materials and reagents

➢ Standard Operating Procedures (SOPs)

➢ Planning, conduct and reporting

➢ Quality Control, Assurance and Quality audits

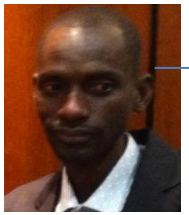
➢ Retention of study documentation, archiving and prompt reports.

AWI-Gen
Wits-INDEPTH Partnership: Organization and Personnel

PI, Michele Ramsay

Co-PI, Osman Sankoh

Oduro



Godfred

Halidou

Herman

Catherine

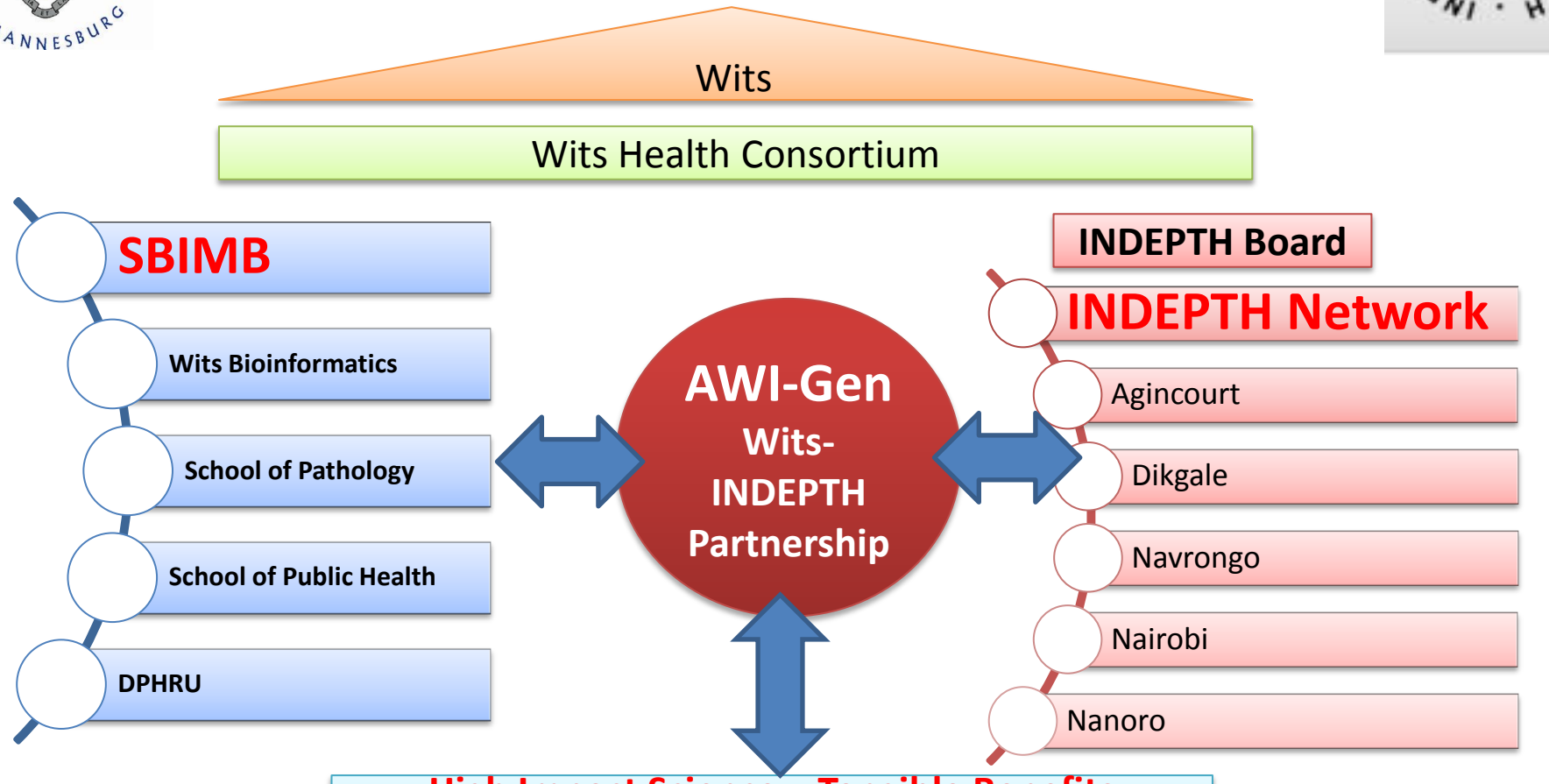
Norris Shane

Zodwa

Marianne

Tollman

AWI-Gen Collaborative Center overview



High Impact Science – Tangible Benefits

Genomic, Genetic and Bioinformatics

Training and empowerment

Resource and Infrastructure development

Focus on disease and population health

Leading Healthier Lifestyle Changes

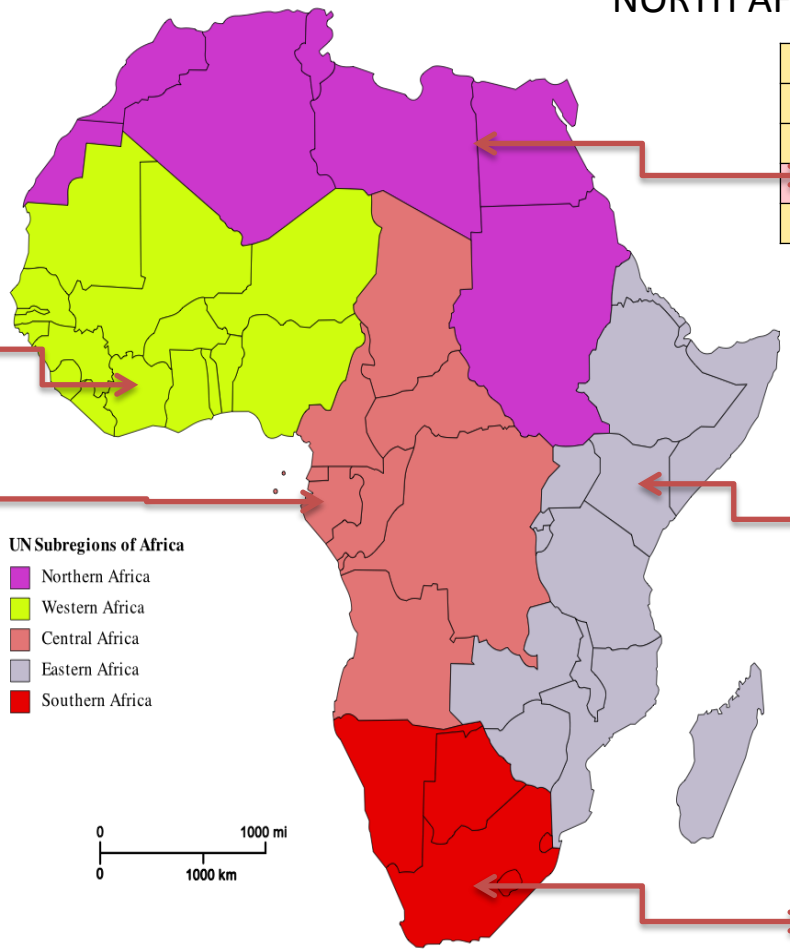
World Bank – Change in burden of disease (1990 to 2010)

