



Center for Health Information & Research

School of Computing and Informatics

Ira A. Fulton School of Engineering

Arizona State University

Sponsored by:

St. Luke's Health Initiatives

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What is AZHQ?

AZHQ is the Arizona HealthQuery. The project's goal is to develop and maintain a community health data system that houses essential and comprehensive health information for each resident of Arizona. This data system serves as a community resource for assessing the health status and health care needs of the state. The AZHQ data system is unique for its ability to (a) provide vast amounts of continuously updated health care information, and (b) link patients across systems and over time.

How can AZHQ help the community?

AZHQ helps the community by putting actionable information from millions of health records at the fingertips of health care researchers and policy makers. In addition to assisting community leaders in public policy decisions, AZHQ allows clinicians to study specific disease states and identify special-needs populations, as well as establish more effective and efficient models of care. This unprecedented volume, quality, and accessibility of data will revolutionize the way health care research is conducted in the community and will drastically improve the efficiency with which communities receive reliable, local information about their health.

How can I participate?

The success of AZHQ depends on voluntary data submissions from health care delivery systems, providers, and employers in the community. Participation in AZHQ is completely voluntary and free, and becoming a data partner requires simply agreeing to provide your organization's data.

How will AZHQ benefit the data partners?

Many of the features that make AZHQ so valuable to the community are also beneficial to the individual data partners. First, while helping to provide a service to the community, your organization can contribute to, and benefit from community-wide benchmarking and forecasting. Second, there are direct benefits to your organization. For example, each data partner will receive regular summary reports containing valuable information about their member's characteristics and utilization patterns. These reports will allow your organization to assess member's behavior outside of your own system and to study the community-wide impact on physicians in your network. Also, becoming a data partner allows your organization to get involved in custom research studies that reflect your particular needs or interests.

Are AZHQ data submissions secure?

You can be assured that all records received in AZHQ are completely secure and confidential, and individually identifiable information is never released from the system. Additionally, no organizationally identifiable information will be released without your permission.

The Community Health Data System Model

Health care research studies are generally commissioned by different organizations with different research methods and objectives. With such diversity in research, it is impossible to combine results across studies. AZHQ is based on the Community Health Data System (CHDS) Information Model, and addresses this major barrier to obtaining health care information. The information in AZHQ is obtained from a variety of public and private administrative data sources in the community. Data elements are standardized and then patient records are linked across individual data sources. With these data AZHQ can assess patterns of health and patterns of care for individuals and populations over time, regardless of which health care providers are seen.

A Common Link

AZHQ is an integrated data warehouse with the capability to link information from disparate data sources. Consider, for example, the efforts that have been made to estimate the numbers of uninsured children in states like Arizona, where national survey data are not reliable. The insurance status of every child who receives care is recorded on any day as part of the health care encounter. The information is carefully stored in many different proprietary databases for the purposes of, if for no other reason, processing payments for the services. However, the information on the same individuals in different databases are never linked, and therefore can never provide a community wide view of health status, health care or health care costs and outcomes. However, a system such as AZHQ can provide this link. As a result, AZHQ is an excellent resource for addressing not only the question in this example, but many others as well.

Revolutionizing Community Health Care Research

AZHQ represents a valuable ongoing resource that can be used to answer clinical, epidemiological, management and policy questions as they arise. The absence of an integrated and continuously updated data warehouse has led to the expenditure of tremendous amounts of time and money on either special interview surveys and data collection or attempts to apply national data to assess health status and needs in Arizona. The design and implementation of interview surveys and special studies typically requires two or more years, delaying the availability and relevance of the information. These time lags combined with the rapid pace of population growth in Arizona create a need to frequently update the data if it is to be representative of reality. The special surveys and special studies must, therefore, be repeated regularly, further increasing costs. The maintenance of a CHDS avoids the long time lags and the expense of creating a new data or research effort in response to pressing management or public policy questions. The ability to track health care and outcomes over time without the need for special surveys or the initiation of new research projects is one of the most important advantages of the AZHQ approach.

Operating Principles¹

- Participation in AZHQ is voluntary and free of charge.
- Ownership of the data resides with the entities that contribute the data -- organizations that contribute data to the pool are lending the data to AZHQ without relinquishing ownership.
- AZHQ accepts custody of data under the constraint that it will not release any dataset to any entity or organization for any purpose. Any sharing of data must be at the direction of the organization that contributes the data.
- The reporting and analysis of data will be directed by the agreements between AZHQ and the data partners.
- No results will be reported on any individual or in a form that would permit the identification of an individual.
- No results will be reported for any organization unless directed by that organization, except for information that is otherwise public.
- AZHQ will provide private reports to individual organizations on internal operations or reports which compare the organization to the aggregate of comparable institutions.
- All operations will comply with the relevant state and federal confidentiality statutes and regulations.

¹ The final form of the principles that we have listed is determined through contracts between AZHQ and its data partners.

