



Day 1: Session I

Presenter: Sam Shalaby, General Motors
Corporation

AHRQ QI User Meeting
September 26-27, 2005





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General Motors / AHRQ Quality Partnership

Measuring and Managing Quality with AHRQ Quality Indicators

September 26, 2005

Sam Shalaby

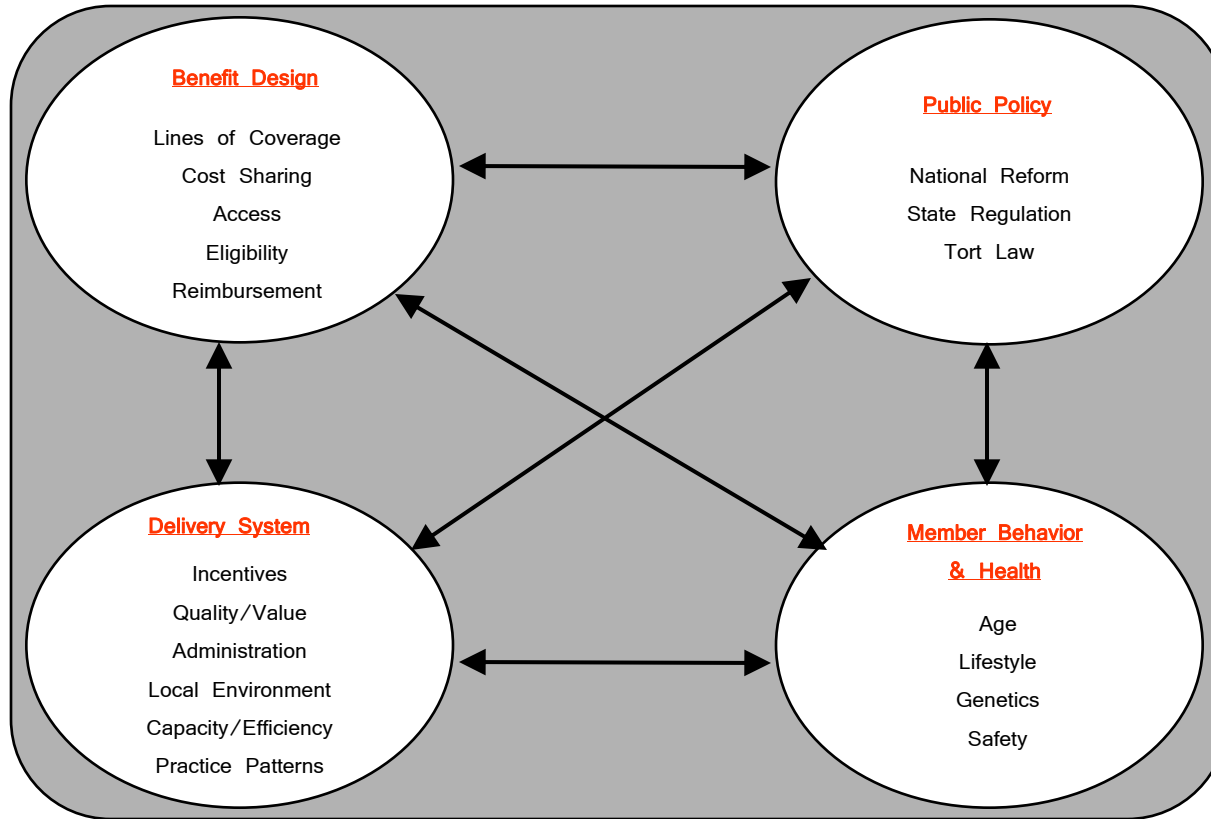
*Director of Community Health Care Initiatives
General Motors Corporation*



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Quality & Cost Drivers of Health Care

- LifeSteps
- Managed Care
- Value Purchasing
- Managed Indemnity
- Reimbursement
- Community Initiatives
- Advocacy



- Process Improvement Workshops
- Safety Initiatives
- Prescription Drugs
- Disease Management
- Integrated Corporate Health
- Carrier Performance



GM and AHRQ: Goals

- *Improving the Quality and Cost of Health Care for GM's Employees By Translating Research Innovations into Action – A business and Science Partnership*
- *Utilize AHRQ Clinical Information, Tools and Consumer Information to Add Value to Current GM's Initiatives*





Overview

- *Measuring Health Care Quality With the AHRQ Prevention Quality Indicators(PQIs), Area Level Inpatient Quality Indicators(IQIs), Area Level Patient Safety Indicators(PSIs)*
- *Applying the Three Indicators to Michigan Data*
- *For all indicators – Provide GM employee density (by county, by age applicable to indicator) and cost data (by county)*



