Promoting the Quality of Medicines Plus

Medical Product Quality Assurance & Regulatory Systems for Effective Supply Chain Management

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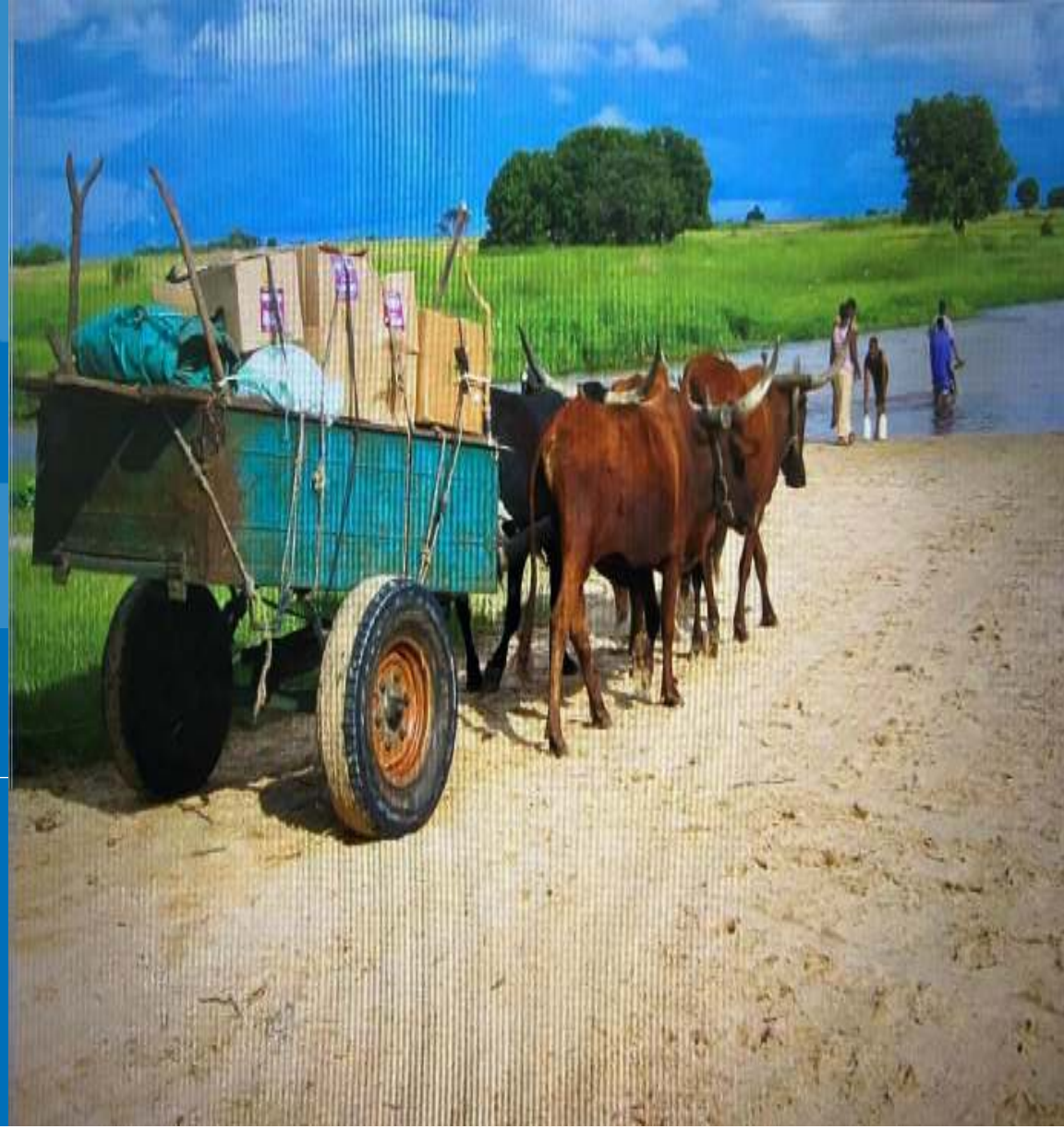
United States Pharmacopeial Convention USP
PSN Conference November 3, 2021



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Courtesy the USAID/DELIVER PROJECT TASK ORDER 1 2011

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Introduction

- "Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement…and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. *Council of Supply Chain Management Professionals (CSCMP)*— In essence, supply chain management integrates supply and demand management within and across companies

Introduction

- Logistics is defined as "[The] part of supply chain management that plans, implements, and controls the efficient, effective forward and reverses flow and storage of goods, services and related information between the point of origin and the point of consumption in order to meet customers' requirement… Logistics management is an integrating function, which coordinates and optimizes all logistics activities, as well as integrates logistics activities with other functions including marketing, sales manufacturing, finance, and information technology." *Council of Supply Chain Management Professionals (CSCMP)*—

Introduction Cont'd

- Health programs cannot succeed unless the supply chain delivers a reliable, continuous supply of medical products to its customer – No product? No program!