WEST AFRICA

HIV/AIDS	483%
Road Injury	112%
Malaria	79%
Cirrhosis	74%
Sickle Cell	66%

CENTRAL AFRICA

HIV/AIDS	240%
Malaria	61%
TB	57%
Neonatal encephalopathy	56%
Meningitis	53%



NORTH AFRICA AND MIDDLE EAST

Diabetes	94%
Low back pain	74%
Major depressive disorder	63%
Road injury	36%
Ischaemic heart disease	37%

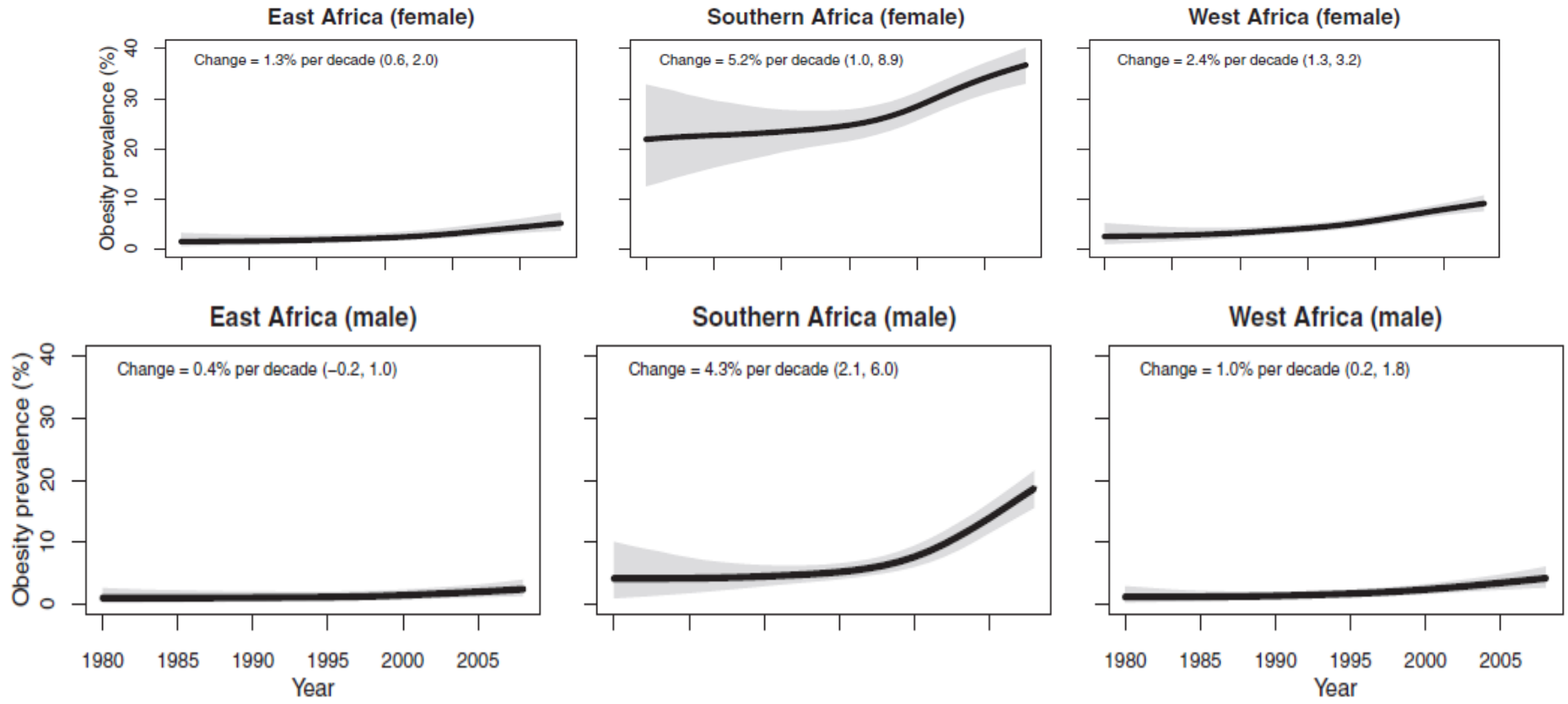
EAST AFRICA

HIV/AIDS	178%
Neonatal sepsis	26%
Neonatal encephalopathy	29%
Preterm birth complications	10%
TB	5%

SOUTHERN AFRICA

HIV/AIDS	1065%
Interpersonal Violence	79%
Diabetes	99%
Major depressive disorder	47%
COPD	38%
Stroke	33%

Change in obesity (1980 to 2008)



Stevens et al. Population Health Metrics 2012, 10:22
http://www.pophealthmetrics.com/content/10/1/22

AWI-Gen project aims

i. ***Build sustainable infrastructure (laboratories and biobank) and capabilities for genotyping and for genomic research on the African continent***

ii. ***Understand the genomic architecture of sub-Saharan populations from west, east and south Africa to guide genomic studies.***

iii. ***Investigate the independent and synergistic genomic contributions to body fat distribution (BMI, hip/waist circumference, subcutaneous and visceral fat) in the populations considering the relevant environmental and social contexts.***

iv. ***Investigate the effect of obesity and fat distribution on the risk for Cardiometabolic diseases in the cohort/longitudinal cohorts (***across six Centres in Africa (~12 000 individuals)

