

# Creating and Using a Diabetes Disease Registry

David Swieskowski, MD, MBA  
Mercy Clinics, Inc  
Des Moines, IA  
*dswieskowski@mercydesmoines.org*

## Disease Registry

- List of patients with a chronic illness
  - Paper, Excel, Access, Electronic Registries, AEHR
- Additional useful information
  - Date of last visit
  - Pertinent test results
- Electronic registries should be easily searched
  - By time period, health system, clinic, physician, insurers, P4P programs
- Measures should be automatically calculated
  - NQF, self generated

## Why Do We Need a Registry?

- Evidence based care given only 55% of time  
– (NEJM. 2003;348(26):2635-2645)
- Blood sugar is controlled in only 37% of patients with diabetes  
– (JAMA. 2004;291(3):335-342)
- Blood Pressure is controlled in only 35% of patients with hypertension  
– (Ann Intern Med. 2006;145(3):165-175)

## Why Does this Happen?

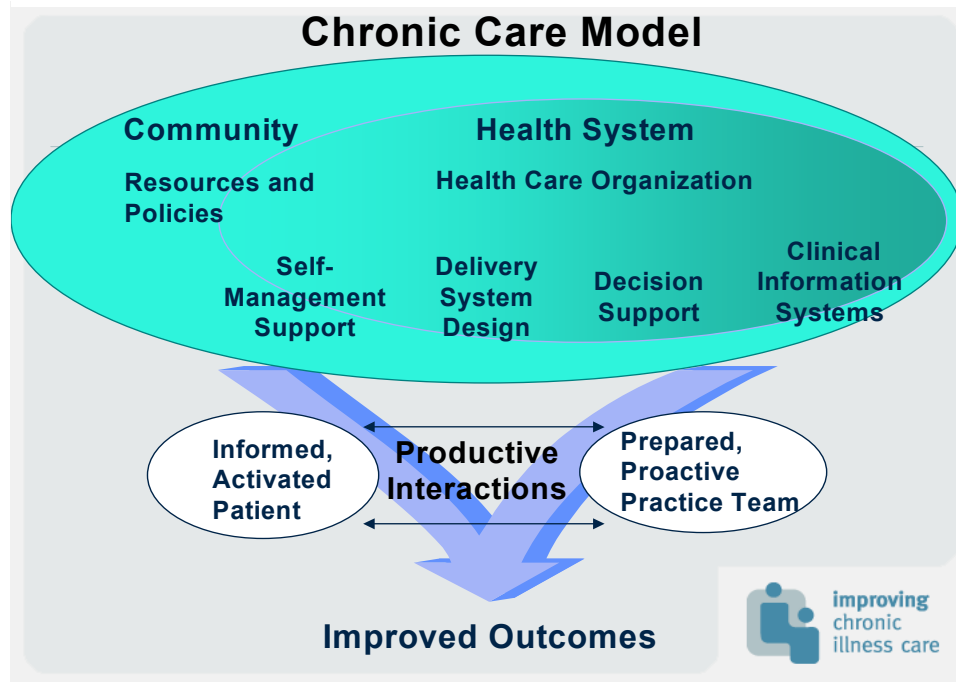
“Every system is perfectly designed  
to get the results it gets”  
-Don Berwick

## Systemic Barriers

- Information Explosion
  - 439 evidence based interventions in primary care
- Time
  - 24.8 hours per day to deliver all recommended care to a panel of 2500 patients
- Lack of measurement
  - We don't know what our performance is
  - Almost all other industries continuously measure
- Reimbursement system
  - Paid for quantity not quality
- Culture
  - Biggest barrier – we lack the will

## Time (for a panel of 2500 patients)

- Chronic Disease 10.6 Hrs / day
  - *Ann Fam Med* 2005;3:209-214
- Preventive Care 7.4 Hrs / day
  - *Am J Public Health*  
2003 Apr;93(4):635-41
- Acute Care (58% of time) 4.7 Hrs / day
  - *J Fam Pract* 1198;46:377-389
- Non-patient care 2.1 Hrs / day
  - *AAFP* survey May 2005
- **Total 24.8 Hrs / day**



