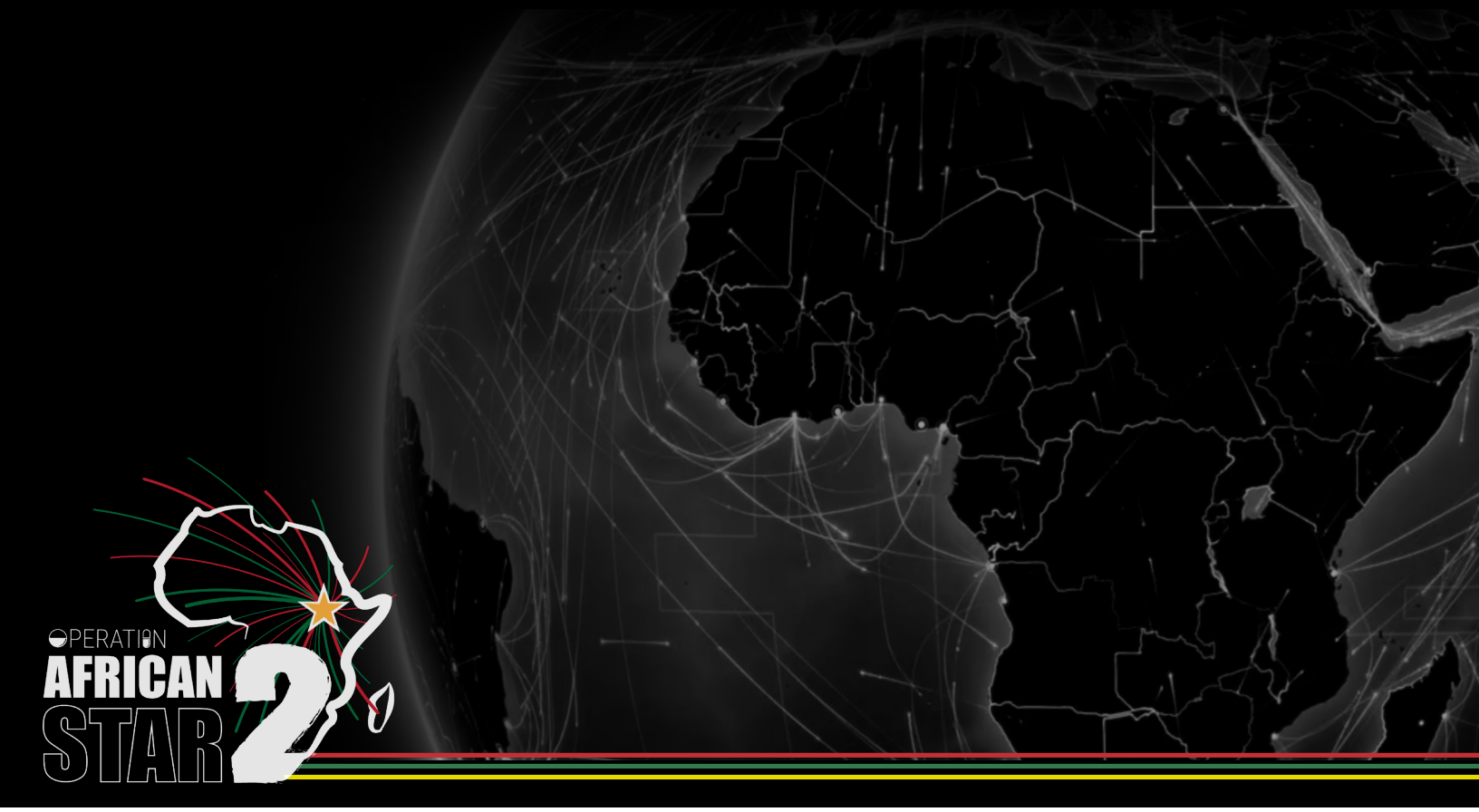
Operation African Star 2

2025 Pharmaceutical Traceability Pilot Program



Ministry of Health

REPUBLIC OF KENYA

National Drug Authority

Safe Drugs Save Lives

National Association of Boards of Pharmacy

NABP
National Association of Boards of Pharmacy

Introduction

On behalf of the Pharmacy and Poisons Board (PPB) of Kenya and the National Drug Authority (NDA) of Uganda, we would like to extend our gratitude for your support and assistance in the successful conclusion of Operation African Star 2 (African Star 2). African Star 2 represents a pivotal evolution in the ongoing efforts to safeguard public health in East Africa by strengthening regulated pharmaceutical supply chains and protecting consumers from violative and illicit medical products. The intent of this memorandum is to provide an overview regarding: (1) relevant background information; (2) the deployment schedule and the participants; (3) significant findings and observations; and (4) envisioned next steps.

