Engaging patients and providers with the right information, at the right time, to do the right thing

Using Automated Patient Engagement and Clinical Decision Support tools to Improve Outcomes and Reduce Costs: A Case Study

ACO National Congress, November 2013
Presenters

Stanley Goldstein
President and CEO
Patient Engagement Systems

Yvonne Sonnenberg, MHA
President - Empire Physicians Manage Company
Executive Director - Empire Physicians Medical Group
Agenda

- Key to Success - Engaging the physician and the patient
- Improving primary care with automated, patient specific and guideline driven analytics and clinical decision support
- A case study: How Empire Physicians Medical Group used Patient Engagement Systems to improve outcomes and reduce costs.
Key Take Aways

- Patients who are engaged with and return to their primary care provider at appropriate times have better outcomes and use significantly fewer health care resources.
- It is not just Patient Engagement but the creation of “meaningful” physician – patient engagement.
- Primary Care Physicians are the Key to success under HealthCare Reform, they need the tools to be successful and these tools are now available!
Benefits of Physician - Patient Engagement

- Improved Physician-Patient Interactions
- Greater Patient Satisfaction
- Better health and lower costs
- Improved Practice Efficiency
Barriers

- Keeping track of results is difficult
  - Doctors love flow sheets – but hate to keep them up!
  - Patients use many different laboratories

- Interpreting results is difficult
  - Diabetes is among the most complex problems a primary care provider faces

- Patients get “lost to follow-up”
  - No reminder systems

- Doctors and nurses care for individual patients
  - Nobody has a “population view”

- Patients don’t know what to do
Primary Care is Key to the Success of the ACO model.

To Be Successful PCPs need easy to use automated tools which:
Create better Patient-Physician Engagement
Provide the Physician with timely analytics and clinical decision support
Using automated tools to create meaningful patient – physician engagement
An overview of the platform

Test Order → Lab Results → PCP Review & Care Planning

Patient Engagement → Analytics → Decision Support → Physician - Patient Engagement
Three integrated modules

Detection & surveillance
- Proprietary data management & algorithms
- Built from evidence-based guidelines (ADA, NKF)
- Defines discrete chronic disease populations for targeted programs
- Foundation for PEC and CDS modules

Patient engagement & communications
- Engine for patient reminders, alerts, and messages
- Personalized to the patient’s specific conditions and care plans
- Reinforces MD-patient relationships

Clinical decision support
- Automated reporting for patient centric care analysis
- Recommendations based on nationally accepted guidelines
- Tools to better manage populations (work list, flow sheets, etc.)
- Enhanced PCPs natural workflow, no disruption
Design Criteria

- Low cost per case
- Low technology investment at the practice
  - *With* or *without* electronic medical record
- Little change in practice flow
- Little disruption of patient-provider relationship
- Accommodate multiple data sources
- No key-entry
- High face validity (accuracy)
PES Clinical Outreach Tools

- Case identification
- Flow sheet updates after every lab result
- Reminders to practices
- Reminder letters to patients
- Clinical alert letters to patients
- Quarterly/Monthly population reports to practices
- Population management for medical homes

All services are based on national guidelines
### A1C (Desirable range <7%)

<table>
<thead>
<tr>
<th>Test date</th>
<th>Result</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>07/27/2006</td>
<td>8.5</td>
<td>Poor glycemic control. Intensify therapy, including medications and lifestyle changes. Recheck A1C every 3 months.</td>
</tr>
<tr>
<td>02/23/2006</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
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<td>9.6</td>
<td></td>
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<td></td>
</tr>
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### M:C Ratio (Normal <30. Borderline high 30–300 mg/gm)

<table>
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<tr>
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<tbody>
<tr>
<td>07/29/2005</td>
<td>57.8</td>
<td>Microalbuminuria present. Confirm that the patient is using an ACE inhibitor or Angiotensin Receptor Blocker (ARB).</td>
</tr>
<tr>
<td>11/01/2004</td>
<td>42.9</td>
<td></td>
</tr>
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<td>02/09/2004</td>
<td>36.5</td>
<td></td>
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</table>

### Creatinine (Normal <1.5 mg/dl men; <1.4 women)

<table>
<thead>
<tr>
<th>Test date</th>
<th>Creatinine</th>
<th>eGFR</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>04/05/2006</td>
<td>0.9</td>
<td>&gt;60</td>
<td>Normal renal function. Recheck annually.</td>
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<td>03/22/2006</td>
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### Serum Lipid Profile (Desirable LDL <100 mg/dl)

