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Registries for Evaluating Patient Outcomes

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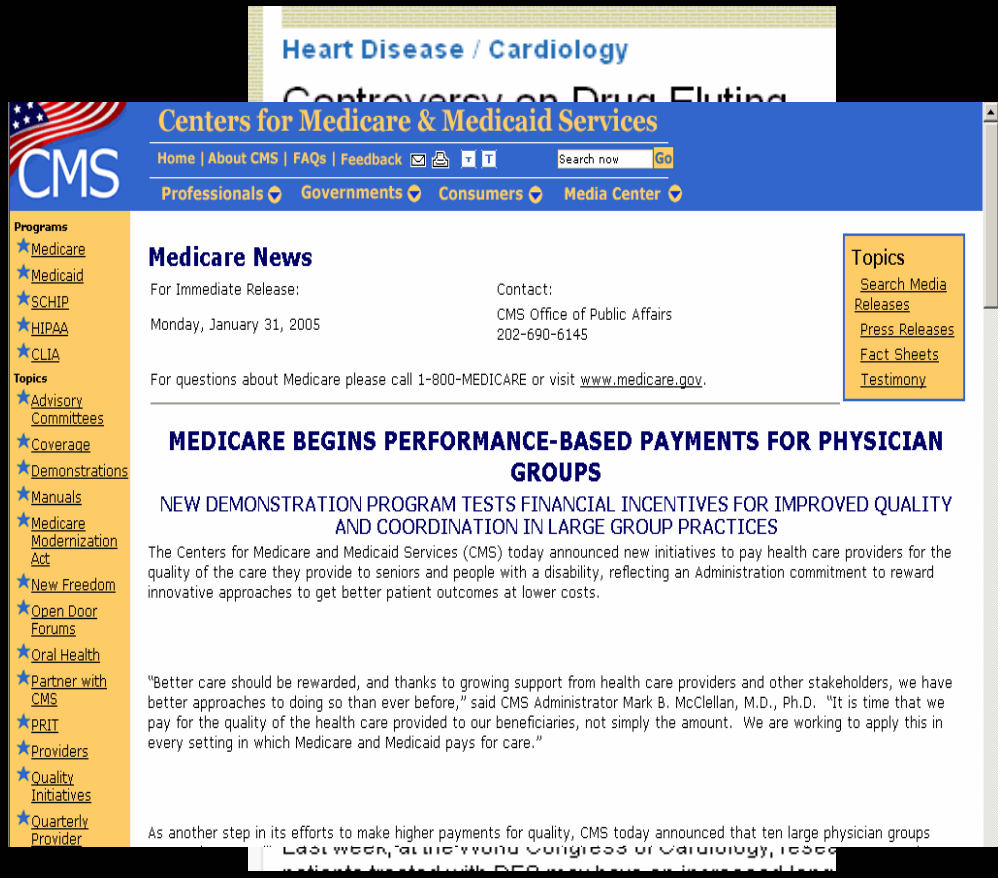
Senior Editor: "Registries for Evaluating Patient Outcomes" Developed for the Agency for Healthcare Research and Quality

Emerging role of patient registries in evidence development

- Natural history of disease process
- Measure or monitor safety and/or effectiveness of healthcare products and/or services
- Measure product and/or service value
- Measure and/or improve quality of care

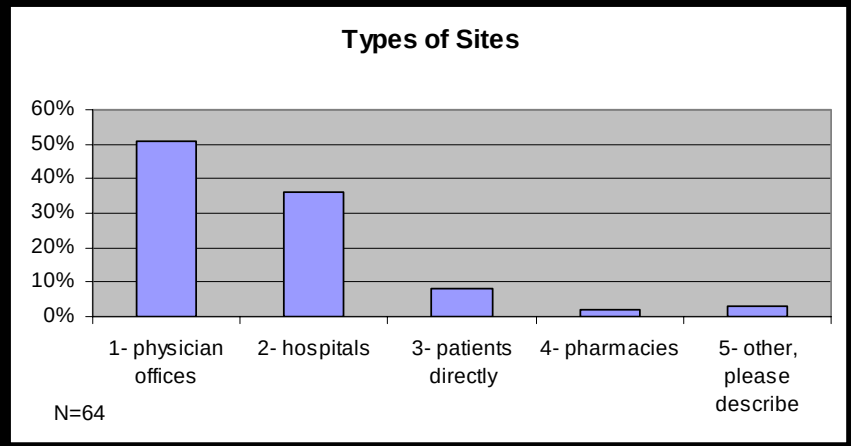


Registries can provide unique outcomes information on populations and under real-world conditions that are not studied in clinical trials

