International infrastructure needed for signal strengthening and hypothesis testing

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Global Collaborative Networks for Vaccine Safety Studies
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Growing Need for Global Collaboration

- Immunization programs increasingly global
- Vaccines distributed rapidly worldwide
- Large populations reached fast
- Vaccines developed and marketed in LMIC first
- Safety concerns spread by 24h-newsticker globally

Local concerns have global effects rapidly
Growing Awareness of Single Center Limitations

- Populations often too small to assess rare events
- Commensurate results by shared methods
- Peers and publishers require reproducibility
- Highly specialized skills needed rapidly at local level

Global support useful at local level
Evaluation Process of Safety Concerns

**Signal**
- PMS
- Rumor
- Study
- Generation

**Strengthen**
- O/E Calculation
- Background
- Plausibility
- Advisory Boards

**Testing**
- Case Control
- SCCS
- Cohort

- Causality
- Etiology
- Pathogenesis

Population Based - Health Care - Databases
Different Types of Health Care Databases

Exposure
- Immunization registries
- Primary care databases
- Specialist databases
- Claims databases

Outcome
- Disease registries
- Primary care databases
- Hospital databases
- Claims databases

- Each possible linkage has its methodological peculiarities
- International linkage has to account for heterogeneity
Different formats of databases

Electronic medical record → Transfer PC → National Data Repository
Sharing Data Across Centers and Borders

Harmonized data collection → Standardized data transfer → Unified data analysis

Electronic patient data

Transfer PC

Person level raw data

Person level anonymized data

Person level aggregate data
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Building on existing expertise and infrastructure

- National data linkage experience
  - DK, UK, AUS, VIET, USA

- International data linkage experience
  - Drug Area, VAESCO, GRIP, Global GBS Study

- Models for international collaboration
  - Online collaboration platform
  - Data collection and transmission tools
  - Quality control tools and mechanisms
  - Ethical and data protection framework
  - Data security standards meeting current regulation
Global Federation of Databases

Global Vaccine Safety Data Link

- Background Rates
- Associations
- Benefit-Risk

Capacity Building
Standardization
Training

Global Collaborative Network for Vaccine Safety Studies
Representation of each Continent and Region
Platform for Global Collaboration

- Data Collection
- Data Transfer
- Data Security

- Protocol
- Case definitions
- Data Analysis

- Standard process
- Rotating PI-ship
- Communication

- Technical
- Governance

- Scientific
- Financial

- Stable core fund
- Flexible scheme
- Rapid response
11-Step Data Linkage Program

- Bringing together investigators from different countries
- Building a network of shared databases across Europe
- Mapping terminologies to extract data across languages
- Agreeing to a single protocol to be used in every location
- Automating case classification to increase precision and comparability
- Aggregating data locally by a distributed data model to protect privacy
- Transmitting aggregated data in a uniform format to a central server
- Employing novel statistical methods for central data analysis
- Determining the risk of the adverse event under investigation
- Sharing the result with public health decision makers

https://brightoncollaboration.org/public/what-we-do/data-linkage/program.html