Kenya Pharmacy and Poisons Board

Ugandan National Drug Authority

Background Information

African Star 2 represents a pivotal evolution in the ongoing efforts to safeguard public health in East Africa by strengthening regulated pharmaceutical supply chains and protecting consumers from falsified, substandard, unauthorized, or otherwise illicitly manufactured health products, pharmaceutical preparations, and medical devices and equipment (illicit medicinal products) impacting East Africa. Building upon the successes of the 2024 Operation African Star 2, this initiative, spearheaded jointly by the PPB of Kenya and the NDA of Uganda, (collectively known as the National Health Regulatory Authorities, or NHRAs), alongside a broad coalition of domestic and international partners, marks a strategic advance toward proactive, systemic, and preventative measures to accompany responsive approaches developed under the previous operation.

The strategic evolution observed in Operation African Star 2, which established a comprehensive Pharmaceutical Traceability Pilot Program in 2025 in tandem with direct enforcement actions and the targeting of violative shipments developed in the initial 2024 operation, underscores a maturing understanding of the complex illicit drug trade. The initial operation involved joint enforcement teams actively profiling and intercepting suspicious, violative, or illicit products, leading to criminal investigations and product seizures. This was a necessary response to immediate threats. The current emphasis under African Star 2 was on tracing drug movement from entry to dispensing, aimed at strengthening regulated supply chains and protecting consumers, and signifies a recognition that reactive measures alone are insufficient against increasingly sophisticated criminal networks. This progression demonstrates a commitment to building long-term resilience and transparency within the pharmaceutical supply chain, thereby addressing root causes of vulnerability, enhancing public health protection more sustainably, and facilitating backtracking investigations to the sources of violation.

The core of African Star 2 is the Pharmaceutical Traceability Pilot Program. This first-of-its-kind initiative leverages the United States National Association of Boards of Pharmacy®'s (NABP®'s) Pulse platform for end-to-end drug tracking and the International Narcotics Control Board's (INCB's) IONICS platform for real-time intelligence sharing among law and regulatory enforcement agencies.

Pulse by NABP™ (Pulse) is a traceability platform that is currently in use in the US for purposes of conducting product verifications throughout the pharmaceutical supply chain. Pulse has been implemented in 30 US states and at the federal level by US Drug Enforcement Administration. The use case within African Star 2 leverages the same underlying technology that has been implemented in the US and is based on GS1 global standards, specifically the GS1 Data Matrix.

Many pharmaceutical manufacturers have started to affix the Global Trade Item Number (GTIN), lot/batch number, expiration date, and (in some cases) the serial number onto pharmaceutical products. These items are collectively known as *product identifiers.* Product identifiers are embedded in the GS1 Data Matrix, which appears as a machine-scannable 2D (two-dimensional) barcode, like a QR Code, and is affixed by the manufacturer on every retail package.

Under African Star 2, products containing the GS1 Data Matrix can be scanned through Pulse by using a simple bar scanner or smartphone. Once a product GTIN is scanned, the data are compared against the Pilot Reference Database[1] to determine whether the product labeled

1 The Pilot Reference Database was limited to 86 pharmaceutical products, categorized by GTIN. This was a known limitation heading into the pilot. Future use cases will require a more robust Reference Database and manufacturer/donor participation.

exists and whether it is authorized for distribution in either Kenya or Uganda. The scan is also associated with a time, date, and location of the scan, such as a pharmacy, pharmaceutical distribution warehouse, mail service facility, or express courier hub, such as DHL. These scans enable the NHRAs to identify where a specific serialized unit of a particular product was at a point in time.

The NHRAs are in the process of implementing national pharmaceutical traceability and product serialization requirements

Deployment Schedule

Operation African Star 2 was kicked off with a global webinar that took place on June 5, 2025. The virtual webinar, *Operation African Star 2: Approaches to Strengthen Regulated Supply Chains and Protect Consumers Against Illicit Products*, brought together numerous international, regional, domestic, and trusted private sector partners in preparation of operational activities planned in the field. In this webinar, NDA and PPB led discussions with stakeholders on practical approaches to strengthen regulated supply chains and protect consumers against illicit products.

Participating organizations in the webinar included the following:

International:

- INTERPOL
- International Narcotics Control Board (INCB)
- Organisation for Economic Co-operation and Development (OECD)
- Universal Postal Union (UPU)

National:

- United Kingdom Intellectual Property Office (UKIPO)
- United States Agency for International Development, Office of Inspector General (OIG)
- United States Food and Drug Administration (FDA)

Private sector partners:

- Pharmaceutical Security Institute (PSI)
- Transnational Alliance to Combat Illicit Trade (TRACIT)
- United States National Association of Boards of Pharmacy (NABP)

The webinar provided an overview of in-country operational actions (preparatory actions, workshops, and field work) that were held in Nairobi, Kenya (July 10-11, 2025), and Kampala, Uganda (July 14-15, 2025). Day 1 of each workshop included educational sessions, threat assessments, panel discussions, and practical training on the use of Pulse and INCB's IONICS platform. Day 2 featured operational field work, where Pulse by NABP was used to scan pharmaceutical products as part of both scheduled and unannounced inspections/visits to regulated entities and mail/shipping service locations opportunistically throughout the distribution chain. INCB GRIDS Programme Cyber-Communications Centre provided national support to the field with a real-time, open-source intelligence examining company and product bona fides for products flagged by Pulse, and reviews and exchanges of spurious pharmaceutical products via IONICS.