## Registry Principles

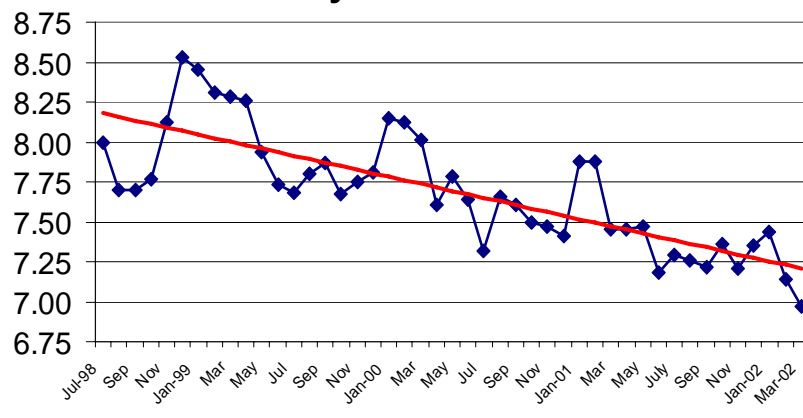
- A registry is the first and single most important step to improve chronic care
  - Changes strategy from reactive to proactive care
- One measure done well is better than many done poorly
  - Needs to be accurate
  - Needs to be done 100% of the time
- The people using the information need to be able to count on it

## Start with HgA1c

- This single data point is very powerful
  - It will introduce population based care
    - Identifies patients overdue for care
    - Identifies Patients not meeting glucose goals
- Diabetes has the best developed set of measures
- Strong evidence that lowering HgA1c leads to better outcomes and reduced cost
- Up to 5% of patients have diabetes
  - Not too big or too small
- Data is relatively easy to collect
  - Pre-load 1 year worth of data
    - From office log or reference lab

## Quality Benefits

**MCI Average HgA1C Values  
July 98 - Mar. 02**



## UKPDS Study

*Published in Lancet 1998*

A 1% decrease in HgA1c reduces:

- Microvascular complications by 35%
- Diabetes related deaths by 25%
- All cause mortality by 7%
- Myocardial infarction by 18%

## Identifying Patients with Diabetes

- Billing systems - billed with code 250.xx
  - Will miss patients who haven't been in the clinic in the search time frame (usually 1 year)
  - Not everyone billed with 250.xx will have diabetes
- Lab systems - patients with HgA1c done
  - Not all patients with a HgA1c will have diabetes
  - Will miss patients without a HgA1c
- Need to refine the list over time with either approach
  - Mark the charts of patients in the registry and add patients when an unmarked chart is found
  - Remove patients identified in error

## Electronic Data Collection Options

- Excel
  - Free (if you have Excel) and easy to use
  - Store only the most recent result
  - Works well for population management of diabetes
- CDEMS
  - Free but difficult to use, no support
- DocSite
  - \$600 per year per provider
  - Web based
- CareMeasures
  - From IFMC – Used by Mercy Clinics
  - Cost about \$500 per year per provider
- MDdatacor
  - Free if you are in the Wellmark CoQ program

## Why not wait until the AEHR?

- Most AEHRs do not function well as registries to support population based care
  - AEHR is much more
    - Expensive
    - Complex
    - Difficult to implement
- Current care delivery system is flawed
  - Don't want to design your AEHR processes around this flawed system or you might end up doing the wrong thing more efficiently

Microsoft Excel - Diabetes Data Collection V2 11-07.xls

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Patient Last Name	Patient First Name	Patient Birth Date	Provider	Most Recent HgA1c Value	Date of Most recent HgA1c								
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														
29														