<table>
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<tr>
<th>Test Date</th>
<th>TC</th>
<th>TRIG</th>
<th>HDL</th>
<th>LDL</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/17/2006</td>
<td>234</td>
<td>145</td>
<td>49</td>
<td>156</td>
<td>Poor lipid control. Intensify therapy including medications and lifestyle changes. Recheck every 3 months.</td>
</tr>
<tr>
<td>11/26/2005</td>
<td>213</td>
<td>137</td>
<td>48</td>
<td>138</td>
<td></td>
</tr>
<tr>
<td>02/09/2005</td>
<td>214</td>
<td>165</td>
<td>39</td>
<td>142</td>
<td></td>
</tr>
<tr>
<td>11/01/2004</td>
<td>222</td>
<td>110</td>
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**Note:** If this patient is not under your care, please fax or call PES.
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</table>
March 31, 2010

Primary Care Provider: William Osler, MD

Patient: Ed Dawson
267 Maple Avenue
Windsor, TX 79304
Date of birth: 02/22/1937

Alert!
This patient is overdue for Urine M:C ratio

The most recent test results for the patient are:

<table>
<thead>
<tr>
<th>Diabetes Test</th>
<th>Test Result</th>
<th>Test Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C</td>
<td>6.7%</td>
<td>September 03, 2009</td>
</tr>
<tr>
<td>Urine M:C ratio</td>
<td>46.3 mg/gm</td>
<td>August 07, 2008</td>
</tr>
<tr>
<td>Total Cholesterol</td>
<td>193 mg/dl</td>
<td>September 03, 2009</td>
</tr>
<tr>
<td>Triglycerides</td>
<td>383 mg/dl</td>
<td>September 03, 2009</td>
</tr>
<tr>
<td>HDL Cholesterol</td>
<td>43 mg/dl</td>
<td>September 03, 2009</td>
</tr>
<tr>
<td>LDL Cholesterol</td>
<td>73 mg/dl</td>
<td>September 03, 2009</td>
</tr>
</tbody>
</table>

If this patient is not under your care for diabetes, please contact PES at the fax or telephone numbers below. Otherwise, please contact the patient to resume active care.

Thank you.
**Alert!**
This patient is overdue for Urine M:C ratio

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</tbody>
</table>
## Provider Report Card

<table>
<thead>
<tr>
<th>Clinical Target:</th>
<th>A1C</th>
<th>LDL-cholesterol</th>
<th>Microalbumin: Creatinine Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;7.0</td>
<td>7.0-8.0</td>
<td>&gt;8.0</td>
</tr>
<tr>
<td>Your Active Patients (n=42):</td>
<td>55%</td>
<td>22%</td>
<td>23%</td>
</tr>
<tr>
<td>All Active Patients (n=4709):</td>
<td>56%</td>
<td>27%</td>
<td>16%</td>
</tr>
<tr>
<td>Top 10% of All Providers:</td>
<td>71%</td>
<td>20%</td>
<td>8%</td>
</tr>
<tr>
<td>On time Definition:</td>
<td>A1C&lt;8 in 55%, Annual test in 93%</td>
<td>LDL&lt;130 in 63%, Annual test in 85%</td>
<td>Annual test in 31%</td>
</tr>
</tbody>
</table>

### ADA Provider Recognition Program
- Last A1C < 7: within 6 months
- Last A1C >= 7: within 3 months
<table>
<thead>
<tr>
<th>Clinical Target:</th>
<th>&lt;7.0</th>
<th>7.0-8.0</th>
<th>&gt;8.0</th>
<th>On time</th>
</tr>
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<td>22%</td>
<td>23%</td>
<td>56%</td>
</tr>
<tr>
<td>All Active Patients (n=4709):</td>
<td>56%</td>
<td>27%</td>
<td>16%</td>
<td>62%</td>
</tr>
<tr>
<td>Top 10% of All Providers:</td>
<td>71%</td>
<td>20%</td>
<td>8%</td>
<td>84%</td>
</tr>
<tr>
<td>On time Definition:</td>
<td>Last A1C &lt; 7: within 6 months Last A1C &gt;= 7: within 3 months</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ADA Provider Recognition Program Criteria:</td>
<td>A1C &lt; 8 in 55% Annual test in 93%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Population Roster