- The 6 Rights of Logistics –

✓ The RIGHT medical products
✓ In the RIGHT quantities
✓ in the RIGHT condition delivered …
✓ to the RIGHT place
✓ at the RIGHT time
✓ for the RIGHT cost

Quality Matters!

The World Health Organization estimates that at least 1 in 10 medical products is of poor quality.

This is the tip of the iceberg.

Impacts Extend Beyond Health

Example: MCH

PLoS One. 2020 Jul 10;15(7):e0236060. doi: 10.1371/journal.pone.0236060. eCollection 2020.

Quality of medicines for life-threatening pregnancy complications in low- and middle-income countries: A systematic review

Maria Regina Torloni [1], Mercedes Bonet [2], Ana Pilar Betrán [2], Carolina C Ribeiro-do-Valle [3], Mariana Widmer [2]

Affiliations + expand

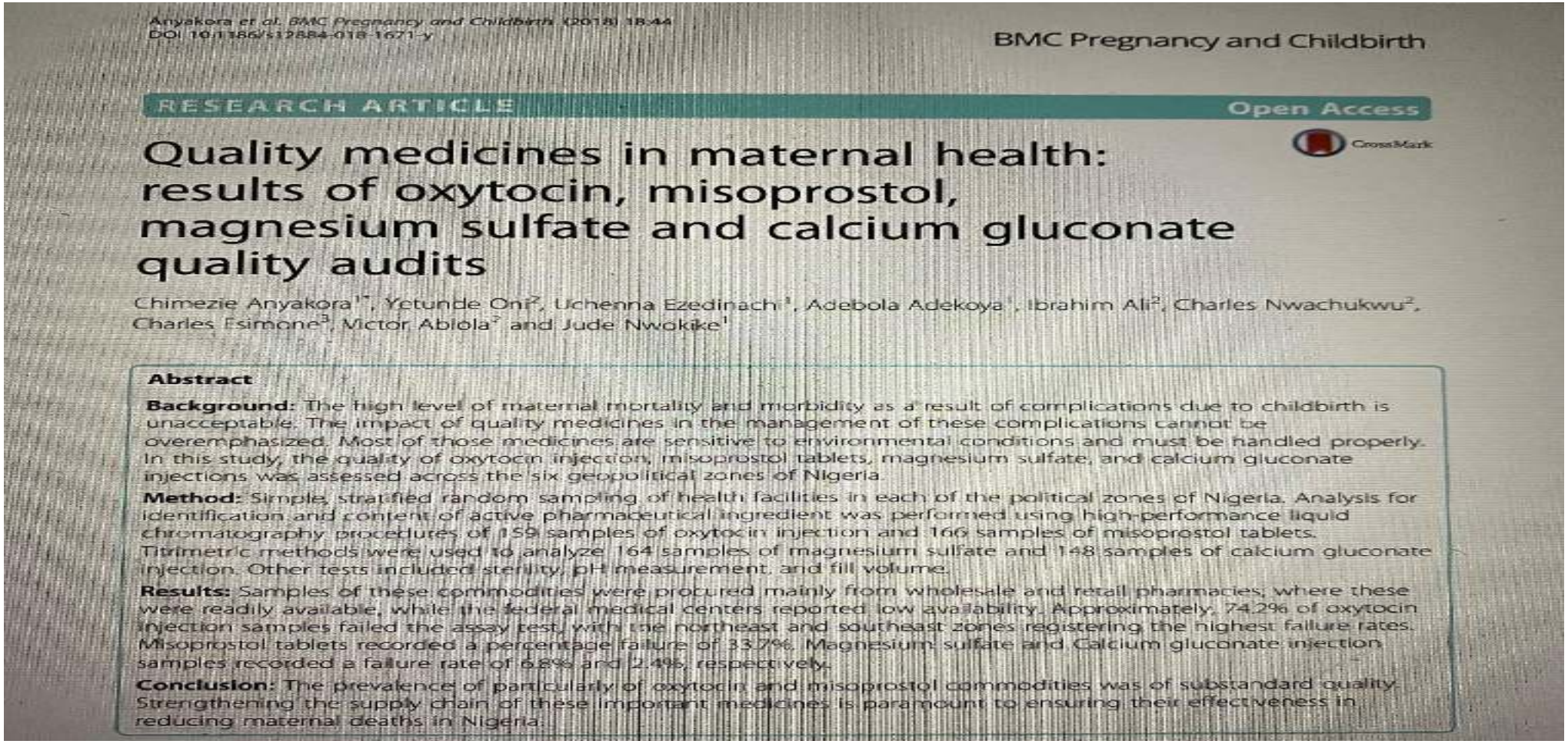
PMID: 32649710 PMCID: PMC7351160 DOI: 10.1371/journal.pone.0236060