Overview of the progress

- **Phase 1 population structure studies**

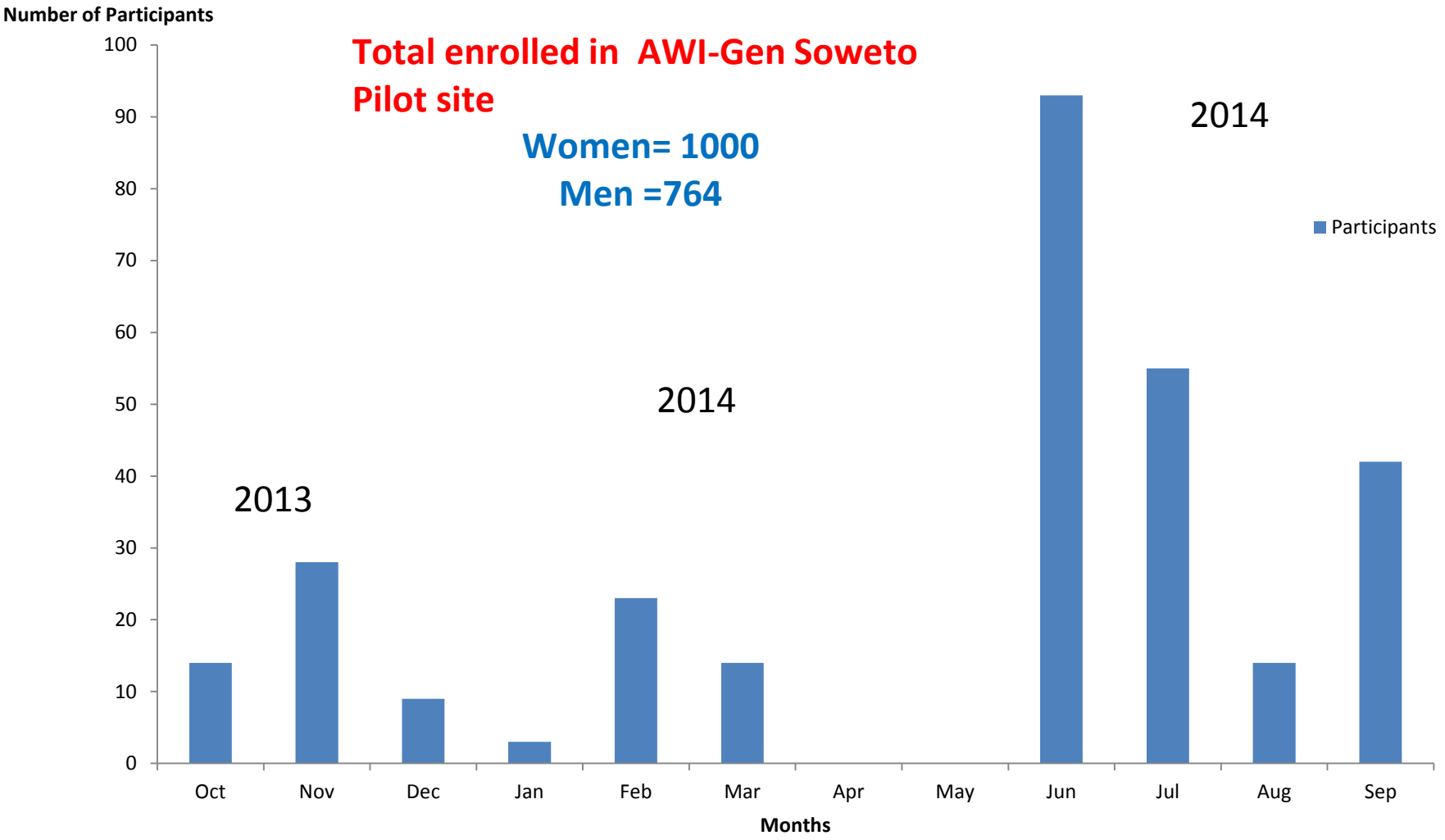
All samples and data from selected ethnic groups have been collected from all six AWI-Gen sites and will be part of H3 Africa Genomic samples for sequencing and Cardio-metabolchips

- **Genomic studies**

The pilot site Soweto, South Africa have enrolled so far 1,764(1,000 women and 764 men) and plan to complete at early January 2015.

- Nairobi, Burkina Faso, Ghana, Agincourt and Dikgale have all secured their Ethical Clearance and plan to start in November 2014

Soweto Roll out sheet 2013-2014



Why H3Africa GCLP compliance?

- Best practices and quality assurance issues have become of paramount importance in all clinical studies and trials.

- The implementation of GCLP in clinical study and laboratories is essential for quality data and data sharing.

- What is quality data and How do we define quality in clinical research?

GCLP requirements relating to Standard Operating Procedures (SOPs)

- Key Compliance Indicators

- ❖ Trained and qualified personnel/retraining
- ❖ Field/Lab SOPs validation, Design and planning
- ❖ Risk management, Preventive and Corrective measures
- ❖ Stepwise QC/QA process
- ❖ Calibration frequency daily/weekly
- ❖ Accuracy daily
- ❖ Precision daily
- ❖ Document control and continuous performance+
- ❖ Validation and Verification
- ❖ Reproducibility
- ❖ Data management, safety and security
- ❖ Suitability and stock of reagents
- ❖ Errors(systemic errors and Random errors & ambiguity

- **QUALITY DATA required achieving below 5% coefficient of variation(CV)**
  - Questionnaire
  - Samples collection and processing
  - Equipment and SOPs
  - Anthropometric measurements
  - Ultrasound measurements
  - Each will need to scan 15 volunteers twice on each of the above (SCAT, VAT & CiMT)

AWI-Gen DATA

- **Demographic Data Collection** using a barcoded AWI-Gen informed consent and questionnaire(Age, Gender, family health history, Diet, Physical activity and substance use/abuse)
- **Phenotypic Data Collection** (Standing height, Weight, Waist and Hip Circumference and cIMT/VAT/SCAT)
- **Sample Collection** ((1)Fasting Blood or Saliva, (2)spot Urine)
- **REDCap** data Online tool and Quality control
- **Genetic and Genomic Markers of cardiometabolic risk using Genomic Wide Association Studies or Exome sequencing.**
- **Cardiometabochips in assessing risk factors and obesity related diseases**
- **Data and Samples Management & Biobanking**

