

Virginia Health Information

Data Linkage for Public Health & Research

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The screenshot shows the Virginia Health Information (VHI) website homepage. The header features the VHI logo with the tagline "FROM NUMBERS TO KNOWLEDGE" and a navigation menu with links: HOME, ABOUT US, CONTACT US, SITE MAP, and RESEARCHERS AND PROFESSIONALS. Below the header, there is a search bar with the text "Google Custom Search" and a "Search" button. The main content area is divided into several sections. On the left, a red heart icon is accompanied by the text "2008 Cardiac Care Data Now Available". Below this, a quote states: "VHI's Long Term Care Consumer Guide is a must have for anyone looking for long term care." In the center, a woman in a business suit stands with her arms crossed. To the right of the woman, the text reads "Virginia's Home For Cost, Quality, and Efficiency Healthcare Information". Below this text are four blue buttons: "Health Insurance", "Hospitals", "Nursing Facilities and other Long Term Care", and "Physicians". Further down, there is a "CONSUMER GUIDES" section listing "Obstetrics", "Virginia Hospitals", "Health Insurance Options", and "Long Term Care". To the right of this list is a small image of a book titled "HEALTH INSURANCE OPTIONS". On the far right, there is a "Find Health Care Near You" section with a dropdown menu set to "Hospitals" and a map of Virginia divided into colored regions. Below the map are links for "Southwest", "Central", "East", "North", and "Northwest". The footer contains the address "1108 E. Main Street Suite 1201 | Richmond, VA 23219", phone and fax numbers, a toll-free number, and a copyright notice: "© 2008 All Rights Reserved, VHI Inc."

FROM NUMBERS TO KNOWLEDGE

HOME | ABOUT US | CONTACT US | SITE MAP | RESEARCHERS AND PROFESSIONALS

Virginia Health Information
FROM NUMBERS TO KNOWLEDGE

Google Custom Search Search

2008 Cardiac Care Data
Now Available

"VHI's Long Term Care Consumer Guide is a must have for anyone looking for long term care."

Virginia's Home For
Cost, Quality, and Efficiency Healthcare Information

Health Insurance Hospitals
Nursing Facilities and other Long Term Care Physicians

CONSUMER GUIDES
Obstetrics
Virginia Hospitals
Health Insurance Options
Long Term Care

HEALTH INSURANCE OPTIONS

Find Health Care Near You
Hospitals

Southwest Central East North Northwest

1108 E. Main Street Suite 1201 | Richmond, VA 23219 | Phone (804) 643-5573 | Fax (804) 643-5375 | Toll Free 1-877-VHI-INFO (844-4636)
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www.vhi.org

Virginia Health Information

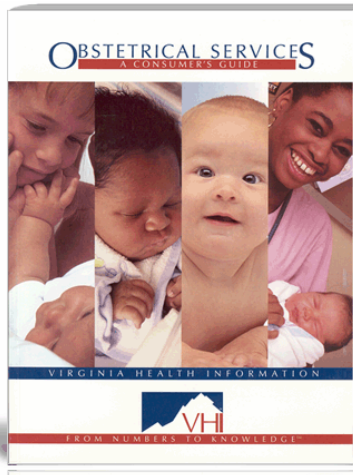
- Formed in 1993 as a public/private partnership
- Virginia's state-recognized entity to collect, analyze and disseminate Virginia health care data
- Contracts with State Health Commissioner, DMV, DMHMRSAS, Anthem PFP, private contracts, sales and services



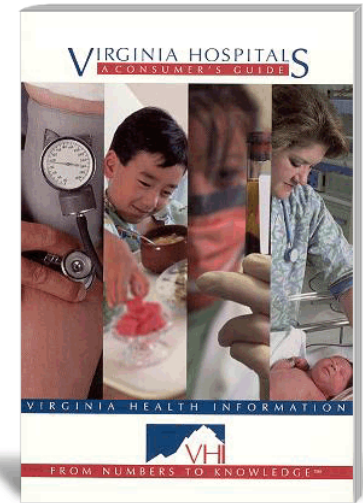
Health Data for Varied Needs

- **Hospital Discharge Data:** 870,000 discharges per year from 90+ hospitals
- **EPICS:** financial and operational information from 370+ ambulatory surgical centers, hospitals and nursing homes
- **Outpatient Surgical Data:** for 7 procedure groups from ambulatory surgery centers, hospitals and physicians
- **HMO Data:** from State Corporation Commission and National Committee on Quality Assurance
- **Long-term care:** adult day care, assisted living, CCRCs, home care and nursing facilities
- Hospital and other facility **licensure data**
- **CODES:** Crash Outcome Data Evaluation Systems www.vacodes.org

VHI Publications



Cardiac Care Reports



Databases/Reports on:

Hospitals,

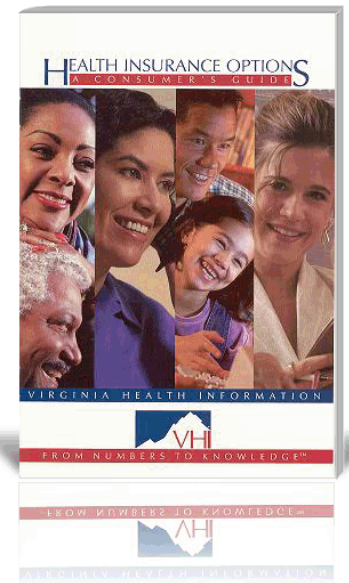
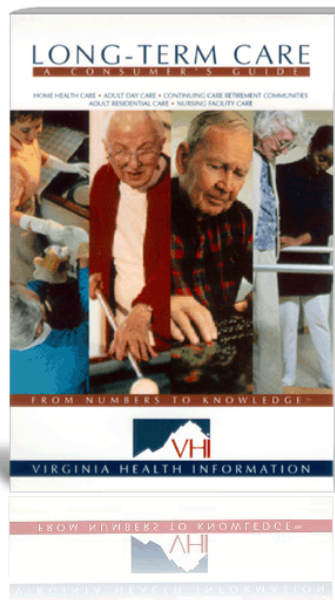
Nursing Facilities

Assisted Living, CCRCs

Outpatient Surgery

HMOs, Physicians

Certificate of Need Data



Common Barriers to Acquiring Hospital Discharge Data for Linking

- Data Needs Assessment
 - Purpose/uses of the data
 - What do you need?
 - ? Specifics: time frames, scope, data elements needed?
 - What data exist?
 - Research vs public reports- probabilistic vs deterministic
- Administrative hurdles:
 - What is the process for acquisition?
 - Data use agreements or IRBs
- Legal provisions

Common Barriers to Data Acquisition (continued)

- Cost of the data (price not published or too high)
- Uncertainty about the ownership, use of and access to the linked data set
 - Issues of secondary release of the data
- Process for requesting/acquiring data is lengthy and time-consuming

Common Data Issues

- Data linkage elements not collected or not releasable
- Missing, invalid data elements or duplicate records
- Data only available in deidentifiable or aggregated format

Data Linkage/imputation

- Why we link/impute data
 - For our public reports
 - For custom private reports
 - For others (agencies, registries, researchers)

VHI Mandate & Solution

The Mandate

- Cannot release any information that could reasonably be expected to identify individuals

A Solution

- VHI links for others collaboratively

Some Examples

Hospital Discharge and Cancer Registry

6 rounds of one-to-one matching between the Cancer Registry and Inpatient data. The match parameters are as follows:

1) Sex/DOB/SSN	67,042 matches	69.5%
2) DOB & SSN	1,892 matches	1.9%
3) SSN	1,474 matches	1.5%
4) DOB M & Y & SSN4 & Sex	4,216 matches	4.3%
5) SSN4 & DOB	138 matches	0.1%
6) DOB & Sex & Zip	3,712 matches	3.8%
Total	79,474 matches	81.1%
Unmatched	18,470 matches	18.2%

Hospital Discharge Data/Vital Records Births

Pass Number	Pass Description	Number of Matches
1	SSN & Age (+-1) & Admit/Birth Date (+ 4)	81,463
2	SSN & Age (+-1) & Admit/Birth Date (+60)	916
3	Age & Zip & Admit/Birth Date (+ 4) & Hospital ID & SSN4	895
4	Age & Zip & Admit/Birth Date (+ 4) & Hospital ID & SSN5	868
5	Age & Zip & Admit/Birth Date (+ 4) & SSN4	115
6	Age & Zip & Admit/Birth Date (+ 4) & SSN5	116
7	Age & Zip & Admit/Birth Date & Hospital ID	6,576
8	Age & Zip & Admit/Birth Date (+1) & Hospital ID	2,234
Total		93,183
		96.0%

Private and State Mental Hospitals

- Problem
 - Neither organization can release SSN
- Solution
 - Both organizations “encrypt” SSNs VHI provides encrypted file to state agency for internal use to merge private with public mental health care

Virginia Cardiac Reports - 2007

2005 2006 2007

[Click here for printer friendly version](#)

Show Key

Show Detail View

Definitions

Click any column to sort

Heart Failure

Hospital Name (click for all hospital information)	Total Cases	Mortality Rating	Readmission Rating
Bon Secours DePaul Medical Center	246	♥♥♥	♥♥
Bon Secours Mary Immaculate Hospital	183	♥♥	♥♥
Children's Hospital of The King's Daughters	5	♦	♦
Hampton Roads Specialty Hospital	1	♦	N/A
Rappahannock General Hospital	102	♥♥	♥♥
Sentara Bayside Hospital	277	♥♥	♥♥
Sentara Norfolk General Hospital ☑	562	♥♥	♥♥
Sentara Obici Hospital ☑	419	♥	♥♥