<table>
<thead>
<tr>
<th>Patient Name</th>
<th>MRN</th>
<th>Date of Birth</th>
<th>A1C</th>
<th>LDL</th>
<th>Urine Protein</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dickens, Charles</td>
<td>M9679762</td>
<td>03/30/1939</td>
<td>7.4+</td>
<td>136+</td>
<td>361+</td>
</tr>
<tr>
<td>Grogan, Smiler</td>
<td>M8698763</td>
<td>02/02/1942</td>
<td>8.2+</td>
<td>132+</td>
<td>302+</td>
</tr>
<tr>
<td>Culpeper, Billie Sue</td>
<td>M0097547</td>
<td>03/01/1958</td>
<td>12.1+</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Poe, Edgar A</td>
<td>M2390651</td>
<td>04/09/1950</td>
<td>6.3</td>
<td>88</td>
<td>88.5</td>
</tr>
<tr>
<td>Wells, Five</td>
<td>M0001011</td>
<td>03/01/1958</td>
<td>12.1+</td>
<td>88</td>
<td>88.5</td>
</tr>
<tr>
<td>Finch, Russell J</td>
<td>M0027397</td>
<td>04/09/1950</td>
<td>6.3</td>
<td>88</td>
<td>88.5</td>
</tr>
<tr>
<td>Benjamin, Benjy</td>
<td>M0011549</td>
<td>01/01/1958</td>
<td>6.6</td>
<td>98</td>
<td>16.7</td>
</tr>
<tr>
<td>Clupeper, C.G</td>
<td>M0073460</td>
<td>03/30/1939</td>
<td>7.4+</td>
<td>150+</td>
<td>4256.2+</td>
</tr>
<tr>
<td>Crump, Melville</td>
<td>M0020961</td>
<td>02/02/1942</td>
<td>8.2+</td>
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42 Active Patients  
+ = Over Goal; ‡ = Overdue
<table>
<thead>
<tr>
<th>Patient Name</th>
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March 11, 2010
Ed Dawson
267 Maple Avenue
Windsor, TX 79304

Our office is using the PES Diabetes Information System to improve the quality of health care we provide. PES helps us know when care is not meeting targets recommended by the American Diabetes Association.

On March 29, 2010 your A1C was 9.5, which is above the target range for this test. The goal is an A1C that is less than 7.0, though a level of up to 8.0 is sometimes acceptable. A1C is a measure of average blood sugar over the past 3 months.

We should be working together on a plan to make improvements. If you haven’t heard from us recently, please call my office.

This letter was generated on behalf of:

William Osler, MD
On March 29, 2010 your A1C was 9.5, which is above the target range for this test. The goal is an A1C that is less than 7.0, though a level of up to 8.0 is sometimes acceptable. A1C is a measure of average blood sugar over the past 3 months.

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Our office is using the **PES Diabetes Information System** to improve the quality of health care we provide. This system helps us know when care is not meeting targets recommended by the American Diabetes Association. The system sends you a letter if you are overdue for lab tests that are important in the care of diabetes. How often to get each test depends on how well-controlled the condition is.

You are currently overdue for one of the following diabetes tests:

<table>
<thead>
<tr>
<th>Test</th>
<th>ADA Recommended Test Schedule</th>
<th>Your Most Recent Test Date</th>
<th>Next Test Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C</td>
<td>Every 3–6 months, depending upon result</td>
<td>March 03, 2010</td>
<td>August 30, 2010</td>
</tr>
<tr>
<td>Urine M:C ratio</td>
<td>Annually</td>
<td>June 09, 2003</td>
<td>June 08, 2004 (Overdue)</td>
</tr>
<tr>
<td>Lipid Panel</td>
<td>Every 3–12 months, depending upon result</td>
<td>December 12, 2009</td>
<td>December 12, 2010</td>
</tr>
</tbody>
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Please call our office so that we can schedule an appointment for you if you don’t have one scheduled in the near future. If you have any questions about the contents of this letter, please contact us. If you would like more information about the Vermedx Diabetes Information System, please call 1-866-233-2298. I look forward to hearing from you soon.

This letter was generated on behalf of:

**William Osler, MD**
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<table>
<thead>
<tr>
<th>Test</th>
<th>ADA Recommended Test Schedule</th>
<th>Your Most Recent Test Date</th>
<th>Next Test Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1C</td>
<td>Every 3–6 months, depending upon result</td>
<td>March 03, 2010</td>
<td>August 30, 2010</td>
</tr>
<tr>
<td>Urine M:C ratio</td>
<td>Annually</td>
<td>June 09, 2003</td>
<td>June 08, 2004</td>
</tr>
<tr>
<td>Lipid Panel</td>
<td>Every 3–12 months, depending upon result</td>
<td>December 12, 2009</td>
<td>December 12, 2010</td>
</tr>
</tbody>
</table>
Readily adopted by patients & providers

Patient Acceptance

<table>
<thead>
<tr>
<th></th>
<th>Clinical Trial</th>
<th>Commercial Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Acceptance</td>
<td>98.1%</td>
<td>99.0%</td>
</tr>
</tbody>
</table>

What providers say…

- High-utility
- Easy to deploy & use
- Improves my relationship with my patients
- Allows for smarter shared-decisions
- Patients appreciate it
“It lets me know when I have to go do lab tests and stuff.”