Free PMC article

Findings: We identified 9699 unique citations and included 34 studies (3159 samples from 40 countries) in the review. Most studies (65%) had low quality (scores <6/12). Overall, 48.9% of 1890 uterotonic samples (19 studies) failed quality tests; failures rates were 75% for ergometrine and nearly 40% each for oxytocin and misoprostol. The overall prevalence of failed injectable antibiotics (1090 samples, 18 studies) was 13.4%, ranging from 2.9% for injectable metronidazole (34 samples, 3 studies) to 16.0% for cefazolin (449 samples, 2 studies). The prevalence of low quality magnesium sulphate (179 samples, 2 studies) was 3.4%. We did not find any studies on the quality of carbetocin, tranexamic acid, or clindamycin.

- 13.4% of 1,090 injectable antibiotics samples
- 48.9% of 1,890 uterotonic samples failed quality tests

NIGERIA EXPERIENCE



Anyakora et al. BMC Pregnancy and Childbirth (2018) 18:44
DOI 10.1186/s12884-018-1671-y

BMC Pregnancy and Childbirth

RESEARCH ARTICLE Open Access

Quality medicines in maternal health: results of oxytocin, misoprostol, magnesium sulfate and calcium gluconate quality audits

Chimezie Anyakora[1*], Yetunde Oni[2], Uchenna Ezedinachi[1], Adebola Adekoya[1], Ibrahim Ali[2], Charles Nwachukwu[2], Charles Esimone[3], Victor Abiola[2] and Jude Nwokike[1]

Abstract

Background: The high level of maternal mortality and morbidity as a result of complications due to childbirth is unacceptable. The impact of quality medicines in the management of these complications cannot be overemphasized. Most of those medicines are sensitive to environmental conditions and must be handled properly. In this study, the quality of oxytocin injection, misoprostol tablets, magnesium sulfate, and calcium gluconate injections was assessed across the six geopolitical zones of Nigeria.

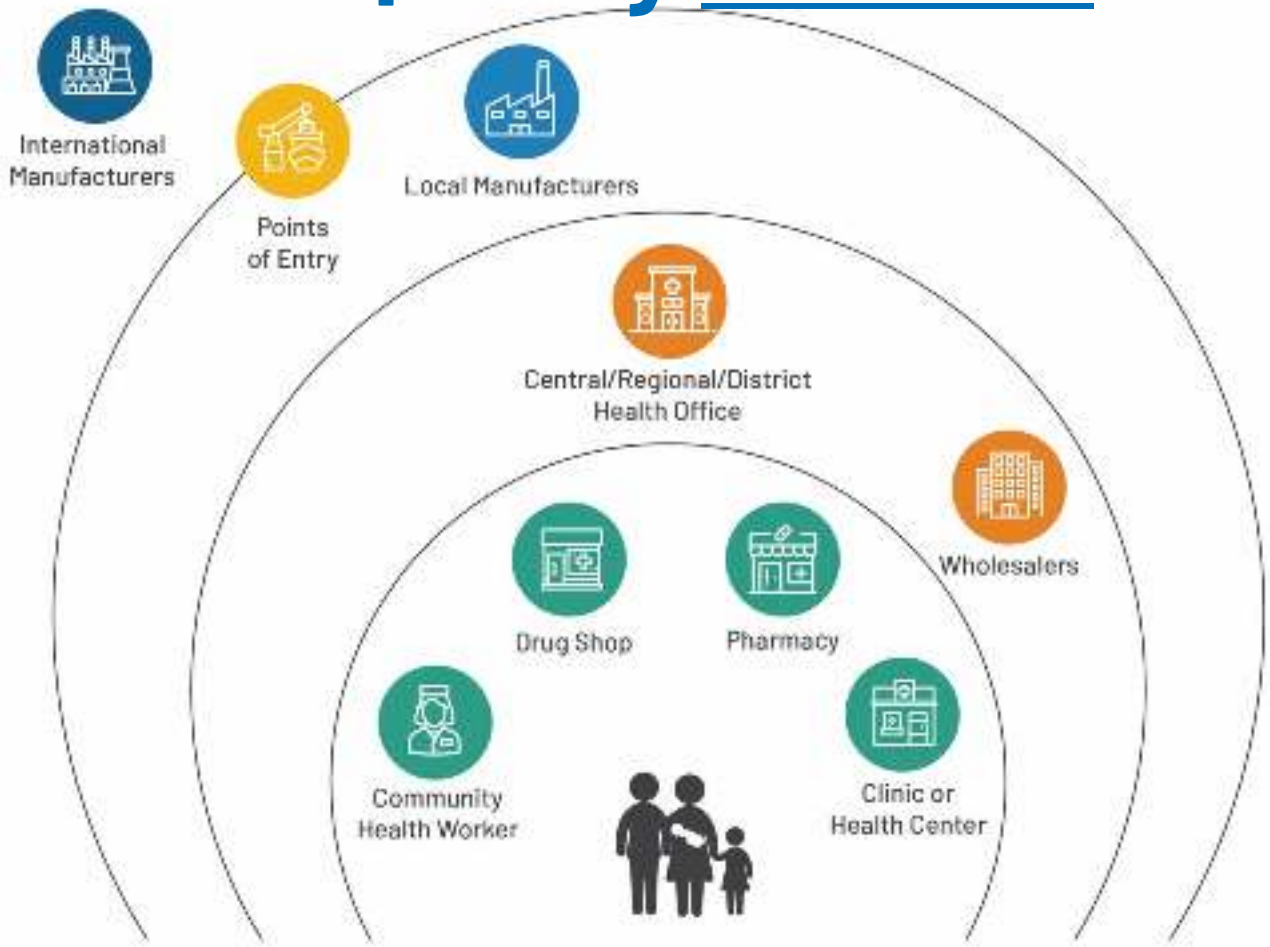
Method: Simple, stratified random sampling of health facilities in each of the political zones of Nigeria. Analysis for identification and content of active pharmaceutical ingredient was performed using high-performance liquid chromatography procedures of 159 samples of oxytocin injection and 166 samples of misoprostol tablets. Titrimetric methods were used to analyze 164 samples of magnesium sulfate and 148 samples of calcium gluconate injection. Other tests included sterility, pH measurement, and fill volume.