Kenya Workshop – Four Points Sheraton, Nairobi, Kenya

- Workshop Day 1, theoretical sessions, July 10, 2025
- Workshop Day 2, Field Exercises Preparation Meeting, July 11, 2025
- Workshop Day 2, Operational Field Actions, July 11, 2025
    - Corner Pharmacy (Corner Plaza)
    - DHL – JKIA Airport
    - Dovey Pharma – Westlands
    - Georgiolani Pharmacy – Chania Rd
    - Good Life Pharmacy – Westlands Square
    - Instant Pharmacy – Dagoertti Corner
    - Malibu Pharmacy Limited – Westlands
    - Meds and Allies Pharmaceuticals
    - Meresi Healthcare, Ltd – Karandini Rd
    - Queensville Pharmacy – Argwings Kodhek Rd
    - Ron Pharmacy – Mpaka Rd
    - Treelane Chemist (Flame Tree Pharmacy, Ltd, at The Mall, Ring Road Westlands)
    - Wiseman's Pharmacy – Upper Hill
- Workshop Day 2, Field Exercise Debrief, July 11, 2025

Figure 1. Field inspections at warehouses and pharmacies in Nairobi.

Uganda Workshop – Golden Tulip Canaan, Kampala, Uganda

- African Star 2 – Workshop Day 1, July 14, 2025
- Workshop Day 2, Pre-Field Exercises Prep Meeting, July 15, 2025
- Workshop Day 2, Field Exercises, July 15, 2025
    - Joint Medical Stores
    - Joint Medical Stores (Cold Chain) – Gogonya Rd
    - Wide Spectrum (Warehouse) – Tuffnel Drive
    - Henber Pharmacy – Nabunya Rd/Rubaga Rd
    - Naham Pharmacy – Lukuli Nanganda
    - Rewards Pharmacy – Martin Rd
    - Mwiru Pharmacy – Kajjansi

    - Josam Pharmacy – Kira Rd
    - Platinum Plus Pharmacy – Bombo Rd
    - Next Generation Pharmacy – Katimbo
    - C&A Pharmacy – Spring Rd
    - 3T Pharmacy – Kisenyi Area
    - Jayvihan Investments (U) LTD – Entebbe Rd
    - Medisuite Pharmacy – Mobutu Rd
- Workshop Day 2, Field Exercise Debrief, July 15, 2025

Participants

Anti-Counterfeit Authority, Kenya	Novartis Kenya
Directorate of Criminal Investigations, Anti-Narcotics Unit	Pfizer Kenya
GS1 Kenya	Pharmaceutical Security Institute (PSI)
GS1 Uganda	Pharmacy and Poisons Board (PPB), Kenya
Interpol Kenya	Postal Services Kenya
Kenya Association of Pharmaceutical Industries	United States Postal Inspection Service (USPIS)
Kenya Revenue Authority	United States Agency for International Development, Office of Inspector General (OIG)
National Association of Boards of Pharmacy (US)	United States Customs and Border Protection (CBP)
National Drug Authority (NDA), Uganda	United States Department of State, Diplomatic Security Service (DSS)
National Intelligence Service, Kenya	Universal Postal Union (UPU), United Nations

Field Exercise Findings

The bullets below are intended to provide a high-level overview of the field exercise findings. Please see Appendix A, B, C, and D for additional information.

- A total of 731 products were scanned across 27 locations during the operational field work.
    - In Nairobi, the pilot teams scanned 297 pharmaceutical products across 13 locations.
    - In Kampala, the pilot teams scanned 434 pharmaceutical products across 14 locations.

- Products scanned included pharmaceuticals labeled to treat a range of illnesses and conditions, including various forms of cancer, epilepsy, blood disorders, mental health issues, analgesic medications, and birth control, as well as diagnostic products such as HIV and TB test kits.
- Pulse by NABP was successful in capturing scan data for >99.9% of products containing a GS1 Data Matrix.
    - For products in the Pilot Reference Database, Pulse was 100% successful in capturing scan data.
    - For products not in the Pilot Reference Database, Pulse was >99.9% successful in capturing scan data.
- Scans captured six GTINs of products in the Pilot Reference Database.
- A total number of 303 distinct GTINs were scanned.
- During the operational field exercises, inspectors found that 46 products (6% of scans) were diverted outside the product's intended supply chain, falsified, substandard, unauthorized, or otherwise illicitly manufactured pharmaceutical products.
    - In these instances, inspectors were trained on how to utilize Pulse to scan a product and then build an investigation by capturing photos and logging additional investigative details.
    - Depending on the findings, inspectors were trained on how to incorporate investigative findings into the IONICS platform.
    - Company and product bona fides were examined with governments in real-time with support by INCB Regional Technical Officers for Africa, the GRIDS Cyber-Communication Centre in Vienna, Austria, and the open-source intelligence tool SNOOP.