Data Warehouse Features

Data Warehouse Structure

- All essential demographic, clinical, and financial elements are captured
- Ease of use/understandability
- Easily extractable at many levels of information
- Efficient storage
- Quick reporting capabilities

Robust Data Loading Process

- Accepts data in a variety of formats and layouts
- Can accept submissions spanning multiple files and tables
- Flexible data handling
- Quick turn-around time to load new data
- Standard data request form

Data Quality

- All values are converted into standardized, HIPAA-compliant values
- Quality checks - only cleaned and validated records are loaded
- Standard validation reports on every data submission

Data Security

- All data behind highly secure firewall
- Data tracking tool to log new data submissions
- No personally or organizationally identifiable information to be released
- Quick restore for virtual day-to-day backups
- Weekly backup to offsite tape
- Data received over secure FTP servers (upcoming)

Custom Developed Matching Algorithms

- Fuzzy matching tools to de-duplicate patients within systems to find those assigned multiple ID numbers
- Fuzzy matching tools to identify patients across systems
- Matching claims across systems

Value to the Community

- Constantly updated information
- Quicker response time for data analysis projects
- Standardization results in data that are comparable across facilities and sources
- Track patients across systems and over time
- Wealth of information (health information on millions of people)

Examples of Information from AZHQ

- Complementing information currently provided by public and private entities in Arizona. *The objective is to add to current information, avoiding duplication of the information reported by the state of Arizona and professional or other private organizations.*
- Benchmarking/forecasting opportunities for data partners.
- Simulating the effects of changes in private or public insurance coverage on the demand for care.
- Signaling changes in the potential patient population and predicting consequent changes in needs for and costs of care.
- Assisting health systems in the development of community health assessments.
- Assisting safety net providers in the development of needs assessments.
- Developing a supply/demand model by merging data from the Center for Health Information and Research (CHIR).
- Physician Workforce database. *This longitudinal model assesses the adequacy of the Arizona physician workforce and project future workforce needs.*
- Determining the effects of changes in insurance coverage on health care and health care costs by merging data with the CHIR Arizona Department of Education school achievement database.
- Analyzing the impact of changes in insurance coverage on health care and health care costs.
- Determining the effects of pollutants on community health.
- Assisting with the evaluation of quality improvement activities across health systems.
- Evaluating programs to reduce medical errors within and across health systems.
- Identifying best practice methods of care.
- Using the data as the source from which to design samples and surveys where information, such as patients' attitudes, can only be obtained from interviews. *The AZHQ data permits much more effective, and therefore, less costly, sample designs and survey instruments.*
- Identifying the importance of distance, travel time, hours of operation, insurance coverage, health conditions, and other characteristics that influence patients' choices among different providers and different locations for care.
- Estimating seasonal or weekly variations in demands for care by geographic area and by type of care required.

Publications

Completed Reports

- "Health Insurance in Arizona: The Children of Yuma County 1999-2004" (Yuma County Community Report, 2007)
- "Emergency Department Visits" (Maricopa County Community Report, 2006)
- "The Effect of AHCCCS Disenrollment on Health Care Utilization in Maricopa County" (report to St. Luke's Health Initiatives, 2006)
- "Asthma in Maricopa County" (Maricopa County Community Report, 2006)
- "Community Health Needs Assessment for St Joseph's Hospital and Medical Center Service Area" (report to Catholic Healthcare West, 2006)
- "Community Health Needs Assessment for Chandler Regional Hospital and Mercy Gilbert Service Areas" (report to Catholic Healthcare West, 2005)
- "The Arizona Physician Workforce Study Part I: The Numbers of Practicing Physicians 1992-2004" (2005)
- "Children and Thyroid Disease" (Yuma Community Report, 2004)
- "Children and Diabetes" (Yuma Community Report, 2004)
- "Child Deaths 2003" (Yuma Community Report, 2004)
- "A Preliminary Report on the Prevalence of Mental Illness" (Maricopa County, 2004)
- "Kids and Asthma" (Yuma Community Report, 2004)
- "A Preliminary Review of Readmissions for Home Health Discharges" (Banner Health System Report, 2004)
- "The Yuma Project on Uninsured Children" (www.flinn.org/about/reports.cms, 2001)

Journal Articles

- Rimsza, M.E., Butler, R.J., & Johnson, W.G. (2007). Impact of Medicaid disenrollment on health care use and cost. *Pediatrics*, 119, e1026-e1032.
- Johnson, T.J., Rimsza, M.E., & Johnson W.G. (2006). Reducing SCHIP coverage: Saving money or shifting costs? *American Journal of Public Health*, 96(4): 709-715.
- Johnson, W.G., & Rimsza, M.E. (2004). The effects of access to pediatric care and insurance coverage on emergency department utilization. *Pediatrics*, 113(3:Pt 1): 483-7.
- Johnson, T.J., & Bartels, A. Patterns of health insurance coverage in a rural Hispanic border community. (*submitted for publication*).