**Excel Diabetes Registry**

- Keep only the most recent visits data
- Sort alphabetically to enter data
- Sort by date to find patients overdue for testing
- Sort by value to find poorly controlled patients

Patient Last Name	Patient First Name	Patient Birth Date	Provider	Most Recent HgA1c Value	Date of Most recent HgA1c	<p style="text-align: center;"><b>Actionable List</b></p> <p style="text-align: center;">Sort by HgA1c Result To determine patients <u>not at goal</u></p> <p style="text-align: center;">Call patients not at goal who haven't been seen in the last 3 months</p>
BOODRY	COSIE	10/21/1968		10.3	9/19/2007	
BALDWIN	Carmela	3/6/1951		9.8	3/23/2007	
BIBBINS	ANTHONY	3/16/1967		8.5	10/24/2006	
Cook	BARBARA	7/11/1944		8.5	10/31/2007	
BRICKMAN	NORMAN	10/10/1947		7.9	8/21/2007	
Claman	DAVID	3/8/1951		7.5	7/17/2007	
CHO	GLEN	6/16/1941		7.5	8/20/2007	
BYERS	REGINALD	6/8/1933		7.3	8/14/2007	
ATKINS	ILA	8/31/1955		7.3	10/16/2007	
Carroll	M	8/30/1964		7.2	8/16/2007	
BURGETT	RICHARD	11/21/1940		7.1	7/31/2007	
ATKINS	CHARLES	10/23/1958		6.9	7/18/2007	
BUSICK	LENETTA	10/22/1934		6.8	9/25/2006	
CARPENTER	Donald	3/1/1949		6.8	10/17/2007	
BECK	Willy	3/2/1948		6.7	6/25/2007	
BERNARD	DANIEL	5/4/1950		6.7	10/10/2007	
BALES	JEON	12/27/1953		6.1	7/5/2007	
BENTLEY	VICTORIA	11/27/1965		6.0	8/1/2007	
BANKS	Susan	11/19/1962		6.0	10/16/2007	
BAILEY	PHILLIP	8/4/1940		5.9	7/25/2007	
BRIGHTWELL	SHIRLEY	1/3/1943		5.9	10/15/2007	
CARPENTER	DARYL	4/12/1947		5.5	1/12/2007	

# Disease Registries Do Four Things

1. Accept Data
2. Create patient summary reports
3. Create actionable lists
  - With a defined condition
  - Overdue for care
  - Not meeting outcome goals
4. Create performance reports
  - % of the population meeting a measure



Care Measures

HOME | NEW PATIENT | PATIENT SEARCH | REPORTING | TOOLS | MY CAREMEASURES | HELP

Entry / Update Patient Lab Master Lab Master ID: 0

**General Lab Information:**  
Date of Service:   
Comments:

**Common Lab Tests:**  
HgbA1c:  Microalbumin/Creat. Ratio (Semi)   
Microalbumin/Creat. Ratio (Quantitative)

**Lipid Panel & Thyroid Function:**  
Total Cholesterol  LDL  T4   
Triglycerides  HDL  TSH

**Chemistry Labs:**  
Glucose  Potassium  ALT  BUN   
Sodium  Creatinine  AST  37

**Complete Blood Count (CBC):**  
WBC  HCT   
HG  PLTS

**Patient Information:**  
Chart No   
First Name   
Last Name

### Patient Cardio-Metabolic Summary

**Patient Name:** Birthdate: 12/10/1943  
**Physician Name:** Chart No:

Vitals			Procedures		
Date	BP	Wgt	Date	Description	Result
11/20/2007	112/62	240	4/6/2007	Foot Care Assessment	n/a
8/1/2007	132/78	239	4/6/2007	Foot Pulse	n/a
4/6/2007	n/a	243	4/6/2007	Monofilament Foot Sensation Test	n/a
4/6/2007	138/78		4/6/2007	Dilated Retinal Eye Exam with Interpretation	MD FM
1/5/2007	124/60		1/5/2007	Mersky	1
1/5/2007	n/a	241	1/5/2007	PHQ	5
10/9/2006	n/a	238.4			
10/9/2006	122/76				
8/18/2006	100/68				