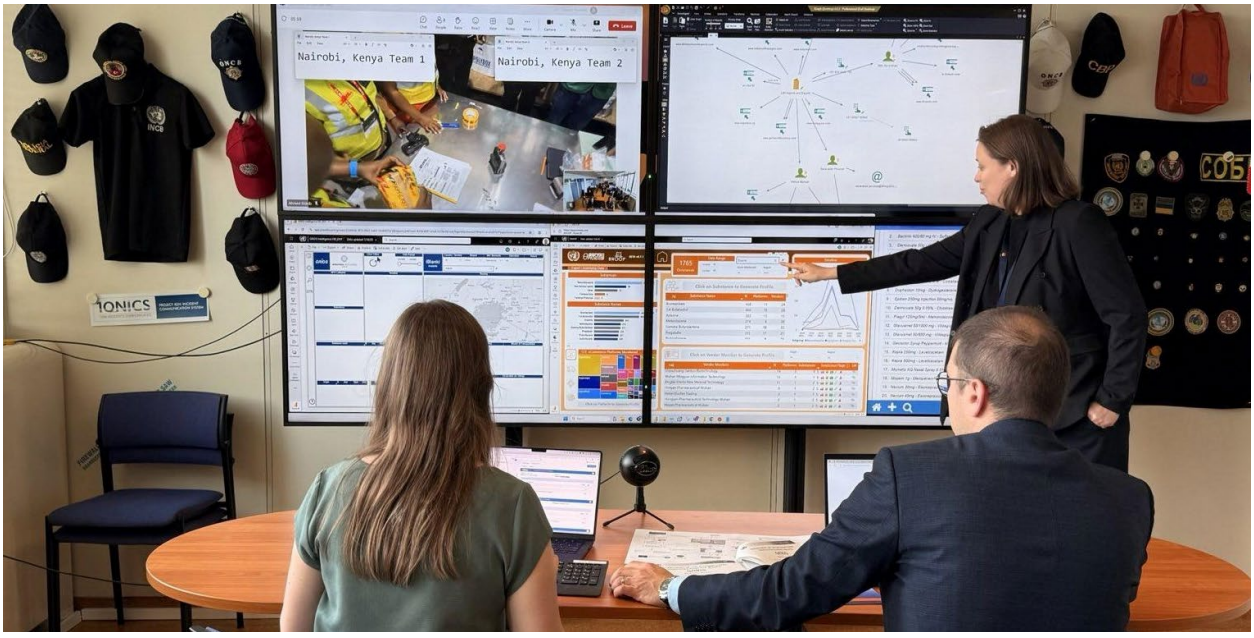


Figure 2. INCB GRIDS Cyber-Communications Centre in Vienna provided live support to governments during field work.

- Violative products identified accounted for 48,000 violative pharmaceutical units, largely branded non-psychoactive products.

    - Psychoactive substances included morphine, flunitrazepam, pethidine, and piracetam.
- Countries affected by the detected violative pharmaceuticals included Kenya, Ghana, Uganda, and Turkey.
- Opportunity exists to deepen areas of cooperation not only amongst the international participants but also between stakeholders in Kenya and Uganda.
- Trusted private sector partners from the pharmaceutical industry provided product-level expertise, which proved invaluable to participants.
- There is a need to ensure that access to secure communication platforms, trafficking targeting tools, and safe interdiction approaches with personal protective equipment are extended to all officers prior to initiating the operational phase.

Observations

Front-line NHRA personnel in Kenya and Uganda, much like their counterparts around the world, are faced with the challenge of determining if a product was legitimately manufactured in a foreign country, authorized for importation, shipped and stored properly, and associated with a valid prescription. While certainly not a panacea, the Pharmaceutical Traceability Pilot represents building blocks that demonstrate that both affordable and accessible hardware and software are available and ready for use to trace products affixed with a GS1 Data Matrix – wherever the products are in the supply chain. In addition, the more pharmaceutical manufacturers and donor organizations that are willing to share their GTINs, the more visibility they will achieve as the scanning of pharmaceutical products scales. In addition to manufacturers and donor organizations gaining visibility, the NHRAs will also gain an additional tool in detecting diverted products and identifying substandard and falsified medications.

The fact that many manufacturers have already voluntarily affixed serial numbers and product identifiers to their packaging enables PPB and NDA to identify whether a product is authorized to be “in country” and to identify the location of products wherever they are in the supply chain. While both nations are in the process of implementing their serialization systems, manufacturers may consider the opportunity to enable product verifications for their products as an interim step toward full traceability. This would allow manufacturers to realize the investment they have already made in serializing products, while also equipping the NHRAs with additional tools to protect patients. As traceability scales in these countries, pharmacies and health care providers would also be able to leverage product verification and serialization.

Identification using private sector serialization allows law and regulatory enforcement agencies the information and intelligence needed to identify suspicious pharmaceutical products, potential diversion, or unauthorized distribution throughout the supply chain. This information, coupled with seizures, suspicious shipments, or illicit manufacture incidents exchanged by governments via IONICS, supports investigations by law and regulatory enforcement agencies into the sources of diversion or the illicit manufacture of pharmaceutical products.