Results: Samples of these commodities were procured mainly from wholesale and retail pharmacies, where these were readily available, while the federal medical centers reported low availability. Approximately, 74.2% of oxytocin injection samples failed the assay test, with the northeast and southeast zones registering the highest failure rates. Misoprostol tablets recorded a percentage failure of 33.7%. Magnesium sulfate and Calcium gluconate injection samples recorded a failure rate of 6.8% and 2.4%, respectively.

Conclusion: The prevalence of particularly of oxytocin and misoprostol commodities was of substandard quality. Strengthening the supply chain of these important medicines is paramount to ensuring their effectiveness in reducing maternal deaths in Nigeria.

What Are medical product quality Assurance Systems and Why Are They Important?

Medical Product Supply Chain Quality SYSTEM



Why Regulate Medical Products?

- **Health and well-being** of patients, families, communities, and populations
- **High market value** makes the pharmaceutical sector especially vulnerable to corruption, waste, and mismanagement
- **Consumers do not have the necessary information** about quality or when, how, or which medicines to use

Source: Rago et al 2008

Why Regulate Medical Products?

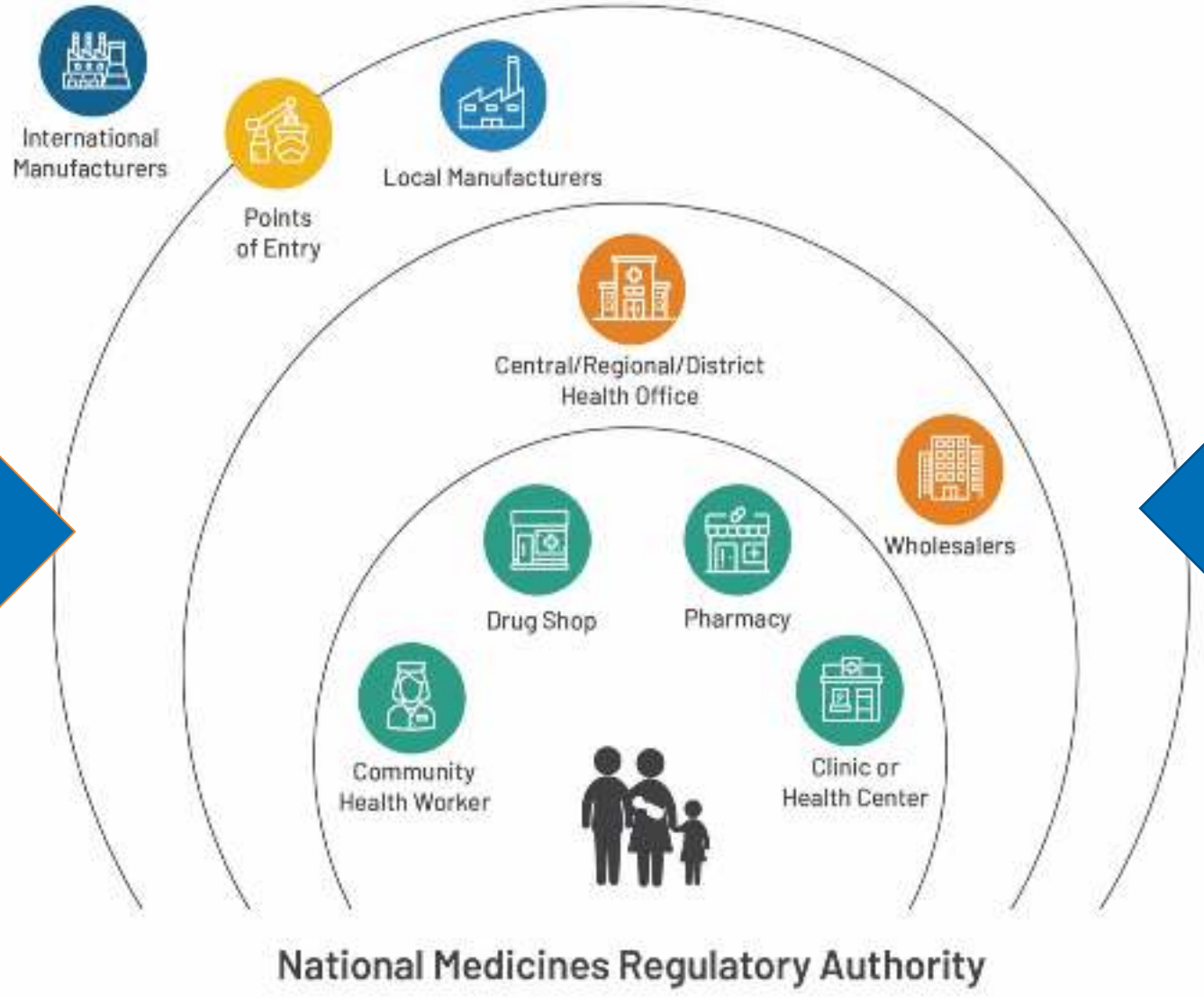
- **The large number of stakeholders** involved increases opportunity for quality to be compromised
- **Premises, practices, and people** must be held to particular standards
- **Supply chains can compromise the quality of medical products** during storage and distribution
- If poor-quality medical products are found, effective **recall, removal, and disposal mechanisms** must be in place

Who Is Responsible for Regulatory and QA Systems? What Institutions Are Included?

A regulatory system consists of all organizations, people, and actions whose primary intent is to ensure access to essential medicines and other health products of assured quality, safety, and efficacy or performance.

Source: The Global Fund, 2019: Regulatory Systems Strengthening (RSS) Technical Brief – October 2019

GOVERNMENT AGENCIES
Ministry of Health
NMRAs
Customs/Port Authority
Judiciary
Police
Trade



NATIONAL DISEASE PROGRAMS
Tuberculosis (TB)
Malaria
Neglected Tropical Diseases (NTDs)
Maternal, Newborn and Child Health (MNCH)

National Medicines Regulatory Authority (NMRA) Key Regulatory Functions

- Registration and marketing authorization
- Market surveillance and control (includes post-marketing surveillance)
- Licensing establishments
- Regulatory inspection
- Laboratory testing
- Vigilance
- Clinical trials oversight
- Lot release

Other functions

- Price control
- Drug information
- Licensing professionals
- Narcotics / psychotropic control