OUTCOME

Current registries

- Sites
  - Physician offices, hospitals, pharmacies, patients directly
  - Recruited, required or volunteer
  - Small to large (range from <5 sites to 10,000 sites)
- Patients
  - Small to large numbers (range from <25 to 2.5M)
  - Sampling: all, random, consecutive, convenience
- Financing
  - Single and multi-sponsor
    - Industry, grants and government contracts, specialty associations, advocacy groups, self-funded
  - Subscription



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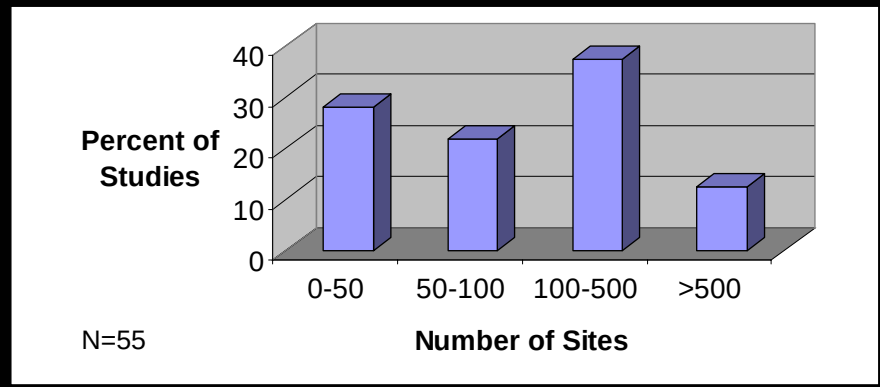

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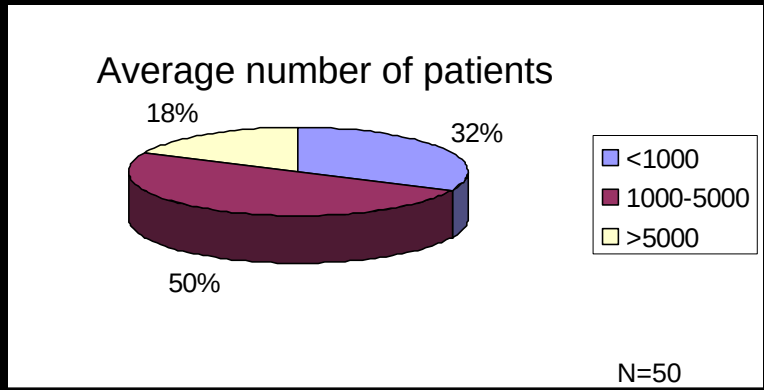

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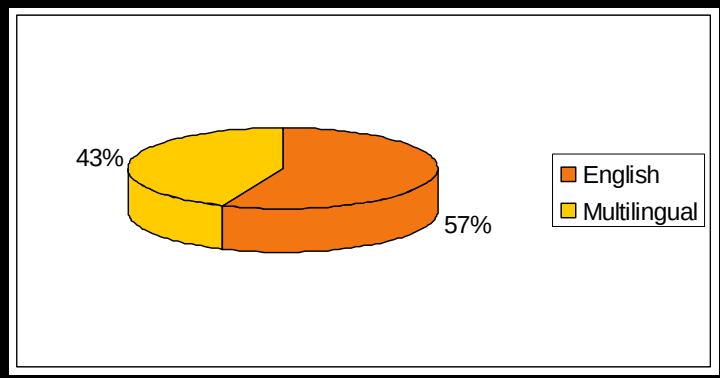
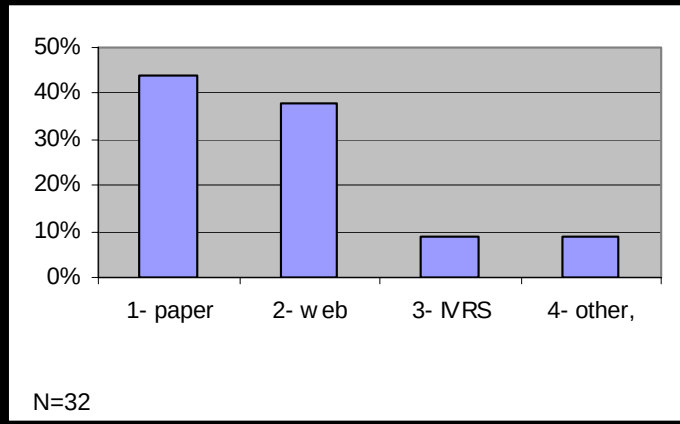