Recent Abstracts

- Arizona HealthQuery: Building Health Data Systems for Tomorrow
- Community Health Data Systems in Rural and Urban Settings
- Determining Physician Workforce Needs Using a Supply/Demand Model
- Health Care Costs of Medicaid and SCHIP Disenrollment
- Health Disparities among Children Who Have Asthma
- Insurance Patterns for Children with Asthma

Patterns of Health Insurance Coverage in a Rural Hispanic Border Community
Patterns of Utilization for Asthma Patients in a Rural Hispanic Border Community
Preventability of Child Deaths in an American Indian Population
Risk Factors for Hospital Readmission among Intensive Care Unit Survivors

AZHQ Associated Activities

Related Sponsored Projects

Previous

Arizona KidsCare Program/The Yuma Study on Uninsured Children (1999-2003)

Community Access Program (2001-2002)

Agricultural Burns Surrounding San Luis Border, Plume Pathways and Health Effects (Southwest Center for Environmental Research and Policy) (2004-2005)

Maricopa County Community Health Assessments – St. Joseph's Hospital and Medical Center, Chandler Regional Hospital (2005-2006)

Asthma in Maricopa County: A Case Study in Medical Data Understanding funded by the Arizona Board of Regents (2006)

Medicaid Provider Survey funded by Arizona Health Care Cost Containment System (2006)

Ongoing

Better Quality Information (BQI) Pilot Project (one of six national demonstration sites) funded by the Centers for Medicare & Medicaid Services

Child Fatality Review funded by the Arizona Department of Health Services

Health Patterns of Hispanic and Non-Hispanic Children funded by the National Institute for Child Health and Human Development

Physician Workforce Study funded by the Flinn Foundation

Arizona HealthQuery Data Partners

Abrazo Health Care

Dan Ausman, Senior VP, Operations
Deanna Wise, Chief Information Officer

Arizona Association of Community Health Centers *(list of currently participating centers on following page)*

Joseph Coatsworth, Chief Executive Officer
Linda Ross, Chief Operating Officer

Arizona Department of Administration

Phil Hamilton, Manager

Arizona Department of Health Services

Susan Gerard, Director
Richard Porter, Bureau Chief

Arizona Health Care Cost Containment System

Anthony D. Rodgers, Director
Christine Goldberg, Strategic Planning Administrator

Banner Health System

John Hensing, Senior Vice President
Twila Burdick, System Director

Cardiovascular Consultants

James Chisolm, MBA, CEO
Andrei Damian, MD, FAAC

Carondelet Health Network

Chandler Regional Hospital

Martin Breeden, Vice President, Mission Integration

The EXCEL Group

Michael Coleman, President & CEO

General Electric Company

Virginia Proestakes, Program Leader, Group Health Plans

Internal Medicine

Bruce Bethancourt, Physician
John V. de Guzman, Physician
Nolawi Mengesha, Physician

IBM Corporation

James O'Sullivan, Global Well-Being Services & Health Benefits

Health Net of Arizona

Gay Ann Williams
Vice President, Government Affairs

John C. Lincoln Health Network

Dan Coleman, Chief Executive Officer
Rob Israel, Chief Information Officer

Maricopa Integrated Health System

Betsy Bayless, Chief Executive Officer
James Kennedy, Chief Medical Officer

Pediatric Associates of Yuma

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Julian Villanueva, Clinic Manager

St. Joseph's Hospital and Medical Center

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Dennis Laraway, Chief Financial Officer

San Luis Walk-In Clinic[†]

Amanda Aguirre, Director & State Representative

Scottsdale Healthcare

Wendy Lyons, Vice President

Society of Saint Vincent de Paul

Janice Ertl, Director, Free Clinic

Sonora Quest Laboratories

Robert Dowd, Chief Information Officer

Sun Health Corporation

Lee Peterson, President and CEO
Keith Dines, Exec. VP of Strategic Development

ValueOptions of Arizona

Angelo Edge, Chief Administrative Officer

Yuma Pediatrics, Ltd.

Daniel Crawford, Physician

Yuma Regional Medical Center[†]

Bob Olsen, President & CEO

Todd Hirte, Director, Contracts

Arizona Association of Community Health Centers Members

Clinica Adelante, Inc.

Avein Saaty-Tafoya MBA, HCM

El Rio Community Health Center

Kathy Byrne, Executive Director

Mountain Park Health Center

John Swagert, MD, President and CEO

North Country Community Health Center

Ann Roggenbuck, CEO

Sunset Community Health Center*

David Rogers, Executive Director

Arizona HealthQuery Maricopa Advisory Committee

AARP

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Arizona Medical Association

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Arizona Chapter of the American Academy of Pediatrics

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Arizona Hospital and Healthcare Association

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Arizona Medical Education Consortium and Graduate Medical Education, University of Arizona Health Sciences Center

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Joseph P. Anderson, Chairman and CEO

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Crane Elementary School District

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Southwest Emergency Physicians

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