Lab Results													
Date	A1C	Chol	HDL	LDL	Trig	UAQR Semi	UAQR	BUN	Creat	Gu	Na	K	ALT
11/20/2007	6.3	193	37	127	147	< 30			1.1	94			28
4/6/2007	6	187	40	114	166								28
1/5/2007	6.2	157	34	98	125				1.1				29
10/9/2006	185	33	112	201	< 30								25
8/18/2006	6.3	226	34	146	229			1.1					
3/27/2006	7	196	26	123	234								
3/15/2006								1.1					

**Outstanding Patient Care Activities**

- Requires Colorectal Cancer Screening Test at least annually
- Requires LDL result <100

Care Measures Patient Summary

HOME | NEW PATIENT | PATIENT SEARCH | REPORTING | TOOLS | MY CAREMEASURES | HELP

Activity Letters | Standard Reports | Measurement Results | Care Opportunities | Patient Lists | Patient Clinical Data

**Patient Clinical Information:**

Select Clinical Info:

- Vitals
- Labs
- Procedures
- Diagnosis
- Medications
- Immunizations
- Allergies
- Exclusions
- Office Visits

Most Recent only  
 Chronic Condition

[All]

Payor	Clinic	Provider	Last Name	First Name	Birthdate	Description	Date	Result	Patient ID
AA					8/9/1986	HEMOGLOBIN A1C	9/4/2007	14.0	30309
AB			DO		5/30/1958	HEMOGLOBIN A1C	8/23/2007	5.5	29035
AB					3/1/1999	HEMOGLOBIN A1C	5/21/2007	6.7	39267
AB					8/30/1951	HEMOGLOBIN A1C	12/13/2007	9.6	28667
AB					3/9/1929	HEMOGLOBIN A1C	11/7/2007	6.0	41119
AB					4/10/1961	HEMOGLOBIN A1C	12/21/2007	6.4	37368
AB			ES		11/29/1923	HEMOGLOBIN A1C	11/7/2007	6.5	43837
AB					11/3/1937	HEMOGLOBIN A1C	12/11/2007	8.9	43948
AB			ICK		3/12/1943	HEMOGLOBIN A1C	10/25/2007	7.6	27378
AB					3/11/1957	HEMOGLOBIN A1C	11/28/2007	7.7	41413
AB			ANIE		4/2/1947	HEMOGLOBIN A1C	8/10/2007	6.4	38967
AB					3/1/1922	HEMOGLOBIN A1C	10/11/2006	8.1	32056
AB					8/8/1944	HEMOGLOBIN A1C	3/6/2008	6.3	26079
AD					11/23/1937	HEMOGLOBIN A1C	5/8/2007	6.4	39055
AD					9/20/1974	HEMOGLOBIN A1C	1/15/2008	7.8	43588
AD			NE		12/18/1968	HEMOGLOBIN A1C	7/5/2005	11.7	33443
AD			H		2/26/1942	HEMOGLOBIN A1C	7/25/2007	6.6	27666
AD			NE		12/18/1968	HEMOGLOBIN A1C	1/30/2007	14.0	39564

Print Preview    Export

HOME | NEW PATIENT | PATIENT SEARCH | REPORTING | TOOLS | MY CAREMEASURES | HELP

Activity Letters | Standard Reports | Measurement Results | Care Opportunities | Patient Lists | Patient Clinical Data

Quality Measurement Report Period: 4/1/2007 - 3/31/2008    Get Measurement Results     Show Summary

Payor: Clinic: Provider:

Topic	Measure	Description	Net Pop.	Percent
DM	1	A1c test at least annually	731	91.1%
	2	A1c result <= 8.0	731	78.0%
	2A	A1c result <= 7.0	731	60.1%
	3	Blood Pressure result < 140/80	731	59.8%
	4	LDL test at least annually	731	88.1%
	5	LDL result < 130	731	77.3%
	5A	LDL result < 100	731	58.5%
6	Microalbumin test at least annually	731	81.1%	
HTN	2	Blood Pressure result < 140/90	946	69.9%
PC	5	Breast Cancer screening	572	16.4%
	6	Colorectal Cancer Screening	1149	5.1%

Beaverdale Clinic Performance Report

Print Preview    Export

## Clinic Level Performance Report

**All Population Diabetes Data: 1/1/08-12/31/08**

Clinic	Beaverdale	Campus	East FP	Jefferson	North FP	Panora	South	Urbandale	West FP
Total Patients	760	597	832	592	1113	80	890	840	997
<b>Process goals:</b>									
HgA1c last 12 mo.	89.7%	93.1%	90.5%	75.0%	93.6%	95.0%	93.4%	88.3%	85.0%
LDL last 12 mo.	85.0%	87.9%	85.1%	43.0%	86.4%	92.5%	88.1%	81.4%	82.2%
Microalb last 12 mo.	74.7%	78.2%	72.1%	37.3%	76.6%	85.0%	74.6%	77.4%	68.5%
Eye Exam last 12 mo.	41.7%	31.7%	44.4%	21.6%	48.4%	40.0%	37.9%	48.8%	35.1%
<b>Outcome goals: Not done in the last 12 mo. Indicates a failure</b>									
% HgA1c ≤ 8.0	76.6%	69.2%	76.3%	61.7%	77.5%	70.0%	79.0%	78.0%	72.0%
% HgA1c ≤ 7.0	59.1%	50.1%	61.4%	45.6%	56.1%	47.5%	58.9%	59.2%	50.6%
% LDL < 130	72.5%	70.4%	69.8%	37.0%	78.0%	73.8%	74.2%	74.4%	73.9%
% LDL < 100	52.5%	51.3%	50.8%	27.2%	59.2%	52.5%	58.2%	62.5%	55.4%
% BP < 140/80	56.7%	62.3%	66.8%	31.0%	49.4%	63.8%	52.4%	64.5%	55.5%
<b>All Population HTN Data: 1/1/08-12/31/08</b>									
Clinic	Beaverdale	Campus	East FP	Jefferson	North FP	Panora	South	Urbandale	West FP
Total Patients	1852	995	839	417	3311	46	733	813	2455
<b>Outcome goals: Not done in the last 12 mo. Indicates a failure</b>									
% BP < 140/90	71.7%	75.1%	72.2%	72.9%	55.7%	67.4%	61.9%	70.4%	63.1%

## Delivery System Redesign to accommodate the registry

- Providers should not use the Registry in the daily care of patients
  - They do not have time to add another chore
- Nursing staff is responsible for
  - Data Entry – must be near 100% accurate
  - Creating reports and contacting patients
- Nursing audited charts of patients who were called back to make sure all needed care was done when they came in.
- When nurses added this to current duties it didn't get done
  - The Health Coach position was created

## Health Coach Job Description- Essential, Core Functions

1. Oversees the *disease registry* database
2. Conducts *pre-visit chart review*
3. Works with patients & families on *self-management support*
4. *Coordination of care across the care continuum*
5. Involvement in *QI activities*

## Pre-visit Chart Review

### *Coaches plan the visit*

- **Health Coaches review the charts of patients before the patient is seen**
  - Review for chronic disease standards of care, preventive health care, immunizations
- **Labs & referrals are done before the patient is seen** *(based on standing orders)*
  - More effective than doctor review and frees up doctor time