Envisioned Next Steps

Action Item 1

Objective	Debrief stakeholders.
Outcome	Ensure participants and leaderships are aware of the activities and outcomes of the operation.
Timeline	This will occur within 30 days of the issuance of this missive.

Action Item 2

Objective	Strengthen bilateral cooperation.
Outcome	PPB and NDA will enter into a memorandum of understanding, intended to enhance our ability to collaborate via the exchange of intelligence, joint efforts, and training.
Timeline	This will occur within 90 days of the issuance of this missive.

Action Item 3

Objective	Increase manufacturer participation in ongoing traceability pilot.
Outcome	PPB and NDA will contact pharmaceutical manufacturers, drug donor organizations, and other parties that ship medication in country to request assistance in populating the Pilot Reference Database.
Timeline	This will occur within 60 days of the issuance of this missive.

Action Item 4

Objective	Work with GS1 to match GTINs with manufacturers.
Outcome	PPB and NDA will work with GS1 offices in Kenya and Uganda to explore ways to identify manufacturers for scanned GTINs that are not in the reference database.
Timeline	This will occur within 30 days of the issuance of this missive.

APPENDIX A: Products Loaded Into Pilot Reference Database

Table 1. GTINs Loaded Into the Pilot Reference Database

Products loaded into the Pilot Reference Database	
Product Name	**Global Trade Item Number**
ACTEMRA 400MG/20ML 1VIAL IV SUBSA-30	07613326001281
ACTEMRA 80MG/4ML 1VIAL IV SUBSA-30	07613326001298
ACTEMRA VIALS 400 MG/20 ML INTRAVENOUS 1 EA US	00350242137010
ALDACTONE 100MG TAB 1X10 BLST EX	05415062308004
ARICEPT 10MG FCT 2X14 BLST MEAG	05415062306048
ARICEPT 5MG FCT 2X14 BLST MEAG	05415062008188
ATACAND PLUS 16MG/12.5 MG	08699786010055
AVASTIN VIALS 100 MG/4 ML 1 EA SUBSA-24	07613326001304
AVASTIN VIALS 400 MG/16 ML 1 EA GCC-24	07613326015974
AVASTIN VIALS 400 MG/16 ML 1 EA SUBSA-24	07613326001311
CELLCEPT 500MG 50TAFI SUBSA-36	07613326003513
DALACIN 300MG HFC 2X8 BLST ECAWA	05415062373958
DALACIN C 75MG/5ML FG 1X80ML GBTL EXE	05415062307977
DIFLUCAN 150MG CAP 1X1 BLST AE	05415062307595
DIFLUCAN 50MG PFC 1X7 BLST MEA	05415062310724
D-MEDROL 40MG/ML SASUS 1X1ML GVL MEA	05415062309445
D-MEDROL 40MG/ML SASUS 1X2ML GV EXE	05415062008270
EDURANT 25MG	06001390139718
EDURANT 25MG	06009713760168
ELELYSO 200UNITS/VIAL SPO 1X10ML GVL US	00300690106014
EVRYSDI 0.75MG/1ML 80POSO SUBSA-24	07613326058445
GAZYVARO 1000MG/40ML 1VIAL IV SUBSA-36	07613326059480
HEMLIBRA 105MG/0.7ML 1VIAL SC SUBSA-24	07613326024464
HEMLIBRA 150MG/1ML 1VIAL SC SUBSA-24	07613326024457
HEMLIBRA 30MG/1ML 1VIAL SC SUBSA-24	07613326024433
HEMLIBRA 60MG/0.4ML 1VIAL SC SUBSA-24	07613326024440
HERCEPTIN 150MG 1VILY IV SUBSA-48	07613326001458
HERCEPTIN 440MG 1VILY IV COPK SUBSA-48	07613326001441
HERCEPTIN VIALS 600 MG/5 ML SUBCUTANEOUS 1 EA SUBSA-21	07613326015868