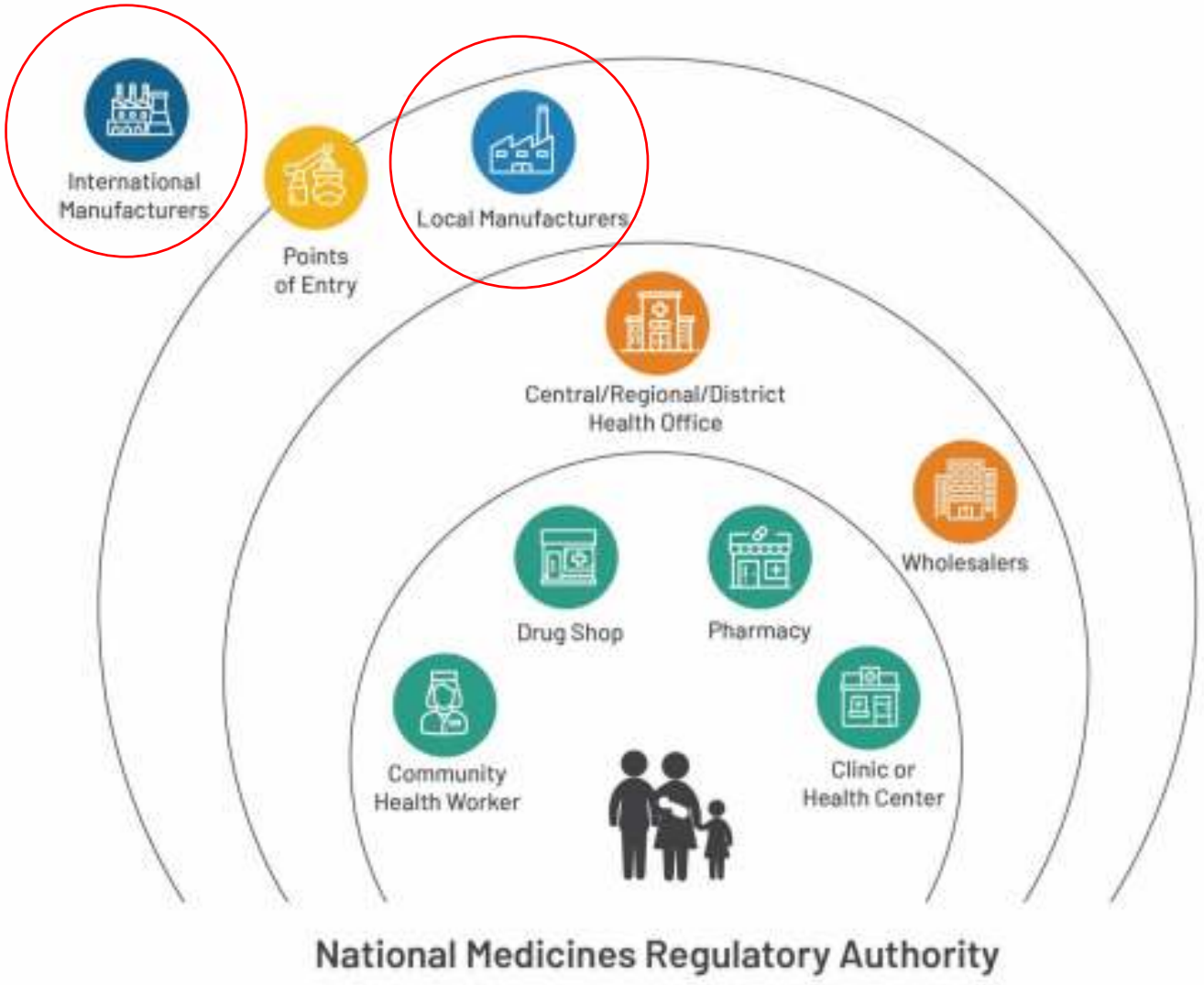
WHO Global Benchmarking Tool (GBT)

The GBT is the primary means by which the WHO objectively evaluates regulatory systems. The tool and benchmarking methodology enable WHO and regulatory authorities to:

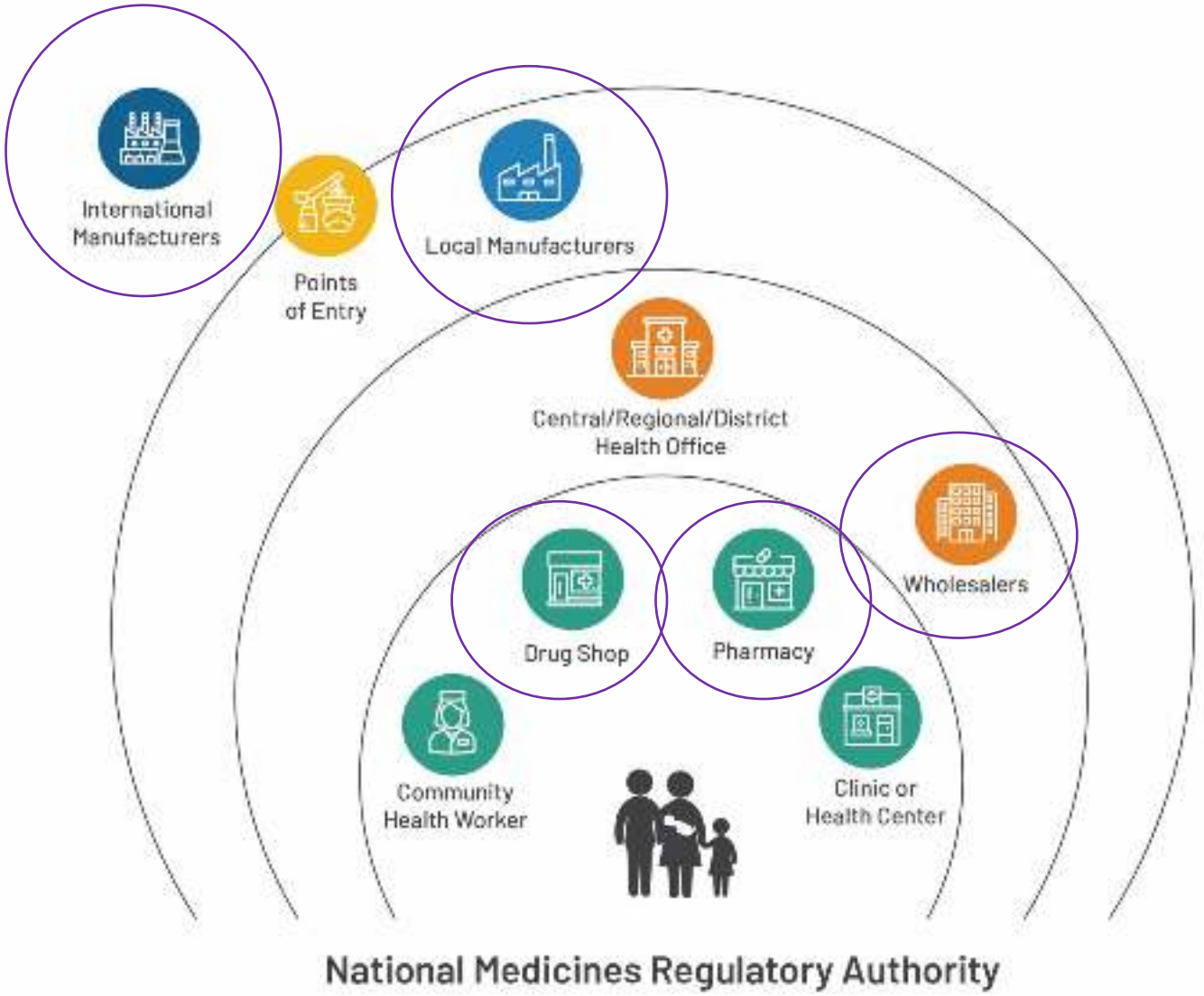
- Identify strengths and areas for improvement;
- Facilitate the formulation of an institutional development plan (IDP) to build upon strengths and address the identified gaps;
- Prioritize IDP interventions; and
- Monitor progress and achievements.