Current registries

- Data collection
  - Paper/fax, electronic (web, RDC) IVRS, handhelds, other
  - Post-hoc vs. point of care
  - Collectors: clinicians, non-clinical health workers, abstractors, patients directly, call centers (e.g. PRO follow-up)
  - Data validation: Range from limited edit checks to data quality audits to source data verification
- Data access or reporting to sites
  - No access
  - Periodic distribution
  - On-demand electronic distribution



Few Existing Guidelines & Standards

- Guidelines for good pharmacoepidemiology Practices *(Pharmacoepi & Drug Safety 2005:14:589-595)*
- Guidance for Industry: Good pharmacovigilance Practices & Pharmacoepi. Assessment. *DHHS, March 2005*
- Guidance for Industry: Establishing Pregnancy Exposure Registries, *DHHS, August 2002.*
- Quality of Reporting of Observational Longitudinal Research *(AJE 2005:161:280-288)*
- CONSORT Statement *(JAMA 2001; 285:1987-1991)*

….etc.

Registries for Evaluating Patient Outcomes*

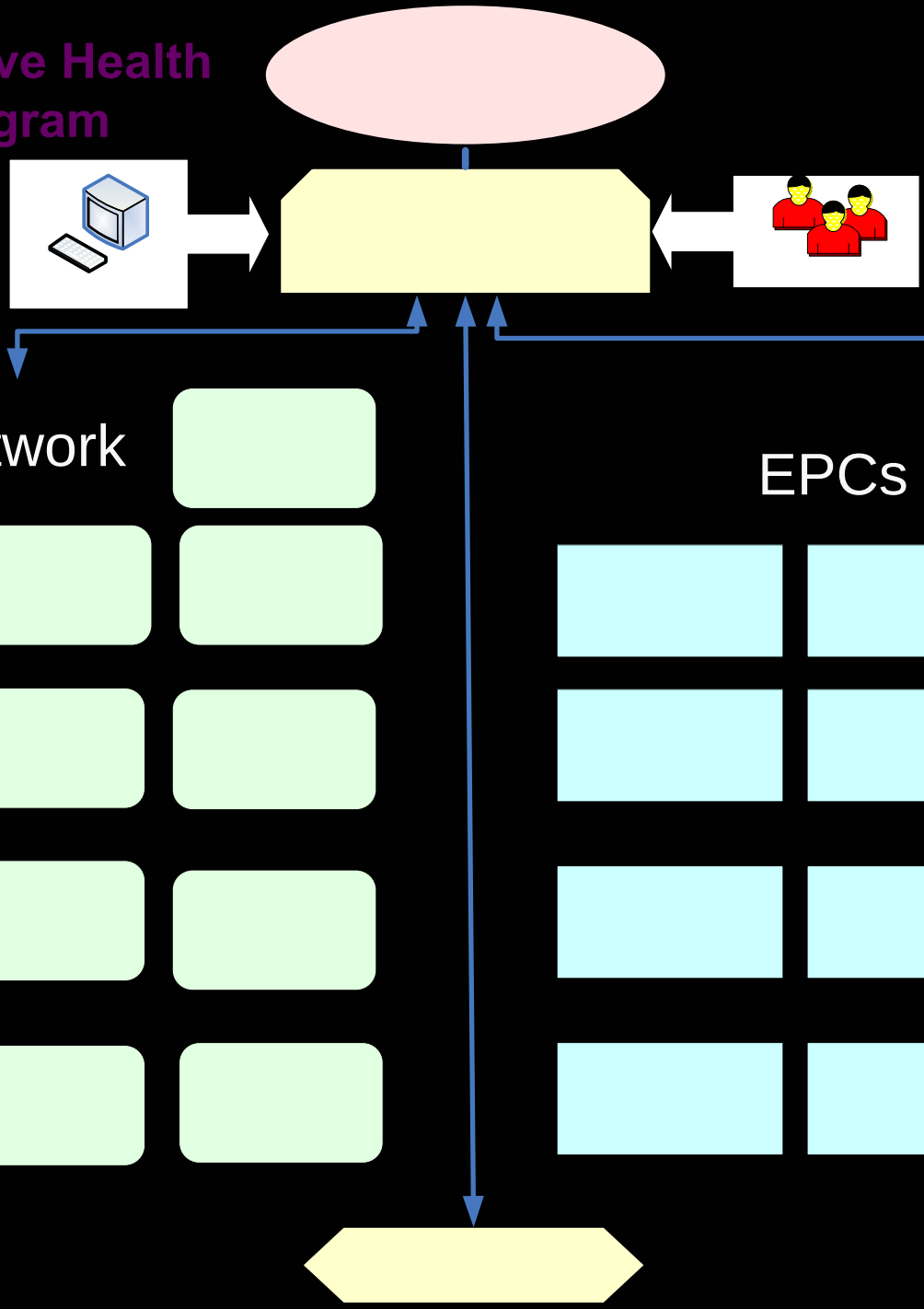
Evidence Generation

new DEcIDE Research Network

Developing Evidence to Inform Decisions about Effectiveness

- Network of 13 centers created in 2005 under MMA Section 1013 to "Generate New Knowledge"
- The main purpose of the DEcIDE network is to expeditiously develop valid scientific evidence about the outcomes, comparative clinical effectiveness, and appropriateness of health care items and services

AHRQ Effective Health Care Program



Creating a Handbook for Registries

- Process:
  - Project Award to Outcome DEcIDE Center: September 29, 2006
  - Fall, 2005-Nominations for potential authors obtained from multiple sources. Final authors selected via published process
  - January-March, 2006-Outline posted for public comment
  - February-April, 2006-Case study submissions requested
  - February–June 2006, Writing, Editing and Review
  - July, 2006—Submission to AHRQ
  - October, 2006-Posting of document for public comment
  - January, 2007-Final release on AHRQ website and in print

Broad, multi-stakeholder involvement

