

The Global Health Barometer

Secondary use of care data for monitoring and evaluation

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Functionality

- Centralization of (aggregate) data from multiple sources in a **data warehouse**
- **Data-entry based on API (not via user interface)**
 - **Receives data from source applications** via http, https, smtp, sms... (electronic medical record, HR systems, lab systems...) in Clinix XML format
 - **Data extractors** must be developed in source application
 - Produced (aggregate) data must be recognizable by GHB
 - Includes **data transmission control mechanisms** (ACK messages)
 - Adapted to unreliable and intermittent connectivity

Functionality (2)

- **Data storage** according to generic data model
 - Based on **GEHR generic health information architecture**
 - **Records** (uid, site) => DHIS2 org/unit
 - **Transactions** (uid, type, date/time, author) => DHIS2 data set
 - **Items** (uid, type, value, editor, modifiers) => DHIS2 data element + category combo option
 - UIDs define acceptable information elements (Clinix)
- **Data visualization** through web interface
 - Collection of plug-ins (modules)
 - **Specialized presentation** of **predefined** transaction types, item types and indicators in GHB database

Functionality (3)

- **Global health care provider registry**
 - Registry of care providers with **unique ID**
 - Organized by country-specific administrative units
 - Provides an encrypted store and forward mechanism for **inter-provider communication** (PDF and Clinix format based)
 - **Reference**
 - **Counter-reference**
 - Provides a point-to-point XMPP **chat service**
 - **Real-time provider communication**

Functionality (4)

- **Data export**
 - To **DHIS2** in DXF2 format (uses DHIS2 https interface)
 - **Mapping of GHB** record uids, transaction types and item types on **DHIS2** org/units, dataset uids and data element uids
 - **Re-aggregation of GHB data** to match DHIS2 requirements
 - **Configurable periodicity**
 - To **WHONet** data warehouse
 - Antibiotics resistance data

Plugins

- Public sites summary (mainly OpenClinic today)
 - **Core data volume** indicators
 - **GIS & GISMap** modules
 - Anonymous sites (only country & self-reported city)
- Project sites summary
 - Core data volume indicators with trend graphs
 - **Site identification**
 - **HIS server information**
 - **Detailed volume data** (table records) with trend graphs
 - **Demographic data** (gender / age distribution) with trend graphs

Plugins (2)

- Project summary (2)
 - **Financial data** (revenue per health service category)
 - **Diagnostics**
 - Incidences with trend graphs
 - Based on KPGS classification
 - **Mortality** (absolute and relative) with trend graphs
 - Based on KPGS classification
 - **Human resources**

Plugins (3)

- Project summary (3)
 - **Bed occupancy** with trend graphs
 - **Vaccination follow-up**
 - **Patient ID card printing** facility

Status

- 500+ hospitals in 70+ countries periodically send performance and activity data on a voluntary basis
 - Anonymous
 - Approximative geo-localization (country, nearby city)
 - 50 million+ health care services and associated information reported in 5 years
- 60 identified hospitals with close follow-up
 - DRC, Rwanda, Burundi, Senegal, Mali, Tanzania, Ethiopia, Congo Brazzaville, Gabon

Future planning

- New plugins
 - **Clinical data quality indicators**
 - Contra-indicated drug prescriptions (diagnostics, allergies)
 - Severe drug-drug interactions
 - Clinical pathway adherence (small peripheral facilities)
 - Quality of diagnostic reasoning (K4H)
 - **Secure clinical mailer**
 - **Early warning module**
 - Combining facility information with unlabeled health related big data (social media, RSS feeds...)
 - **Health insurance coverage indicators**

Future planning (2)

- New plugins (2)
 - **Ambulance** availability
 - **Biomedical equipment** status information
 - **Patient satisfaction and QoL** information
 - PSQ-18
 - SF-36
- Implementation of **country instances**

Differences with DHIS2

- GHB provides **no data-entry GUI** (no user training)
- GHB focuses on data sources at **district level or higher**
- Generic database but **predefined querying**
 - Business specific **preconfigured plugins**
 - **No user training**
- GHB item types extractor/plugin dependent (mandatory GHB based standardisation => **indicator harmonization**)
- Mandatory use of **international data standards**

Demo

- <http://www.globalhealthbarometer.net>
- Login: chuk
- Password: alfa01