Key Elements: Facility

- **DEMONSTRABLY FIT-FOR-PURPOSE (QUALITY SAMPLE/DATA)**
- Trained and qualified staff
- Size and Space

- **suitable size, structure and location**

- **space to avoid sample mix-up or contamination**
  - **separation of activities**
  - **Restricted access?**

- **storage areas**
  - **temperature controlled, monitored, limits set, alarmed, back up**

- **Risk management both in Labs, field and logistics**
- good housekeeping

Equipment and Standard Operating Procedures

Facilities, Equipment & Reagents

- **Equipment**
  - **Mastering and acceptance testing prior to use**
  - **appropriately maintained & calibrated**
    - with records to demonstrate this
    - trend analysis of calibration checks?
    - validated computer systems in use
    - may need to keep records of usage
  - **Reagents**
    - suitably labelled and stored

Standard Operating Procedures

- **Approved by WITs-INDEPTH management**
- Controlled historical file maintained.
- To cover areas such as:
  - **Format, control and review of SOPs**
  - **Sample handling- receipt, chain of custody, storage, repeat analysis,** etc
  - **Methods or control of methods**
  - Equipment use and maintenance
  - Record keeping
- **QA/QC & Audit procedures**
- **Documentation, reporting and archiving**
- **Data safety and security** (secure storage & unauthorised access)

AWI-Gen comprehensive program ensuring compliance to GCLP

Quality Audits

- **Quality Assurance and Quality control**
- **The quality sample and data audit system**
- Audits of safety labs and GCLP compliance
- Biweekly Study coordinator or Monthly internal meetings & audits by site staff

Challenges

- **Critical non-compliance**
- **Major non-compliance**
- **Minor non-complaince**
- **Inspection and evaluation of field(s) and laboratories performance**

AWI-Gen Community Engagement

AWI-Gen community Mobilizers

Adapt to the local context and realities

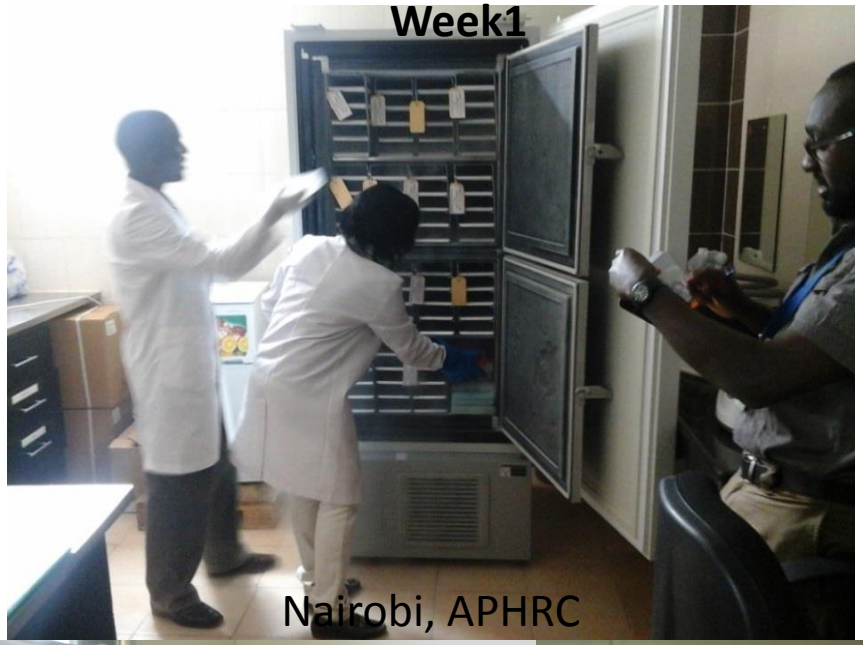
AWI-Gen site staff training and QC

AWI-Gen field Training sessions

Digkale, SA

Digkale, SA

AWI-Gen Cooperative Learning & Quality checks



AWI-Gen Staff performance Assessment

(Intra/Inter-variability)

Training Week 1

Staff	CV Height	CV Waist Circ	Comments
Evance	7.6	8.6	More practices required
	3.9	3.7	
Lydiah	4.2	4.4	
	4.2	4.2	
	5.4	4.1	
	5.5	6.1	
Benjamin	3.0	3.6	More practices required
	5.7	3.2	
James	5.2	3.5	
	4.0	4.2	
	6.4	4.2	
	5.7	4.1	
Ambrose	6.6		
	7.2		
Mary	8.5		
	8.5		

Training Week 2

Staff	CV Weight	CV Waist Circ	Comments
Evance	3.6	3.6	More practices required
	3.9	3.8	
Lydiah	4.2	4.2	
	4.21	4.21	
	3.6	6.4	
	6.4	5.1	
Benjamin	4.6	3.7	More practices required
	3.79	2.9	
James	4.2	4.4	
	4.21	3.9	
	4.0	2.2	
	6.7	3.1	
Ambrose			More practices required
Mary			

AWI-Gen RedCaP and LIMS systems

Real time RedCaP data **capturing**

Real time RedCaP data independent **QC(aspect specific)**

Real time RedCaP data **curation**

Real time RedCaP data **sharing & policies**

Online Real time RedCaP & LMIS analysis & data

Quality in clinical research may be defined as…

- Reliability and credibility of information providing an answer to a scientific question
- Compliance of the study process with defined requirements

AWI-Gen Show cards tools

- CE/IC show card for participants
- CE/IC take home card
- Obesity show card
- Cardio disease show card
- GPAQ show card
- Alcohol show card
- Diet show card
- **AWI-Gen training manual**
- **AWI-Gen reporting system**

(AWI-Gen Study Coordinator forum & AWI-Gen data manager meeting)