- Senior Editors:
  - Richard Gliklich MD, Outcome
  - Nancy Dreyer, MPH, PhD, Outcome
- Authors: 39 selected contributors with relative equal distribution from industry, academia, government and services providers
- Reviewers: 35 reviewers including NIH, FDA, CMS, OHRP, OCR, IOM
- Case Studies: 20 case studies from 28 contributors

Patient Registries

- Goal: “guide the design and implementation of patient registries, the analysis and interpretation of data from patient registries, and the evaluation of the quality of a registry or one of its components.”
- Scope: Registries for evaluating patient outcomes
- Sections
  - Defining
  - Creating
  - Operating
  - Evaluating

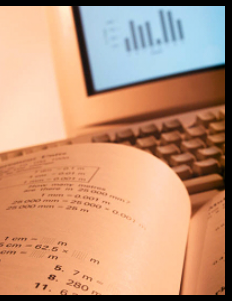
Patient Registries

- Definition
  - A patient registry is an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves a predetermined scientific, clinical, or policy purpose(s).
  - The registry database is the file (or files) derived from the registry.

Characteristics

- The data is collected in a naturalistic manner
- The registry is designed to fulfill specific purposes, and these purposes are defined in advance of collecting and analyzing the data.
- The registry captures data elements with specific and consistent data definitions.
- The data is collected in a uniform manner for every patient.
- The data collected includes data derived from and reflective of the clinical status of the patient (by history, examination, laboratory test, or patient reported).
- At least one element of registry data collection is active, meaning that some data is collected specifically for the purpose of the registry.

Classification

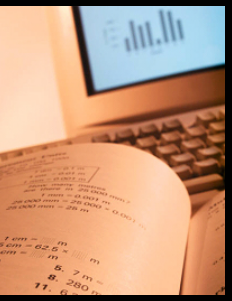


Product

- Exposure = product
- Device registries
  - All or subset of exposed patients
    - Implantable Cardioverter Defibrillators (ICD)
    - Stents
    - Orthopedic devices
- Pharmaceutical product registries
  - All or subset of exposed patients
    - Cox 2 inhibitors
    - Thalidomide
- Pregnancy registries
  - Exposed population = fetus