#### DIABETES Laboratory Standing Orders

TEST	INTERVAL	CONDITIONS
HgA1C	4 months	All patients
Lipid Profile	1 year	Patients with <b>no</b> Dx of hyperlipidemia
	4 months	Patients with a Dx of hyperlipidemia
ALT (SGPT)	4 months	If on high risk medication (Statins, Actos, Avandia)
Creatinine	1 year	Patients with <b>no</b> Dx of Hypertension
Basic Metabolic Profile	1 year	Patients with a Dx of Hypertension
Glucose	4 months	Do not order if a BMP is being done
Urine Alb/Creat. ratio	1 year	Patients with <b>no</b> Hx of Abn UACR
	4 months	If UACR was ever > 30

Complete these labs on all my patients with diabetes whenever the Standing Orders are due.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

Coaches  
make sure  
all needed  
care is  
delivered  
using the  
diabetes lab  
standing  
orders

**Recommended Lab/Preventive Screenings for today's visit:**

**QUALITY CARE - RECOMMENDED FOR ANY PATIENT WITH HTN/DIABETES**  
(WELLMARK AND NON-WELLMARK PATIENTS)

Y'S DATE: \_\_\_\_\_ PROVIDER: \_\_\_\_\_ DM: \_\_\_\_\_ HTN: \_\_\_\_\_ BOTH: \_\_\_\_\_  
 name: \_\_\_\_\_ First Name: \_\_\_\_\_  
 id Record #: \_\_\_\_\_ Date of Birth: \_\_\_\_\_

Blood Pressure \_\_\_\_\_

- Basic Metabolic Panel (every 3-6 months) - Serum
- Creat: \_\_\_\_\_ Glucose: \_\_\_\_\_
- MAL (every 3-12 months) \_\_\_\_\_
- Uric Acid (if on thiazides) \_\_\_\_\_
- WBC (if on ACE Inhibitors) \_\_\_\_\_
- Lipids (yearly)
- Chol: \_\_\_\_\_ Trig: \_\_\_\_\_ HDL: \_\_\_\_\_ LDL: \_\_\_\_\_
- HgbA1c: \_\_\_\_\_
- ALT: (ordered if pt. on thiazides or statins) \_\_\_\_\_
- Mammograms (at least yearly in women from age 50-69) \_\_\_\_\_
- Pap Smear (at least every 3 years in women age 18-64) \_\_\_\_\_
- Colonoscopy (at least every 10 years from age 50-80) \_\_\_\_\_
- PSA (yearly after age 50 unless family history) \_\_\_\_\_
- Bone Density Test (every 2 years) \_\_\_\_\_
- Dilated Eye Exam (yearly) \_\_\_\_\_

**WELLMARK & NON-WELLMARK PATIENTS - CRITERIA**

<p><b>HYPERTENSION</b></p> <p>Charts of Wellmark hypertension patients should be marked with MAGENTA tape. Non-Wellmark hypertension patients should be marked with light purple tape (this includes out of state Wellmark patients and Federal employees).          Continue to mark charts of newly diagnosed HTN patients.          Order labs according to the posted established provider guidelines and provide all necessary information on this form. Deliver this form to the health coach or lab once completed.          If a patient is no longer hypertensive, remove the tape and fill out one of these forms to inform the health coach of this change. The patient will then be removed from Secur.          If the patient has transferred care, fill out one of these forms to inform the health coach of this change. The patient will be removed from Secur.</p> <p>Other information for the health coach or lab to be aware of: _____</p>	<p><b>DIABETES</b></p> <p>Charts of diabetic patients should be marked with GREEN. Continue to mark charts of ALL newly diagnosed diabetic patients according to the posted established provider and provide all necessary information on this form. Deliver this form to the health coach or lab once completed.          If a patient is no longer diabetic, remove the tape and fill out one of these forms to inform the health coach of this change.          If the patient has transferred care, fill out one of these forms to inform the health coach of this change. The patient will be removed from Secur.</p>
---	--