Evaluating Community Care: Area Level AHRQ QIs

- **Prevention Quality Indicators (PQIs):**
 - *Focuses on ambulatory care sensitive conditions*
- **Area-Level Inpatient Quality Indicators (IQIs):**
 - *Examines area-level utilization indicators that reflect the rate of hospitalization in the area for specific procedures.*
- **Area-Level Patient Safety Indicators (PSIs):**
 - *Captures all cases of predefined potentially preventable complications that occur either during hospitalization or resulting in subsequent hospitalization.*

Prevention Quality Indicators (16)

- *Bacterial pneumonia*
- *Dehydration*
- *Pediatric gastroenteritis*
- *Urinary tract infection*
- *Perforated appendix*
- *Low birth weight*
- *Angina without procedure*
- *Congestive heart failure*
- *Hypertension*
- *Adult asthma*
- *Pediatric asthma*
- *COPD*
- *Diabetes cx - short term*
- *Diabetes cx - long term*
- *Uncontrolled diabetes*
- *Lower extremity amputation*

Area-level IQIs (4) and PSIs (6)

- *Coronary Artery Bypass Graft (CABG) area rate*
- *Hysterectomy area rate*
- *Percutaneous transluminal coronary angioplasty (PTCA) area rate*
- *Laminectomy or spinal fusion area rate*
- *Foreign Body Left During Procedure*
- *Iatrogenic Pneumothorax*
- *Selected Infections Due to Medical Care*
- *Postoperative Wound Dehiscence*
- *Accidental Puncture or Laceration*
- *Transfusion Reaction*

Applying the community or area- level QIs to Michigan Data

- *Data Source: Healthcare Cost and Utilization Project (HCUP) Michigan State Inpatient Database (SID), 2001 and 2002*
- *Software: AHRQ PQI v 2.1, revision 3; AHRQ IQI v 2.1, revision 4; AHRQ PSI v 2.1, revision 3*
 - *Standardize data values to QI software requirements*
 - *2001 MI SID PQI Analytical File = 1,250,358 total inpatient discharges*
 - *2002 MI SID PQI Analytical File = 1,250,706 total inpatient discharges*
 - *Cases primarily excluded due to missing data (e.g., age, sex) or residence outside of MI. The focus is admissions among MI residents.*

Applying the QIs to Michigan Data (cont.)

- *To calculate area rates it was necessary to have access to the state and county (FIPS code) of patient residence.*
- *The QI software produces observed and risk-adjusted rates*
- *Output converted to rates*
 - *All rates expressed per 100,000 population with the exception of perforated appendix (rate per 100 admissions) and low birth weight births (rate per 100 births)*



QI Data Interpretation

- *QI Data Tables*
 - *Present risk-adjusted rates and confidence intervals*
 - *Using color, the data tables indicate areas that are significantly higher than the state average (red) or significantly lower than the state average (green)*
 - *Focus on areas with red for improvement, areas with green for best practices*



QI Data Interpretation - Example

All AHRQ PQIs by County - State of Michigan

Region Name	PQIs Related to Diabetes											
	Diabetes Uncontrolled			Diabetes Short Term Complication			Diabetes Long Term Complication			Lower Extremity Amputation		
	RA Rate	LCI	UCI	RA Rate	LCI	UCI	RA Rate	LCI	UCI	RA Rate	LCI	UCI
Michigan	8.48			28.16			54.97			18.49		
Alcona	36.14	3.76	68.52	57.02	-385.15	499.18	83.39	14.57	152.20	50.86	10.74	90.97
Alger	0.00	-35.30	35.30	0.49	-481.50	482.47	0.00	-75.01	75.01	2.77	-40.96	46.50
Allegan	18.38	7.24	29.52	73.44	-78.71	225.59	68.87	45.19	92.55	32.98	19.17	46.78
Alpena	0.00	-20.24	20.24	0.53	-275.86	276.93	0.00	-43.02	43.02	0.00	-25.08	25.08
Antrim	19.14	-4.07	42.35	136.75	-180.19	453.69	317.60	268.28	366.93	95.46	66.70	124.21
Arenac	4.75	22.24	31.84	39.17	-330.73	409.06	45.77	-11.79	103.21	20.11	-13.44	53.67
Baraga	28.10	-10.07	66.27	0.23	-521.00	521.45	13.84	-87.27	94.96	0.00	-47.29	47.29
Barry	6.51	-8.64	21.66	72.95	-133.90	279.80	120.38	88.18	152.57	31.32	12.55	50.09
Bay	32.40	21.54	43.26	36.74	-61.55	235.02	119.10					
Benzie	0.00	-27.52	27.52	32.70	-343.13	408.53	6.95					
Berrien	9.11	0.09	18.11	29.49	-93.74	152.71	44.30					
Branch	31.72	14.94	48.50	59.35	-169.84	288.54	141.46					
Calhoun	16.81	7.02	26.60	72.77	-60.91	206.45	105.86					
Cass								-20.96	46.75	4.58	-15.15	24.32