INSULIN ASPART	00373070100117
INTELENCE 100MG	06001390125315
INTELENCE 100MG	06009713760250
JANUMET 50/500M	08699636090923
KADCYLA 100MG 1VILY SUBSA-36	07613326032674
KADCYLA 160MG 1VILY IV SUBSA-36	07613326032681
KADCYLA LYOPHILIZED VIALS 100 MG 1 EA WAC-EF	07613326031684
KADCYLA LYOPHILIZED VIALS 160 MG 1 EA GCC-36	07613326016988
KADCYLA LYOPHILIZED VIALS 160 MG INTRAVENOUS 1 EA WAC-EF	07613326033329
MABTHERA 100MG/10ML 2VIAL IV SUBSA-30	07613326001472
MABTHERA 1400MG/11.7ML 1VIAL SC SUBSA-36	07613326003520
MABTHERA 1600MG/13.4ML 1VIAL SC SUBSA-30	07613326003537
MABTHERA VIALS 500 MG/50 ML INTRAVENOUS 1 EA SUBSA-30	07613326001489
MERONEM 1G 30ML SSOL X10 VL CTN PFE EXP	05415062343098
MERONEM 500MG 20ML SSOL X10 VL CTN EXP	05415062343111
MIRCERA 120MCG/0.3ML 1ASRG SUBSA-36	07613326001366
MIRCERA 50MCG/0.3ML 1ASRG SUBSA-36	07613326004091
MIRCERA 75MCG/0.3ML 1ASRG SUBSA-36	07613326001359
NEORECORMON PREFILLED SYRINGES 5000 IU/0.3 ML 6 EA SUBSA-24	07613326001588
NEXIUM ESOMEPRAZOLE 20MG	08699786040038
NIMENRIX SFDPO 1X0.5ML GVL+SYR EXAF	05415062374825
OCREVUS 300MG/10ML 1VIAL IV SUBSA-24	07613326034937
PERJETA 420MG/14ML 1VIAL IV SUBSA-24	07613326036511
PHESGO 1200/600MG/15ML 1VIAL SC SUBSA-18	07613326041416
PHESGO 600/600MG/10ML 1VIAL SC SUBSA-18	07613326041461
PHESGO VIALS 1200/600 MG 15 ML SUBCUTANEOUS 1 EA GCC-18	07613326033657
PHESGO VIALS 600/600 MG 10 ML SUBCUTANEOUS 1 EA GCC-18	07613326033749
PHESGO VIALS 600/600 MG 10 ML SUBCUTANEOUS 1 EA WAC-EF-18	07613326039284
POLIVY 140MG 1VILY IV SUBSA-24	07613326024280
POLIVY 30MG 1VILY IV SUBSA-24	07613326029049
PREVENAR 13 VAC 10X0.5ML PFS NG	05415062374795
PREVENAR 13 VAC 1X0.5ML PFS NG	05415062374559
PREZISTA 150MG	06001390130272
PREZISTA 400MG	06001390139817
PREZISTA 600MG	06001390129832

PREZISTA 75MG	06001390130258
RECORMON 2000IU/0.3ML 6ASRG SUBSA-24	07613326001571
ROACCUTA 10MG 30CAPS SUBSA-36	07613326001595
ROACCUTA 20MG 30CAPS SUBSA-36	07613326001601
ROCEPHIN 1000MG 1VIPO IM COPK SUBSA-36	07613326001502
ROCEPHIN 1000MG 1VIPO IV COPK SUBSA-36	07613326001519
ROCEPHIN 2000MG 1VIPO INF SUBSA-36	07613326001526
ROCEPHIN 500MG 1VIPO IM COPK SUBSA-36	07613326001557
ROCEPHIN 500MG 1VIPO IV COPK SUBSA-36	07613326001564
ROZLYTREK 100MG 30CAPH SUBSA-24	07613326037303
ROZLYTREK 200MG 90CAPH SUBSA-24	07613326037471
TECENTRIQ 1200MG/20ML 1VIAL IV SUBSA-36	07613326029544
TECENTRIQ 840MG/14ML 1VIAL IV SUBSA-36	07613326029551
TECENTRIQ VIALS 1200 MG/20 ML INTRAVENOUS 1 EA WAC-EF-36	07613326025287
TRESIBA FLEXTOUCH	00301692660153
VABYSMO 6MG/0.05ML 1VIALI-VITRE SUBSA-30	07613326076135
XALATAN 50MCG/ML OPSOL 1X2.5ML PBTL EXAF	00840149653176
XATRAL XL 10 MG	08699809037748
XELODA 150MG 60TAFI SUBSA-24	07613326002172
XELODA F.C. TABLETS 500 MG IN PVC BLISTER 120 EA SUBSA-36	07613326002189
XOFLUZA 20MG 2TAFI SUBSA-24	07613326054799
XOFLUZA 40MG 2TAFI SUBSA-24	07613326054782
ZAVICEFTA 2000/500MG POW 1X10 VL EAF	05415062374474
ZITHROMAX 1200MG POS 1X1 PBTL EAF	05415062376188
ZITHROMAX 500MG TAB 1X3 BLST EAF	05415062374467

APPENDIX B: Companies With Products Scanned NOT in Pilot Reference Database

The 55 companies with unique license keys are:

ABBOTT DIAGNOSTICS TECHNOLOGIES AS	KAYSERSBERG PHARMACEUTICALS (INACTIVE)
ABBOTT RAPID DIAGNOSTICS JENA GMBH	KRKA, TOVARNA ZDRAVIL, D.D., NOVO MESTO
ABDİ İBRAHİM OTSUKA İLAÇ SAN. VE TİC. A.Ş.	LABORATOIRES THEA S.A.S
ACCORD HEALTHCARE LIMITED	LABORATÓRIOS BASI - IND. FARMACÊUTICA, SA.
AL ANDALOUS FOR PHARMACEUTICAL S.A.E.	LES LABORATOIRES SERVIER INDUSTRIE
ALLIANCE PHARMACEUTICALS LIMITED	MERCK SHARP & DOHME LLC
ALMIRALL S.A.	MERCK SHARP & DOHME İLAÇLARI LİMİTED ŞİRKETİ
ASPEN GLOBAL INCORPORATED	MSN LABORATORIES PVT LTD
ASTRAZENECA AB	MYLAN LABORATORIES LIMITED
BAYER AG DIVISION PHARMA	NOVARTIS PHARMA AG
BAYER SAUDI ARABIA	NOVO NORDISK PHARMA, INC.
BİLİM İLAÇ SANAYİİ VE TİCARET ANONİM ŞİRKETİ	ORCHIDIA PHARMACEUTICAL INDUSTRIES
BRISTOL LABORATORIES LIMITED	PFİZER PFE İLAÇLARI ANONİM ŞİRKETİ
C.P. SCHMIDT GMBH	PHARMA INTERNATIONAL COMPANY
CEPHEID AB	ROCHE MOLECULAR DIAGNOSTICS
CHEPLAPHARM ARZNEIMITTEL GMBH	SANDOZ AG
DAIICHI SANKYO İLAÇ TİCARET LİMİTED ŞİRKETİ	SANOFI SAĞLIK ÜRÜNLERİ LTD.ŞTİ.
DEVA HOLDİNG A.Ş.	SANOFI WINTHROP INDUSTRIE
FAES FARMA S.A.	SUN PHARMA UK LIMITED
GLAXOSMITHKLINE SERVICES UNLIMITED	SUN PHARMACEUTICAL INDUSTRIES LTD
GLENMARK PHARMACEUTICALS INC., USA	TILLOMED LABORATORIES LIMITED
GLOBAL ADVANCED PHARMACEUTICALS	TORRENT PHARMA (UK) LTD
GOWRIE LAXMICO LIMITED	UCB PHARMA ANONİM ŞİRKETİ
GULF PHARMACEUTICAL INDUSTRY/JULPHAR PUBLIC JSC	UNICHEM LABORATORIES LTD
HALEON UK EXPORT LIMITED - REP. OFFICE	WALLACE MANUFACTURING CHEMISTS LIMITED
HOKY CORPORATION	ZENTIVA, K.S.
JNTL TURKEY TÜKETİCİ SAĞLIĞI LİMİTED ŞİRKETİ	ZEST PHARMA
JUBILANT GENERICS LTD	

APPENDIX C: GS1 Country Registrations

Products are licensed with GS1 in Austria, Belgium/Luxembourg, China, Czechia, Denmark, Egypt, France, Germany, India, Jordan, Mauritius, Norway, Portugal, Saudi Arabia, Slovenia, Spain, Sweden, Switzerland, Türkiye, United Arab Emirates, the United Kingdom, and the United States of America.