AWI-Gen Show cards and tools

Apples

Bananas

Mangos

Pears

Oranges

Naartjies

Grapes

Watermelon

Guavas

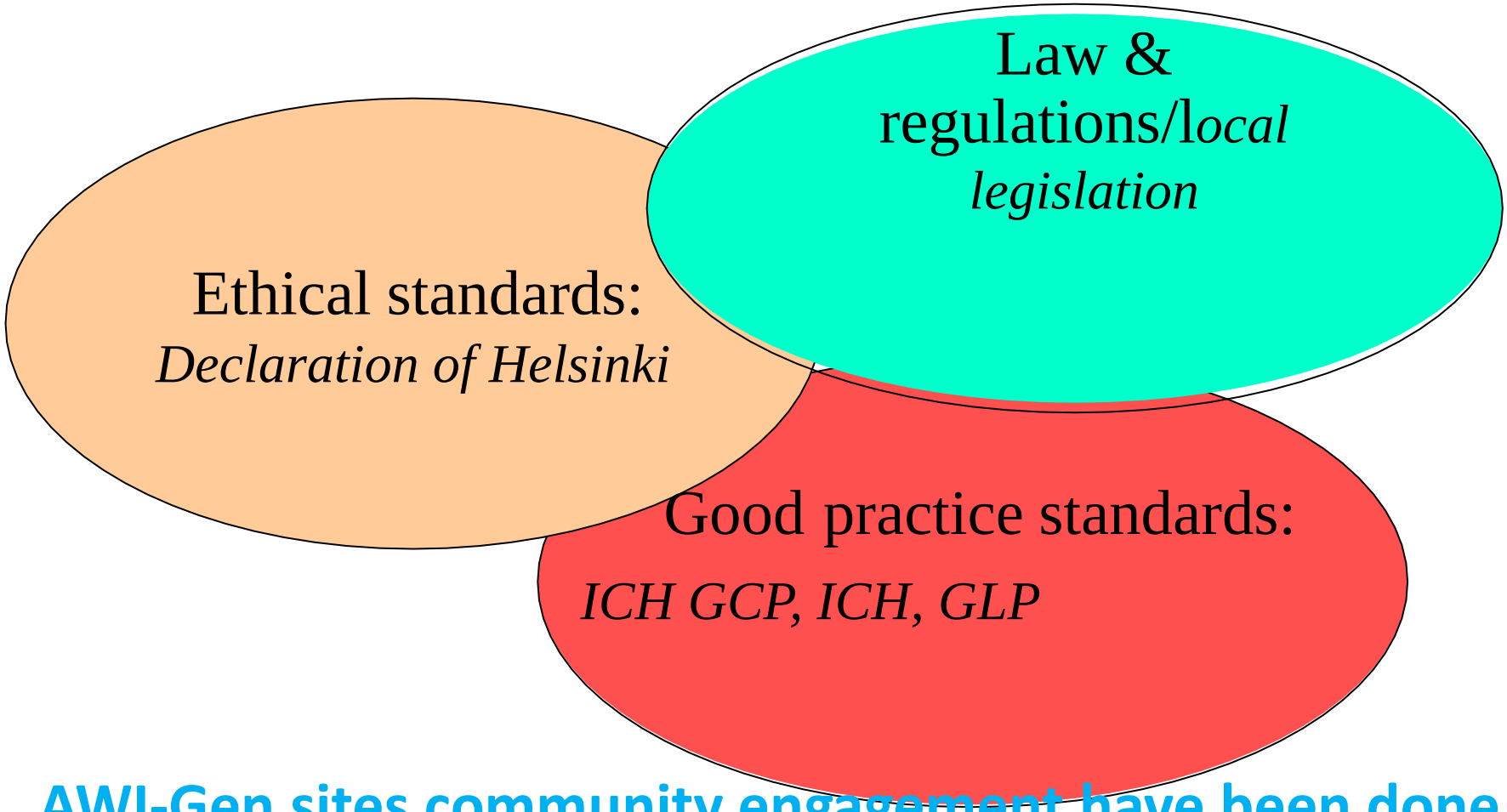
Paw paws

Peaches
Nectarines

Melon

AWI-Gen **research** participants requirements

All AWI-Gen Sites have secured Ethical Clearance

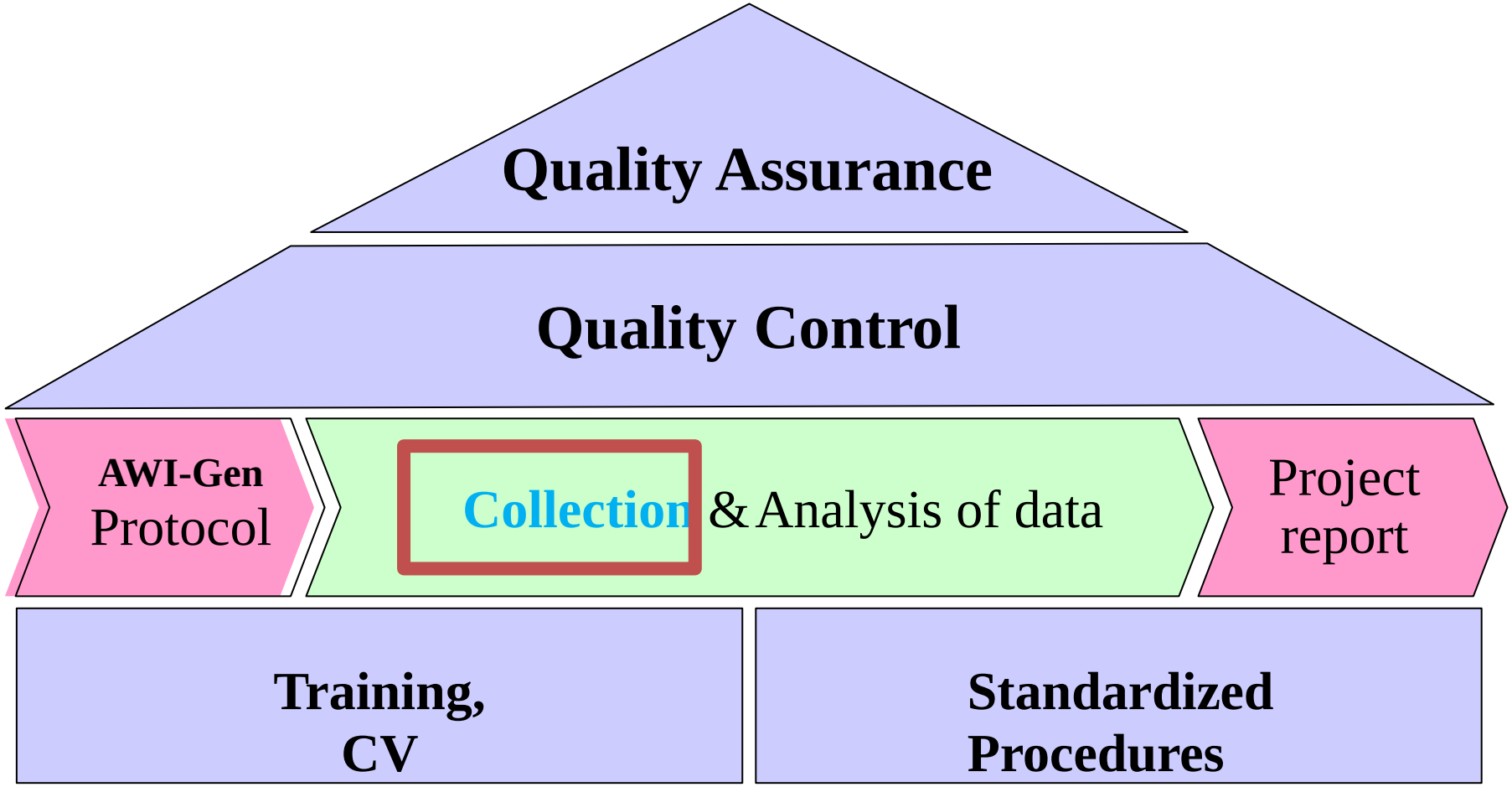


AWI-Gen sites community engagement have been done

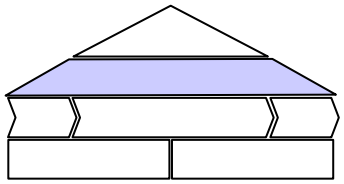
AWI-Gen Quality Management System, definition based on ISO 9000

- A set of interacting elements established to direct and control an organisation with regards to quality