https://www.who.int/medicines/areas/regulation/nras_ml3_ml4/en/

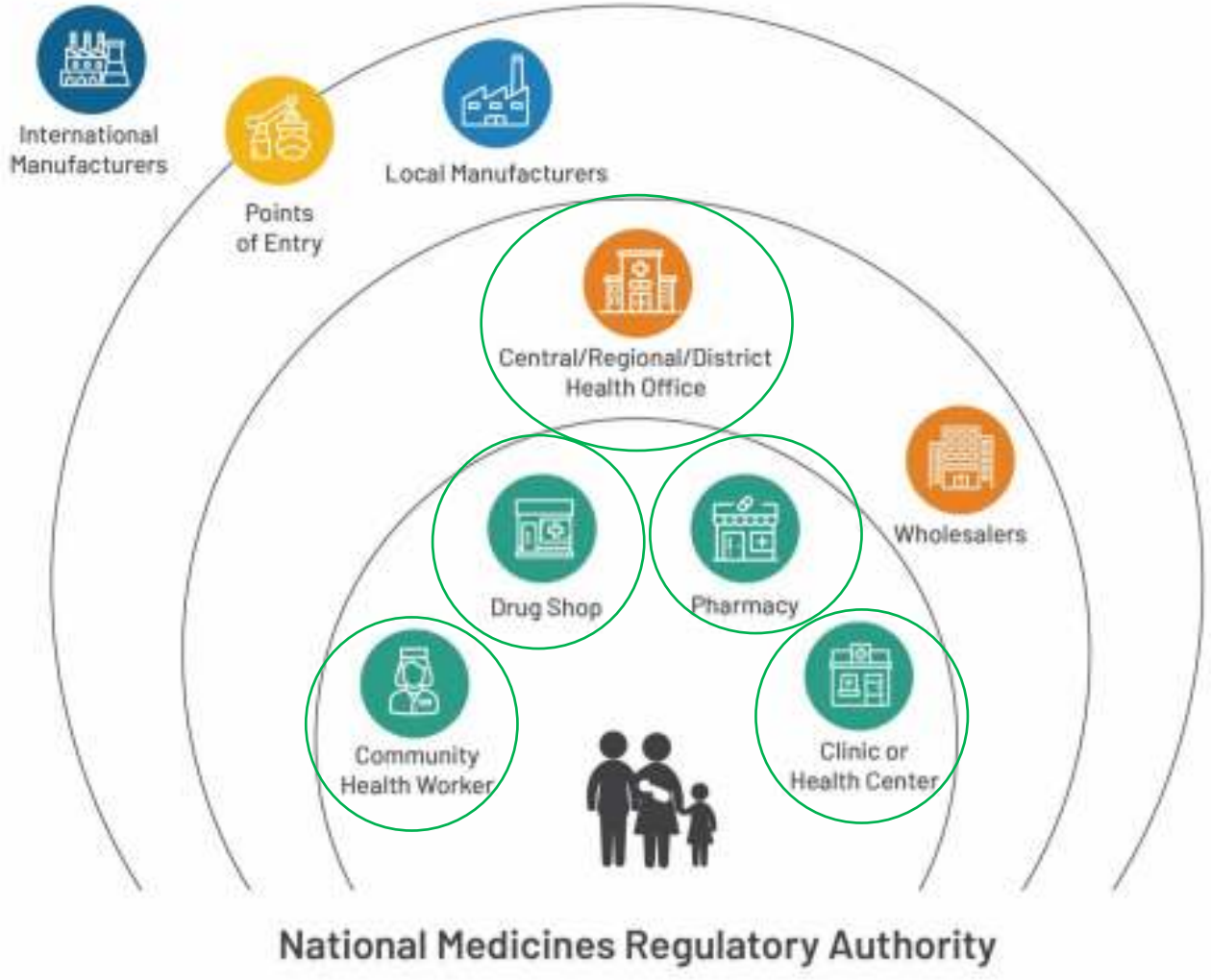
Registration



Licensing and Inspection



Post-marketing Surveillance



Regulatory Functions Supported by the PQM+ Program

LICENSING

Support licensing of manufacturers, distributors, warehouse, and other pharmaceutical premises

INSPECTION

Build capacity of inspectorates for Good Manufacturing Practices (GMP), Good Storage Practices (GSP), Good Distribution Practices (GDP)

REGISTRATION

Training in good dossier review practices (GReVP), collaborative procedures for faster registration (CRP), Bioequivalence

LABORATORY TESTING

Training in Quality Management Systems, Good Laboratory Practices, testing, toward WHO Prequalification (PQ) and ISO 17025 certification

RISK-BASED POST-MARKETING SURVEILLANCE (PMS)

Help develop risk-based PMS programs.

Training on risk - based PMS.

How Does PQM+ Sustainably Strengthen Regulatory and QA Systems?

PQM+ Objectives

- Governance for medical product quality assurance systems improved.
- Country and regional regulatory systems to assure the quality of medical products in the public and private sectors improved.
- Financial resources for medical product quality assurance optimized and increased.
- Supply of quality-assured essential medical products of public health importance increased.
- Global medical product QA learning and operational agenda advanced.

Sustainability Requires Planning

- **Sustainability** is the ability of a local system to produce desired outcomes over time and to be both resilient and adaptive in the face of changing circumstances. (*Local Systems: A Framework for Supporting Sustained Development. USAID, 2014*)
- **Sustainability** cannot be an afterthought; it is a forethought.

What Makes a Regulatory or QA System Sustainable?