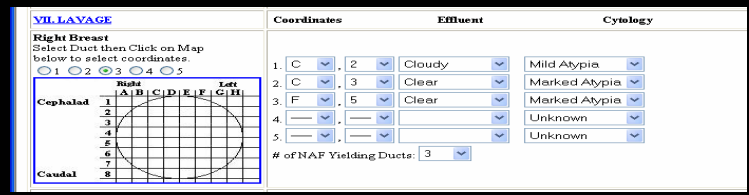
Patient Initials	Patient SSN	Pharmacy	Physician	Status	Next Test Due Date	Outcomes
AAA	111223333	Walgreen's	Epps, Susie	Weekly	08/12/2004	08/05/2004
FJW	111111111	Brooks	Epps, Susie	Monthly	08/28/2004	08/21/2004
RDC	111111112	Brooks	Epps, Susie	Weekly	08/10/2004	08/03/2004
LNT	222222221	Walgreens	Epps, Susie	Q2M	08/26/2004	08/23/2004

Classification



Service

- Exposure = health care service
- Procedure registries
  - Exposure = procedure
    - Primary coronary intervention
    - Normal pressure hydrocephalus registry
    - Society Thoracic Surgeons (STS) database
  - Clinical service (and quality measurement) registries
    - Exposure = clinical encounter(s)
      - Hospitalization registries
      - P4P



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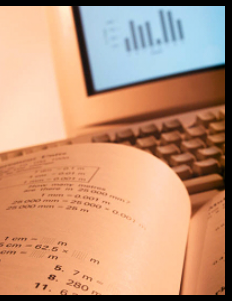
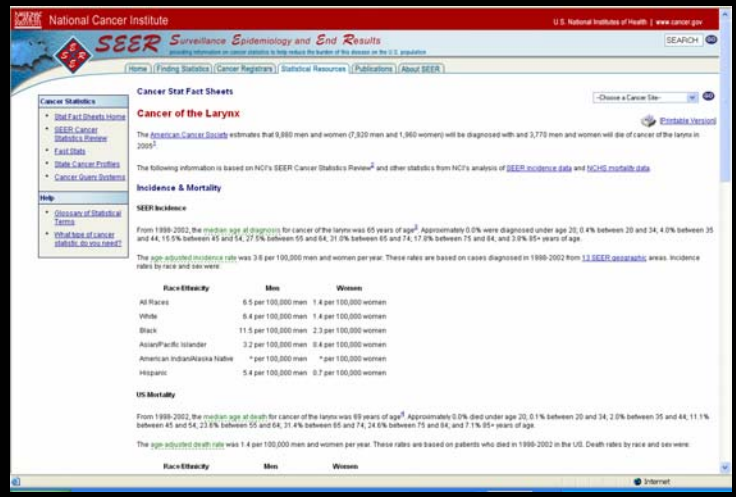


Disease or condition

Examples:

- *Acute* disease or event:
  - National Registry Myocardial Infarction
  - Paul Coverdell Stroke Registry
- *Chronic* disease:
  - ESRD registry
  - Heart failure registry
  - Cancer registries (SEER)
- *Rare* disease
  - Pompe disease
  - Cystic fibrosis registry



Registry Purposes

- Describe natural history of disease
- Determine clinical effectiveness or cost effectiveness of health care products and services
- Measure or monitor safety and harm
- Measure quality of care

Creating a Registry

- Planning
  - State purpose
  - Identify stakeholders
  - Establish governance
  - Define scope
  - Define target population
  - Assess feasibility
  - Secure funding

Creating a Registry

- Design
  - Determine study design (from analysis perspective)
  - Select data sources, populations, and comparison groups
  - Determine whether sampling is needed and if so, how
  - Identifying possible sources of bias (systematic error); and addressing them to the extent that is practical and achievable

Creating a Registry

- Data elements
  - Importance and relationship to the primary outcome
  - Burden
  - Incremental costs for collection
  - Relevant domains
    - Specific data elements
      - Established standards, common data definitions
      - Use of identifiers
      - Reliability
  - Pilot testing

Creating a Registry

- Data sources
  - Primary-collected for direct purposes of the registry
  - Secondary
    - Medical records
    - Institutional or organizational databases
    - Administrative and claims data
    - Death and birth records
    - Census databases
    - Existing registry databases

Creating a Registry

- Ethics, data ownership and privacy
  - The research purpose of a registry, the status of its developer, and the extent to which registry data are individually identifiable and location of the registry largely determine applicable regulatory requirements.
  - Importance of transparency