[Begin A New Search](#)

Definitions

Actual Mortality

Virginia Cardiac Reports - 2007

2005 2006 2007

[Click here for printer friendly version](#)

Show Key

Show Normal View

Definitions

Click any column to sort

Heart Failure

Hospital Name (click for all hospital information)	Teaching Status	Cases Cat.	Total Cases	Hospice Cases	Mortality					Readmission				
					Adj Vol	Act	Exp	Ratio	Rating	Adj Vol	Act	Exp	Ratio	Rating
Bon Secours DePaul Medical Center	ACGME	Mid- Low	246	3	239	0.84%	3.14%	0.27	♥♥♥	238	15.13%	17.85%	0.85	♥♥
Bon Secours Mary Immaculate Hospital	None	Mid- Low	183	2	180	3.33%	3.44%	0.97	♥♥	175	17.71%	18.06%	0.98	♥♥
Children's Hospital of The King's Daughters	COTH	Low	5	0	3	0.00%	2.14%	0.00	♦	3	0.00%	18.21%	0.00	♦
Hampton Roads Specialty Hospital	None	Low	1	0	1	100.00%	4.05%	24.70	♦	0	N/A	19.84%	N/A	N/A
Rappahannock General Hospital	None	Mid- Low	102	2	91	4.40%	4.26%	1.03	♥♥	88	12.50%	18.16%	0.69	♥♥
Sentara Bayside Hospital	None	Mid- High	277	6	263	3.80%	3.86%	0.98	♥♥	256	18.36%	18.16%	1.01	♥♥
Sentara Norfolk General Hospital	COTH	High	562	10	552	2.90%	3.20%	0.91	♥♥	545	19.45%	18.08%	1.08	♥♥
Sentara Obici Hospital	None	Mid- High	419	7	406	5.67%	2.75%	2.06	♥	390	17.18%	17.58%	0.98	♥♥

Virginia CODES

Crash Outcome Data Evaluation System

HOME ABOUT CODES REPORTS

Welcome to the Virginia CODES Website

Information for Virginians on Motor Vehicle Crashes, Costs, and Outcomes



Crash Facts - Printer ready posters and flyers with topical Virginia crash information.



Ready to Use Reports - Quick reports with information on the most common areas of interest about crashes and outcomes.



Create a Report - Make your own report on crashes using variables you select.



Link Specification Wizard

CODES 2000

Link Specification for CrashHospital

Pass Name Total Matches
 Description Cutoff Probability
 Population AB Cutoff Weight Test

Join Specifications

	Field from A	Field from B	Criteria for A	Criteria for B
▶	DMVAdate	CodesADate	dupid is null	dupid is null
	DMVSSN4	Codesssn4		
*				

Record: of 2

Match Specifications

	Field from A	Field from B	Compare Method	Low, Hi Limits	Agree, Disagree X
▶	DMVAdate	CodesADate	DeltaDays	0 1	0.73 1.00
	DMVAge	CodesAge	DeltaExact	0 0	1.00 1.00
	DMVSex	CodesSex	DeltaExact	0 0	1.00 1.00
	DMVINjFlag	CodesInjury	DeltaExact	0 0	1.00 1.00
	DMVBirth	CodesBirth	DeltaExact	0 0	1.00 1.00
	DMVZip	codeszip	DeltaExact	0 0	1.00 1.00
	DMVSSN4	Codesssn4	DeltaExact	0 0	0.73 1.00
	DMVSSN5	Codesssn5	DeltaExact	0 0	1.00 1.00
*					

Record: of 8

Record: of 10 (Filtered)

Close Wizard

Link Specification Wizard

CODES 2000

Link Specification for CrashHospital

Pass Name Total Matches
 Description Cutoff Probability
 Population AB Cutoff Weight Test

Join Specifications

	Field from A	Field from B	Criteria for A	Criteria for B
▶	DMVDOD	CodesDOD	dupid is null	dupid is null
*				

Record: of 1

Match Specifications

	Field from A	Field from B	Compare Method	Low, Hi Limits	Agree, Disagree X
▶	DMVAdate	CodesADate	DeltaDays	0 1	1.00 1.00
	DMVAge	CodesAge	DeltaExact	0 0	1.00 1.00
	DMVSex	CodesSex	DeltaExact	0 0	1.00 1.00
	DMVINjFlag	CodesInjury	DeltaExact	0 0	1.00 1.00
	DMVBirth	CodesBirth	DeltaExact	0 0	1.00 1.00
	DMVZip	codeszip	DeltaExact	0 0	1.00 1.00
	DMVSSN4	Codesssn4	DeltaExact	0 0	1.00 1.00
	DMVSSN5	Codesssn5	DeltaExact	0 0	1.00 1.00
*					

Record: of 8

Record: of 10 (Filtered)

Close Wizard



“Without health there is no happiness. An attention to health, then should take place of every other object.”

Thomas Jefferson, 1787