- QMS is a tool to establish and continuously & consistently achieve quality objectives based on project' requirements.
- In clinical research these objectives are:
  - Compliance with ethical, regulatory and GXP standards
  - Credibility and reliability of clinical data

AWI-Gen standard components of Quality Management System



AWI-Gen Quality Control

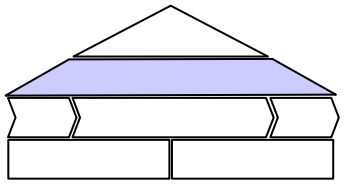


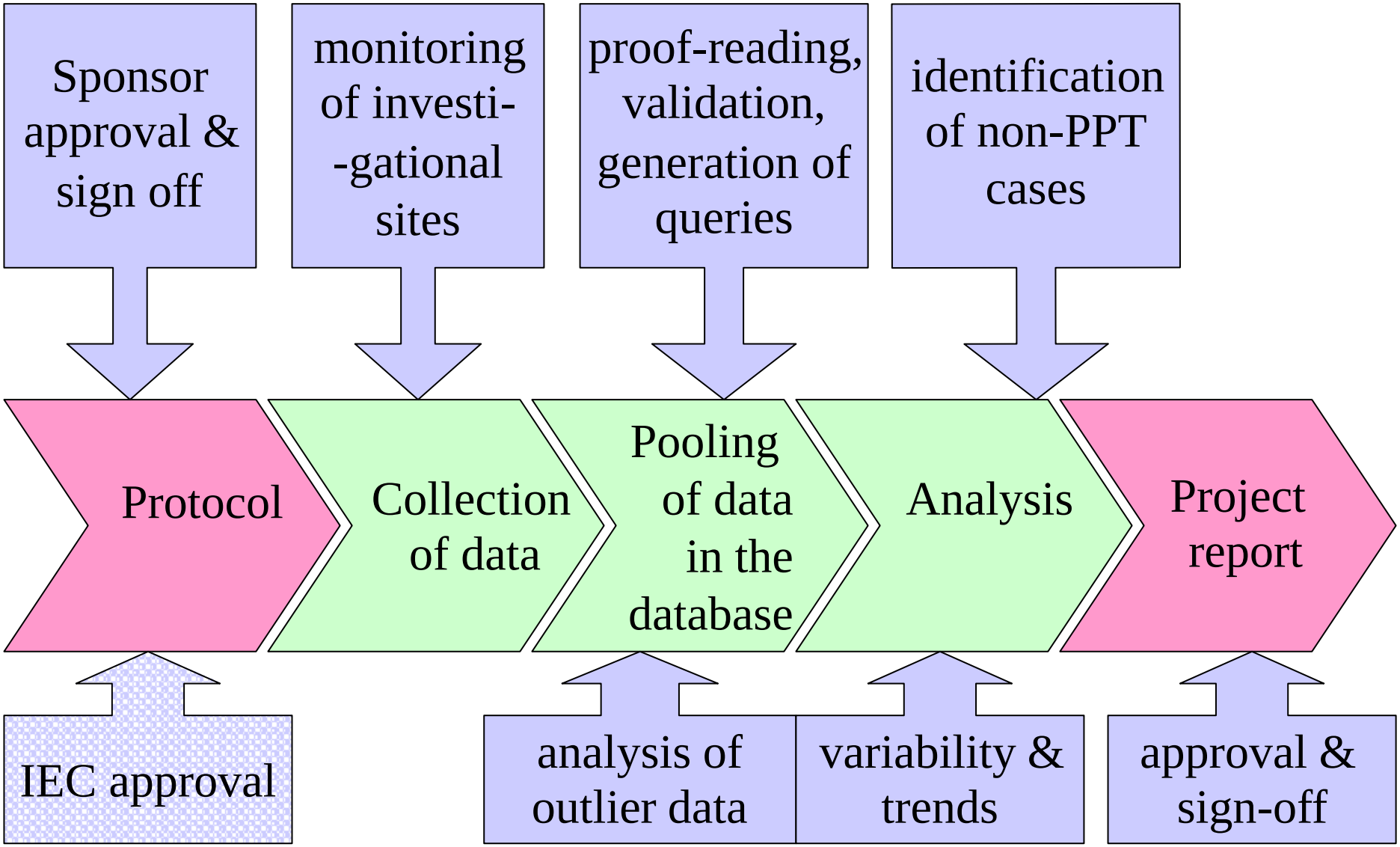
- Activities & techniques applied to ensure that data/samples consistently fulfil requirements

  systematic checks on p r o j e c t compliance,
  credibility of data process & reliability