- Resource availability and optimal use
- Process efficiency
- Workforce capacity
- Good governance, leadership and management
- Enabling policy, legal, and regulatory framework

QC Laboratories

- In **Nigeria**, supported multiple QC labs to achieve accreditation. Now 100 percent of quality tests for pharmaceuticals are locally performed by these facilities.
- In 2017 alone, QC tests conducted by these labs informed the approval of 11,240 new or generic medical products for the Nigerian market.
- NIPRD Laboratory ISO 17025 Re-accreditation and migration to NINASS for ISO 17025 accreditation resulting into over 50% cost savings.

E-Learning and Building Capacity

- *Strengthening Quality Assurance Systems for Medical Products* available on USAID's Global Health eLearning Center platform.
  - Since September 2019, thousands of visits from 75 countries.
  - https://globalhealthlearning.org/course/strengthening-quality-assurance-systems-medical-products
- *Foundations of Good Manufacturing Practices* available on PQM+ website
  - More than 9,000 have registered to take this free course and 4,000 have completed it.
  - https://www.usp.org/global-public-health/promoting-quality-of-medicines/gmp-online-course

Conclusions

- Product regulation and QA require a **whole systems approach.**
- QA is spread across an ecosystem of many actors.
- As a result, there are many points of vulnerability and many opportunities to strengthen the system.
- Sustainability can be built into regulatory and QA systems.
- Financial self-reliance, an adequate and competent workforce, good governance, and an enabling policy/legal environment underpin sustainability.

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QUESTIONS?

THANK YOU!

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