APPENDIX D: Operational Results

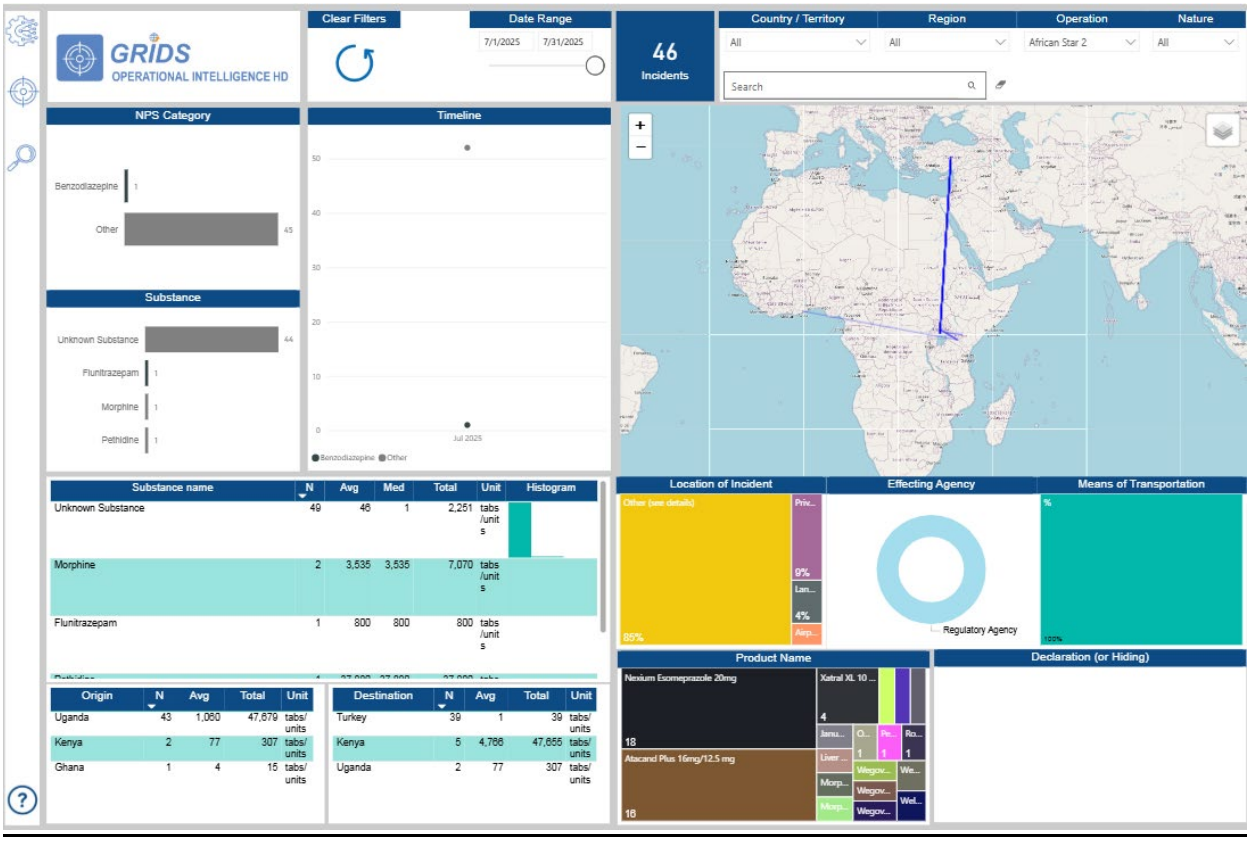


Figure 3. INCB IONICS | GRIDS Operational Intelligence HD depicting 46 incidents (some with more than one pharmaceutical) and countries affected during the operational period. Note: IONICS provides details for psychoactive products (eg, opioids and benzodiazepines), while non-psychoactive pharmaceutical substances are depicted as "unknown substance").

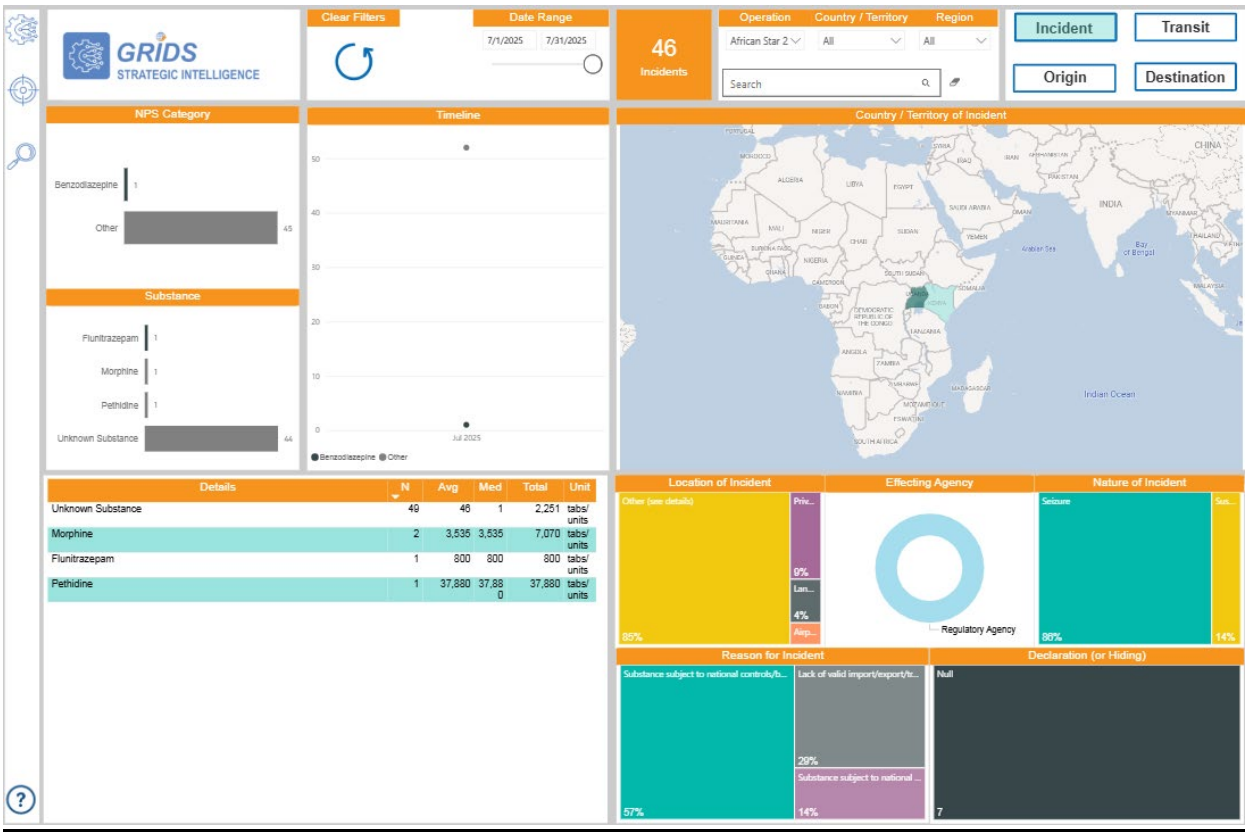


Figure 4. GRIDS Strategic Intelligence depicting the country of incident of the 46 detections during the operational period.