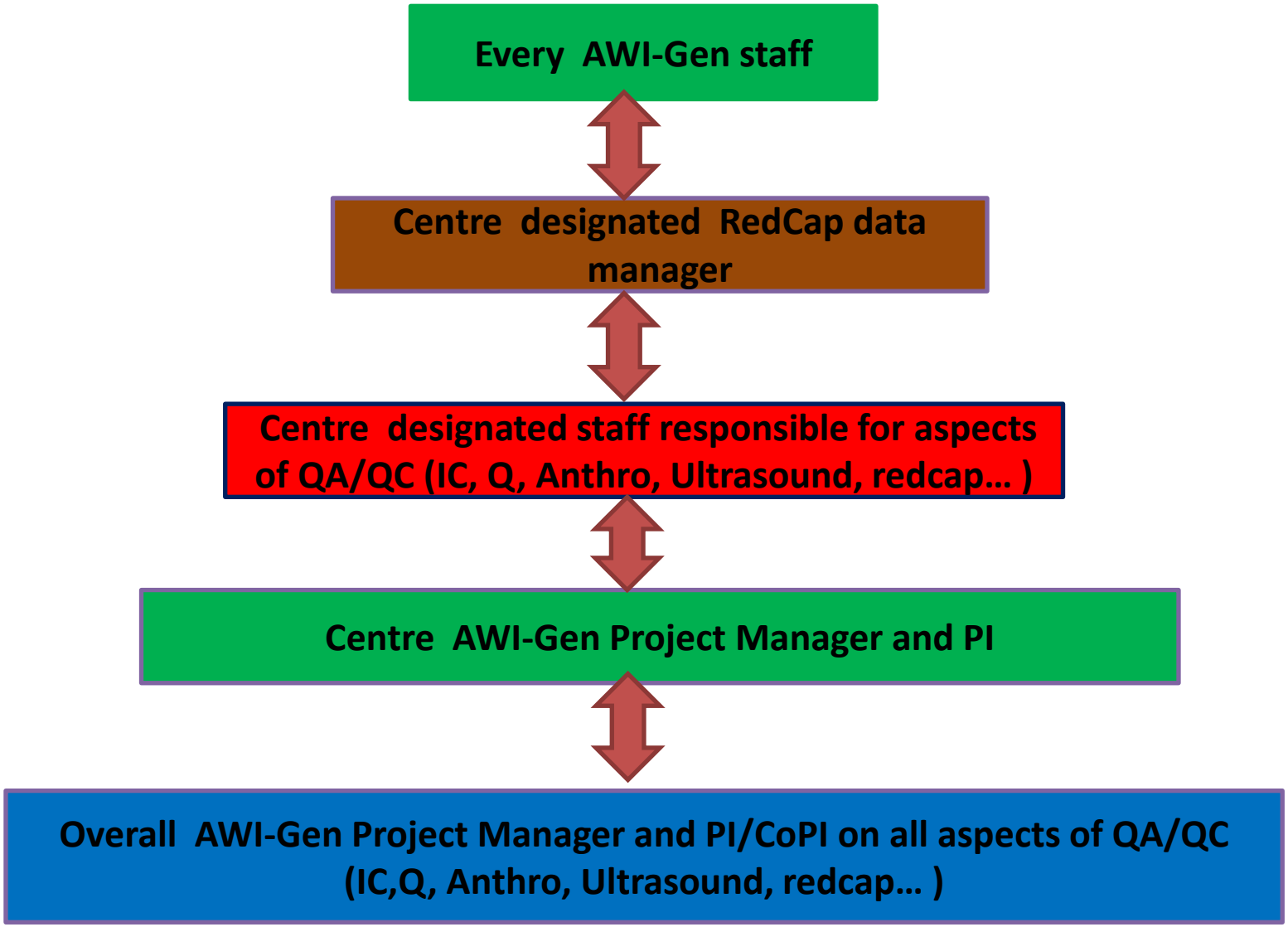
  - Performed at every step of AWI-Gen project
  - Applied to each stage of data/samples handling.

Quality Control

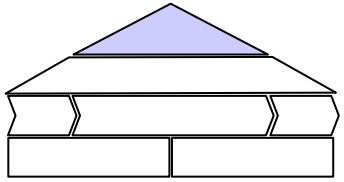




AWI-Gen Quality Control Process



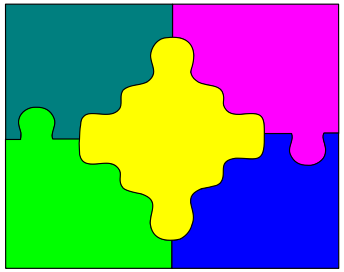
Quality Assurance audits



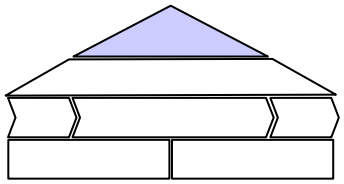
- Project specific audits
- Systems audits