County RA rate is significantly lower than state rate

County RA rate is significantly higher than state rate



Cost Data Interpretation

- *Cost Data Tables (electronic)*
 - *Detail the average (mean) cost per discharge for each indicator in the county. Display the number of discharge per year, total costs, and potential cost savings if the number of discharges were reduced by 10%, 20%, 30%, 40%, or 50%.*
 - *No tests of statistical significance.*



Cost Data Interpretation - Example

Microsoft Excel - pq_cost_2002.xls

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QI Name

Chronic Obstructive Pulmonary Disease (PQI 5)

Cost Savings Given Reduction of Cases by

County	Name	Mean Cost	Total Cases	Total Cost	10%	20%	30%	40%	50%
26001	Alcona	6,373.43	13	82,854.59	8,285.46	16,570.92	24,856.38	33,141.84	41,427.29
26003	Alger	4,200.81	9	37,807.29	3,780.73	7,561.46	11,342.19	15,122.82	18,903.64
26005	Allegan	4,729.93	111	525,022.23	52,502.22	105,004.45	157,506.67	210,008.89	262,511.11
26007	Alpena	5,252.40	76	399,182.40	39,918.24	79,836.48	119,754.72	159,672.96	199,591.20
26009	Antrim	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26011	Arenac	5,002.26	7	35,015.82	3,501.58	7,003.16	10,504.75	14,006.33	17,507.91
26013	Baraga	3,646.28	21	76,571.88	7,657.19	15,314.38	22,971.56	30,628.75	38,285.94
26015	Barry	5,179.23	93	481,668.39	48,166.84	96,333.68	144,500.52	192,667.36	240,834.19
26017	Ben	5,727.56	305	1,746,905.80	174,690.58	349,381.16	524,071.74	698,762.32	873,452.90
26019	Benzie	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
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26171	Benzie	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26173	Benzie	5,117.96	24	122,831.04	12,283.10	24,566.21	36,849.31	49,132.42	61,415.52
26175	Benzie	5,117.							

Presentation of Data on Maps

- *Risk-adjusted PQI and area-level IQI and PQI rates of all Michigan counties were grouped into quintiles – five equal groupings*
 - *Group 1 = any up to 20% (bottom 1/5), lowest rates*
 - *Group 2 = 20 to 39%*
 - *Group 3 = 40 to 59%*
 - *Group 4 = 60 to 79%*
 - *Group 5 = 80% up (top 1/5), highest rates*
- *Visually presents five colors representing the ranges above with actual data ranges (rates) noted*
- *Lower rates are in green; higher rates in red*
- *Hospital locations (by zip code within a county) placed on map for reference only – this does not indicate any relationship to the rates in the counties*

Presentation of Data on Maps (2)

- *GM beneficiary density data was divided into three groups for visual presentation. A “stick figure” was inserted in each county to represent the number of covered beneficiaries residing in that county. The age ranges of the beneficiaries are those appropriate to the indicator reported, e.g., the diabetes PQI measures are applicable to adults so the ages of beneficiaries was limited to 25 years and older. The pediatric PQIs are from 0 to 25 years.*
- *The size of the “stick person” represents beneficiary density within three groups: the smallest size figure for low employee density, middle size for medium density, and large size to represent a high number of beneficiaries in the county. An example from PQI 1 is shown.*





Map Data Interpretation

- *Maps*
 - *Present indicator data in quintiles – shows range of variances*
 - *No indication of statistical significance*
 - *Present employee density using “stick figures”*
 - *Focus on areas with red or high rates and a large number of GM beneficiaries*



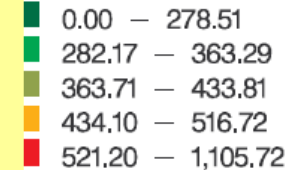
Map Data Interpretation - Example

Name of Indicator and Data Year in Map Title

AHRQ Prevention Quality Indicators
Congestive Heart Failure Admission Rate (PQI 8), 2002