Revised 1/07

**Pre-visit  
Review  
Audit**

**Mercy West  
Medical  
Clinic**

### One Day of Charges from Pre-visit Chart Review

Done the same day	Number of patients receiving	Charge added today		Scheduled for future date	# of patients needing	Charges added in future	
Zostavax & Admin fee	1	259.00	259.00	CPX	6	\$158.00	\$948.00
DTAP & Admin fee	2	95.00	190.00	Occult blood	5	\$45.00	\$225.00
HPV & Admin fee	3	213.00	639.00	DEXA	3		Shared revenue
Pneumonia & Admin fee	3	94.00	282.00	Colonoscopy	7		FRBL
Ped Hep A & Admin fee	1	95.00	95.00				
PSA	2	51.00	102.00				
Microalbumin	1	30.00	30.00				
<b>TOTAL</b>			<b>\$1,597</b>				<b>\$1,173</b>

**Urbandale FP Clinic**

## Mercy North Example

10 providers & 1.6 FTE Health Coaches

Mercy North Clinic - Diabetes Visits				Coach Introduced	
	2003	2004	2005	2006	2007 annualized
Total Diabetes Visits	733	824	881	1334	1446
Per Cent 99214	47%	62%	58%	62%	67%
Weighted average charge / visit	\$105	\$113	\$111	\$113	\$115
Total Diabetes EM Charges	\$76,769	\$92,746	\$97,546	\$150,523	\$166,516
Microalbumin	365	479	739	2058	2,083
UACR charges	\$10,950	\$14,370	\$22,170	\$61,740	\$62,498
HgA1c	1274	1389	1384	2024	2135
HgA1c charges	\$34,398	\$37,503	\$37,368	\$54,648	\$57,642
<b>Total Office DM charges</b>	<b>\$122,117</b>	<b>\$144,619</b>	<b>\$157,084</b>	<b>\$266,911</b>	<b>\$286,656</b>
Yearly Gross Differential		\$22,502	\$12,465	\$109,827	\$19,745
<b>Yearly Net Differential</b>		<b>\$15,751</b>	<b>\$8,726</b>	<b>\$76,879</b>	<b>\$13,821</b>

## Conclusions

- A disease registry changes the strategy from reactive to proactive
- Care delivery changes to accommodate the registry will lead to many chronic care model innovations
- Performance reports will drive your organizations to continually improve
- Practice redesign with a registry should be done before an AEHR is implemented

# www.mercyclinicsdesmoines.org/Quality

The screenshot shows a Microsoft Internet Explorer browser window displaying the website <http://www.mercyclinicsdesmoines.org/Quality/QualityIndex.html>. The website header features the Mercy Clinics logo and the tagline "Excellence. Every Day in Every Way.™". A navigation menu includes "FIND A DOCTOR OR CLINIC", "PRIMARY CARE", "SPECIALTY CARE & SERVICES", "URGENT/QUICK CARE", and "BILLING INFO". Below the menu, there are links for "Home", "About Us", "Health News", "Contact Us", "Employment", "Quality Improvement", "Clinics Administration", and "Employee Login".

The main content area is titled "Quality Improvement for Excellent Care". It includes a sub-header "Read about our Excellent Care as found in nationally published articles:" followed by two article titles: "Office-Based Health Coaches: Creating Healthier Communities" and "Mercy Clinics: The Medical Home. Redesigning Primary Care Delivery Systems for Patient Centeredness".

Below these titles is a section titled "Mercy Clinics' Expert Care for Diabetes Receives National Recognition". The text describes the clinic's work to improve diabetes care, mentioning awards from the National Committee for Quality Assurance (NCQA) and the American Diabetes Association (ADA). It also mentions the use of a secure computer system to track patient visits and goals, and the role of Health Coaches in helping patients manage their conditions.

The browser's taskbar at the bottom shows the Start button, several open applications, and the system clock displaying 9:23 AM on 4/8/08.