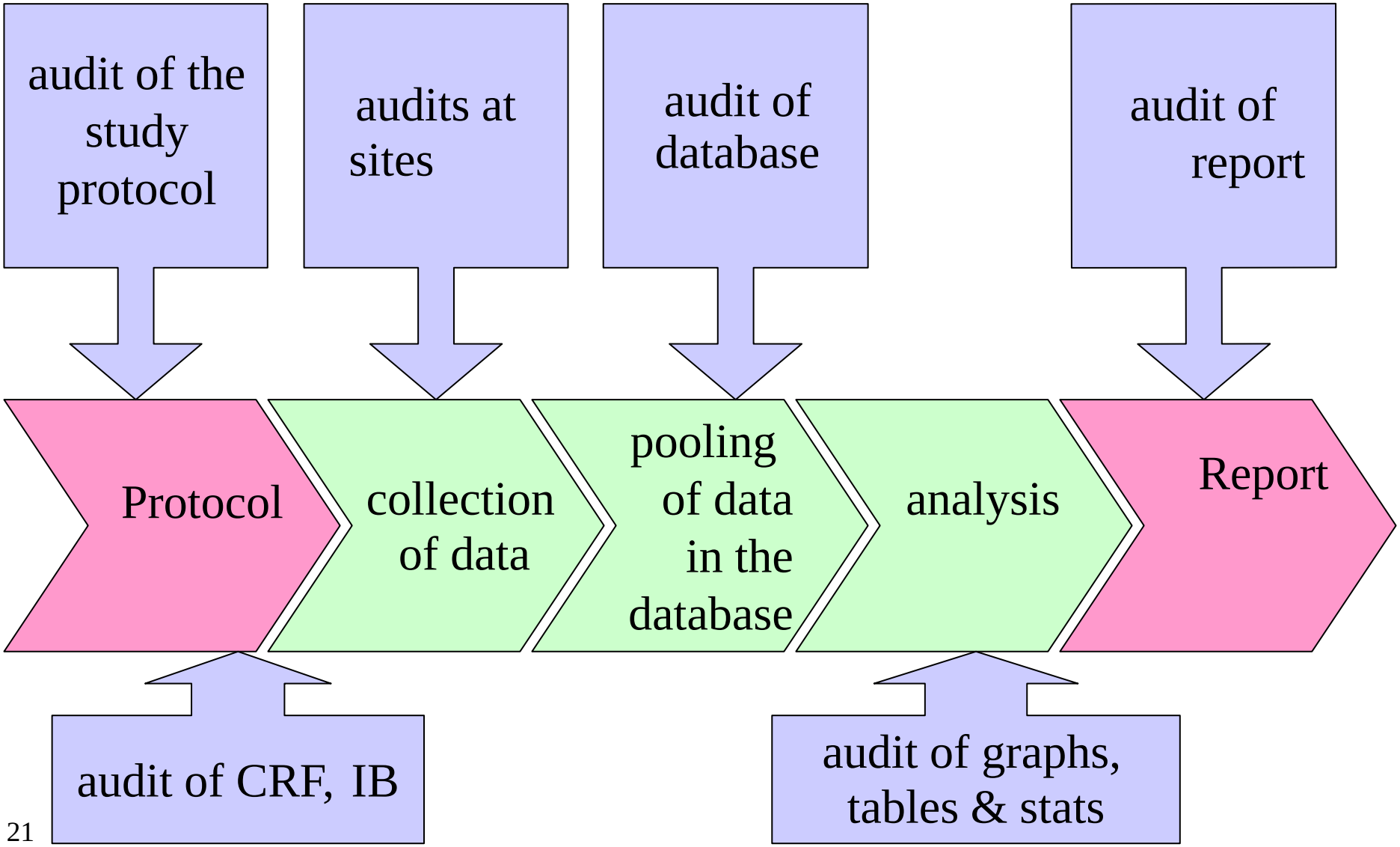
System: A selected process plus all related activities, resources, organisation, documents (including SOPs & records), facilities and equipment

e.g.: Pharmacovigilance, Data Management

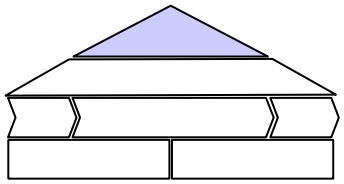


QA specific audits plans





QA systems audits



audits of computerised data collection sytems (validation audits)

audit of monitoring system

audit of management & distribution system

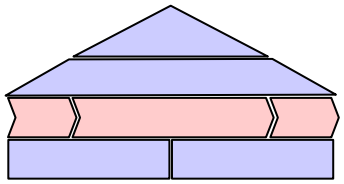
audit of document management & archiving

Collection & Handling of data

audits of central lab & other service providers

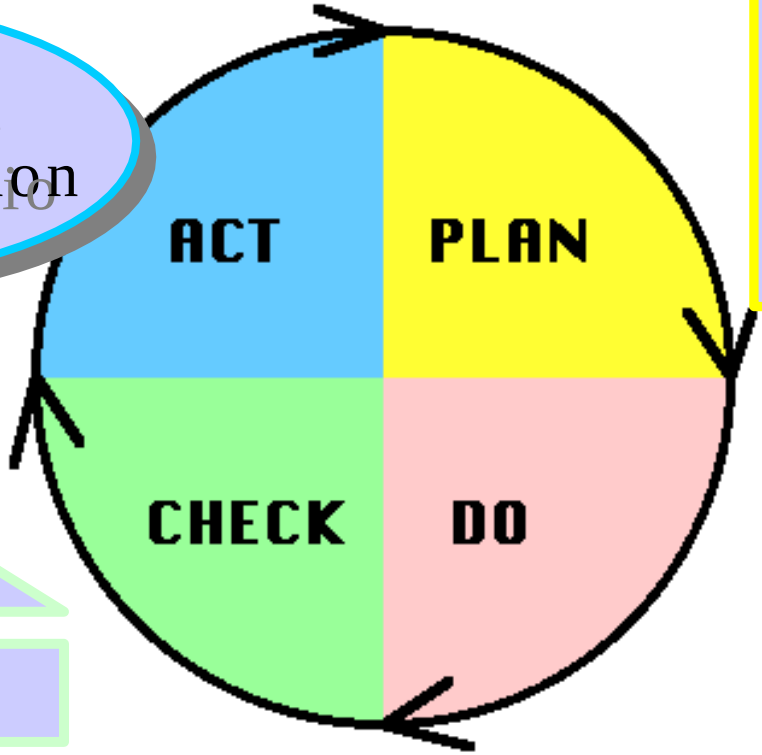
audit of sponsor's pharmacovigilance system

Benefit of AWI-Gen QMS



It supports continuous quality improvement

implement recommendations



development of trial protocol & instructions training,

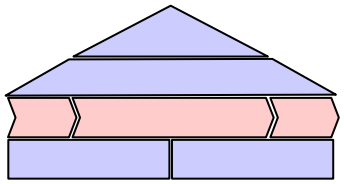
AWI-Gen process

QA audits

QC activities

in line with SOPs

Conclusions



The overall AWI-Gen study relies on

- COMPLIANCE with requirements and credibility & reliability of Quality data

- AWI-Gen Quality Management System rely on its set of tools and show cards to ensure, maintain and improve participant understanding and quality data samples and collection

- Improved quality systems, results, greater efficiency and teamwork are the key benefits.



Thanks!!!







H3Africa Consortium: Policies Harmonisation

AWI-Gen

National Institutes of Health - Wellcome Trust H3Africa Research Network