State of Michigan

Risk Adjusted Rate per 100,000 Population

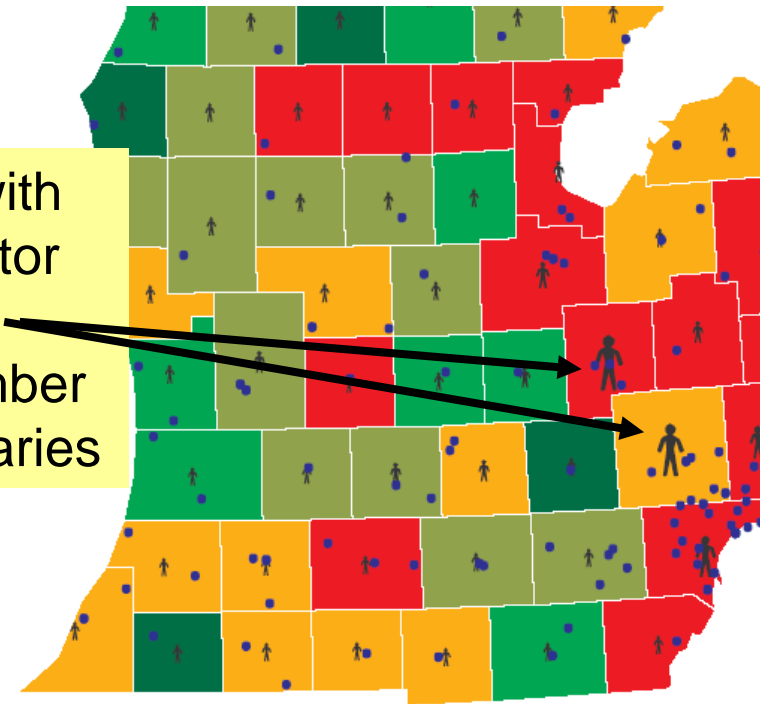


• Hospital Location



Number GM-covered beneficiaries, ages 25 and older

Counties with high indicator rates and higher number of beneficiaries



Data quintiles. Green is the lowest 20% or the lowest rates. Red is the highest 20% or the highest rates.

Symbol indicating number of GM covered beneficiaries, number below is average in the group.

Indicator and Cost Data **Summary - Interpretation and** **Prioritization**

- *Indicator and Cost Summary – Prioritization of Opportunities*
 - *Counties listed were limited to those with more than 5,000 GM beneficiaries regardless of age or more than 1,000 GM beneficiaries within selected age subgroups (e.g., pediatrics).*
 - *Highlighting was used to call attention to the counties with the highest opportunity for cost savings with a reduction in the number of admissions by just 10% for the specified indicator. So highlight represents influence of the number of cases as well as the cost per admission.*

QI Name

Indicator and Cost Data Summary

Interpretation - Example

Inpatient Quality Indicators: Categorization by GM Beneficiary Density, Rate and Potential Cost Savings

IQI Number	Inpatient Quality Indicators	County Name (High Density GM Beneficiaries)	County IQI Rate (stat sig.)	Number of Discharges 2002	Average Cost Per Discharge	Potential Savings with 10% Reduction in Admissions Per Year	Total Potential Savings with 10% Reduction
26	Coronary artery bypass graft (CABG) area rate	Bay	291.4	129	\$27,602	\$356,064	\$9,694,614
		Genesee	440.2	26	\$21,670	\$58,942	
		Ingham	296.2	169	\$27,189	\$459,486	
		Lapeer	384.5	25	\$23,751	\$59,378	
		Livingston	214.1	94	\$29,024	\$272,824	
		Macomb	293.2	427	\$28,120	\$1,200,732	
		Oakland	231.6	998			
		Saginaw	361.8	216			
		Tuscola	371.2	39			
		Washtenaw	250.8	178			
Wayne	266.3	745					
		Bay	1,391.5	686			\$12,769,896
		Eaton	884.5	250			
		Ingham	860.8	538			
		Livingston	488.8	240	\$13,855	\$332,513	
		Macomb	908.3	1,616	\$12,173	\$1,967,086	
				3,121	\$12,236	\$3,818,986	
				845	\$13,808	\$752,552	
				45	\$18,449	\$83,022	
				135	\$12,986	\$175,306	

County name (limited to those with high density of GM beneficiaries)

Potential cost savings if number of admissions were reduced by 10% - by county and total

Focus on indicators with statistically sig. higher rates and high potential cost savings (red highlighting)



Potential Next Steps

- *Data Interpretation*
 - *Focus on indicators and counties that have significant opportunities for improvement (e.g., statistically significantly higher than state average); high number of GM beneficiaries; high potential cost savings with reduction in admissions / events*
 - *Top performers, those counties with lower than state average rates, may be a resource for best practices*



Potential Next Steps (2)

- *Community Collaborations*
 - *Identify stakeholders who can assist with and/or may be impacted by community quality improvement projects*
 - *Identify best practices and improvement strategies.*
- Resources include:*
- *Top performing communities – what are they doing right?*
 - *CDC, AHRQ and other national resources – what has worked in other areas?*

Implementation and Challenges

Proposed Actions

- *Integrate action plans with other Community Initiatives projects*
- *Consider Pay for Performance for providers in specific counties*
- *Dovetail with Save Dollars / Save lives Project in SE MI*
- *Focus on the vital few projects (PTCA, CABG, CHF, Bacterial Pneumonia, COPD & Diabetes)*

Challenges

- *Limitation of administrative data*
- *Determination of Best in Class*
- *Coordination with other Community Stakeholders to achieve desired improvement*
- *Funding to implement projects at a community level*