Operating Registries

- Patient and provider recruitment and management
  - Recruitment occurs at several levels
  - Motivating factors for participation differ according to the registry.
    - Relevance, importance, scientific credibility, risks, burdens, incentives.
  - Goals for recruitment, retention and follow-up should be explicit and deviations continously evaluated for risk of introducing bias

Operating Registries

- Data collection and quality assurance
  - Broad range of data collection procedures and systems available
  - Critical factors in data quality:
    - Data element structure and definition, training of personnel, how data problems are handled.
  - Quality assurance
    - Define requirements at registry creation
    - Risk-based approach
      - Most important or likely sources of error or potential lapses in procedures that may impact quality in the context of intended purpose

Operating Registries

- Adverse event detection, processing and reporting
  - Collection or detection
  - Processing
  - Reporting
  - Requirements
  - Training investigators in registry AE procedures

Operating Registries

- Analysis and interpretation
  - Analysis
    - Importance of a statistical analysis plan
      - Analytic plans and statistical techniques for primary and secondary objectives
    - Report on characteristics of the patient population, exposures of interest, endpoints
  - Interpretation
    - Who was studied?
      - Is the actual population representative of the target population?
    - How were the data collected, edited and verified?
      - Completeness of data collection and data quality
      - How were missing data handled and reported
    - How were the analyses performed?

Evaluating Registries

- Quality = confidence that the design, conduct and analysis of the registry protect against erroneous conclusions
- Quality component analysis
  - Research quality (scientific process)
  - Evidence quality (data/findings)
- Components classified as “necessary” or “enhancements”

Research Quality

Necessary Aspects for the Design

- Target population is described including plans to recruit study subjects.
- The literature has been reviewed to guide appropriate data collection.
- Specific eligibility, inclusion, and exclusion criteria are specified.
- The size required to detect an effect, should one exist, or achieve a desired level of precision is acknowledged, whether or not the sample size requirement is met.
- The follow-up time required to detect events of interest is acknowledged, whether or not it is feasible to meet this requirement.
- To the extent feasible, the follow-up time is adequate to address the main objective.
- Plans are addressed for how the analysis will be evaluated, including what comparative information will be used, if any, to support study hypotheses or objectives.

Research Quality Examples

Enhancements to the Design (depending on feasibility and affordability)

- For safety studies, the registry has the capacity to detect most if not all serious events that may be causally related to the product or process under study.
- Use of concurrent comparators may offer a substantial advantage over historical or external comparison groups and increase the information yield of a registry.
- The methods of data collection do not limit site participation such that the representativeness of site selection is compromised. While single methods of data collection to a centralized database (e.g. via web) are most efficient, multiple methods of data collection may be required for some purposes (e.g. global registries where access to computers or internet is limited).
- Formal statistical calculations are presented to support the desired study size needed to measure an effect with a certain level of precision, or to meet a specified statistical power to detect an effect, should one exist; precision and power considerations may be tempered by budgetary and feasibility constraints.
- For studies intended to support decisionmaking, the registry should be large enough to have a reasonable chance of detecting the main effect under study, should it exist, and the follow-up period should be adequate to capture the events of interest or surrogate measures of outcome.

Evidence Quality Examples

Necessary Aspects for Analysis

- Accepted analytic techniques are used; these may be augmented by new or novel approaches as well.
- The role and impact of potential confounding factors has been explored.
- Follow-up time is described so that readers can assess the likelihood that sufficient observation time elapsed for the purpose of drawing conclusions about causation (for effectiveness, comparative effectiveness, and safety studies).
- For safety studies, the risks and benefits of products, devices, or processes under study are quantitatively evaluated.

Enhancements to Analysis (to the extent feasible and affordable)

- Loss-to follow-up is characterized at all stages of study conduct.
- Sensitivity analyses are useful to examine the effect of varying the study population inclusion/exclusion criteria, the assumptions regarding exposure, and the definitions of potential confounders and outcomes on the association between the *a priori* exposure of interest and the outcome(s).
- If models are used, the specific data elements that are included are described.

Links/Contacts

- Effective HealthCare Program: www.effectivehealthcare.gov
- Draft available at http://effectivehealthcare.ahrq.gov/decide/activeDecide.cfm
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  richard_gliklich@meei.harvard.edu

  617-621-6430

Publication Reference

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