The HMO Research Network: Opportunities for Collaboration

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The HMO Research Network

- 16 HMOs with formal research capabilities
- Public domain research
- Current combined cohort is ~ 14.5 million persons
  Estimated 3.6 million children
  ~ 4.5% of U.S. population
HMORN Members

- Fallon
- Geisinger
- Group Health Cooperative
- Harvard Pilgrim
- HealthPartners
- Henry Ford
- KP Colorado
- KP Hawaii
- KP Northern California
- KP Northwest
- KP Southeast
- KP Southern California
- Lovelace
- Maccabi
- Marshfield
- Scott & White
Welcome to the HMO Research Network

The HMO Research Network is an organization of HMO research programs whose mission is to use our collective scientific capabilities to integrate research and practice for the improvement of health and health care among diverse populations.

What would you like to do today?
Use the menu above or click on the checkboxes below to find what you need.

Would you like to:

- Connect with collaborators for new research studies?
- Get tools to make your research easier?
- Find up-to-the-minute information about the HMORN conference?

www.hmoresearchnetwork.org
Types of Research Conducted

- Epidemiology, including genetic research
- Health services research
- Comparative effectiveness
- Biostatistics

and many other fields
Patient Populations

• Include commercially insured, Medicaid, Medicare, and individually insured

• Racial/ethnic composition varies by HMO

• Socioeconomic status has reasonable diversity
Health Care Systems & Data Sources

• Providers are mainly group or network model HMOs

• Provide comprehensive health care, including outpatient primary and specialty care, hospital, home health, and pharmacy

• Data sources are electronic medical records, e.g. Epic, and claims
Relationship of HMO Research Network to Mini-Sentinel Initiative

• Mini-Sentinel includes 11 HMORN sites: Kaiser Permanentes, plus 5 others

• Unique advantage – Rapid access to electronic medical records
Virtual Data Warehouse Development

Original local databases with varying structure → Site-specific translation programs → Local VDW databases with common structure
Virtual Data Warehouse

Local VDW databases with common structure

HPHC
KPNC
GHC
HPRF
KPSC

Pharmacoepidemiology, genetics, and other studies

Study-specific analysis programs based on common data dictionary

Compatible de-identified datasets from each site

Research Team

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Research Team
Distributed Data Network
Features

• Standardized, reusable data model
• Distributed analytic capabilities
• Minimal data transfer
• Extensibility and scalability
Example: The Vaccine Safety Datalink Project

- 8 HMORN sites
- Sponsored and coordinated by CDC since 1991
- Current cohort is ~ 9 million persons
  ~ 3% of U.S. population
  - Birth cohort = 95,000
Vaccine Safety Datalink Sites

Group Health Cooperative
Northwest Kaiser Permanente
No. CA Kaiser Permanente
So. CA Kaiser Permanente
Health Partners
Marshfield Clinic
Kaiser Permanente Colorado
CDC
Harvard
VSD Data Files

Linked by Study IDs
Data are linked and kept at each site, not at CDC

Hospital and ED discharge diagnosis codes

Vaccination Records

Outpatient visit diagnosis codes

Enrollment and demographics

Geocodes

Birth and death certificate data
Selected VSD Studies

• Rotashield vaccine and intussusception

• Thimerosal and neurodevelopmental disorders, autism
Selected VSD Studies

• Rotashield vaccine and intussusception

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• Rapid Cycle Analysis Studies
  – Menactra vaccine and Guillain-Barre syndrome
  – MMRV vaccine and febrile seizures
  – H1N1 influenza vaccine safety
VSD’s Rapid Cycle Analysis
Dynamic Data Files – Updated Weekly

Vaccination Records

Hospital and ED discharge diagnosis codes

Outpatient visit diagnosis codes

Linked by Study IDs
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Enrollment and demographics

Geocodes

Birth and death certificate data
Rapid Cycle Analysis

• Data are updated on all vaccines and all outcomes every week

• Monitor pre-specified outcomes
  – Selected based on literature and reports

• Evaluate the number of outcomes in vaccinated persons

• Compare this to the expected number of outcomes based on a comparison group
Validation of ICD9 Codes via Chart Review
Example: Seizures in Children

• Children 6-23 mos

• ICD9 codes during the 30 days after pneumococcal vaccination (333.2, 345, 780.3, 779.0)

• Standardized chart abstraction

• 3,233 events with seizure ICD9 codes; 1,024 randomly selected for review
Validation of Seizure ICD9 Codes in Children

• Of the total events with ICD9 codes, 15% had hospitalizations, 17% had ED visits, and 67% had outpatient visits alone

• Positive predictive value of ICD9 codes to predict definite seizures varied:
  – ED = 97%
  – Hospital = 64%
  – Outpatient visit on day 0 = 2%
  – Outpatient visit on days 1-30 = 16%
Validation of Seizure ICD9 Codes in Children

• Most (77%) of the definite seizures would have been identified by using ICD9 codes from ED and hospital events alone

• Conclusion: It may be reasonable to restrict the identification of seizure outcomes via ICD9 codes to events in ED and inpatient settings
Summary: HMO Research Network

• Strengths
  – Large populations
  – Rich electronic medical record data
  – Dedicated investigators and analysts
  – Ability to conduct rapid data updates and chart reviews

• Weaknesses
  – Statistical power to detect modest risks for rare adverse events