“I got me to thinking about priorities for me and for my family. I realized I had to take care of myself first.”

“Made me aware that it might be a good idea to talk to someone.”

“The most useful part was that doc was thinking of me.”

“It means that there is somebody out there that is willing to listen, who is willing to answer questions.”

“My wife handed the letter to me last night and said you better go to Dr. ….”
# Impact Validated in NIH study

## Utilization

<table>
<thead>
<tr>
<th>In-patient</th>
<th>ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>-15%</td>
<td>-28%</td>
</tr>
</tbody>
</table>

## Charges

<table>
<thead>
<tr>
<th>In-patient</th>
<th>ER</th>
</tr>
</thead>
<tbody>
<tr>
<td>-11%</td>
<td>-27%</td>
</tr>
</tbody>
</table>

- 5 year study period
- Over 7,000 patients
- 64 practices
- Better Outcomes
- Lower utilization
**Effect on Total Claims Paid**


**Net savings:** $2,400 per patient per year
On-Time for Testing

Bar chart showing percentages for:
- A1C: 17%
- Cholesterol: 39%
- Creatinine: 40%
- Urine Protein: 74%
Pain-free adoption…

- No data entry
- No change in practice patterns
- No change in workflow
- No IT investment or training
Proven results…

- Improved clinical processes
- High patient satisfaction
- Better disease control
- Lower costs of care
What’s Going On?

- Communicating with patients – engaging them – improves health.
- They get more testing.
- They do not get more meds.
- They get more planned care – less emergency care.
- They have fewer ER visits and hospital stays.
  - Admissions for all diagnoses go down (except Obstetrics)
- Total costs per patient go down by over $2400 per year
Case Study

How Empire Physicians Medical Group used an automated tool to engage patients and providers with the right information, at the right time, to do the right thing:

Improving outcomes and reducing costs.
About Empire Physicians Medical Group

- IPA Established 1986
- 60+ primary care physicians
- 280+ specialists
- 2012 CAPG Elite Practice
- Serving Palm Desert CA and the Coachella Valley
- [http://www.empirephysicians.com](http://www.empirephysicians.com)
Delegated Risk Model…

California model – IPA working with over 60 Primary Care Physicians at 50 different sites

Managed care focus, IPA bears financial risk

Plans and IPAs need to meet 5 Star requirements

IPA requires higher level analytics and reporting to achieve its goals

Physicians are all independent contractors
IPA Relationships

Health Plan relationship with IPA as a delegated Medical Group is based on percent of premium payments – Health Plan gain/loss passes through to IPA

Financial Relationship with Providers

Capitation with bonus incentives based on performance (5 star quality focus & P4P quality focus)

The IPA success drives the Health Plan success for 5 Star measures

Bonuses to Plans range from 3% to 5% increase to benchmark with rebates based on plans ratings –
IPA Overview

**PROS**
- Managed Care Focus
- Single source Laboratory
- Experienced Staff

**CONS**
- Many systems with some sense of “ownership to older systems”
- Communication & cooperation

Si L b !!
Decision points to Partner with PES

- IPA Nursing Staff focused on Case Management and Disease Management for individuals
- Analysis of quality measurements require a greater level of clinical knowledge
- Coordination with Physicians and Patients requires constant attention
- Registry system must be maintained and accessible - IPA resources stretched
- Would PES be "good fit" for EPMG?
- Would PES provide Detection and Surveillance?
How would it work?

- More communication with patients – engaging them – improves health.
- More testing will occur
- Should see better control
- Should decrease ER Use
- Increase Primary Care interactions
IPA Implementation – It’s a GO

- **PROS**
  - Managed Care Focus
  - Single source Laboratory
  - Experienced Staff

- **CONS**
  - Many systems with some sense of “ownership to older systems”
  - Communication & cooperation
  - Single source Laboratory!!
Challenges

- Lab Data
  - Timely and accurate data
- Physicians
  - Education
  - Time to review initial profiles
  - Acceptance of program
  - Impact on office operations
- Patients
  - Education
- Staffing
Focus

- Dedicated staff most important
- Working together to understand goals
- Assign ownership to a provider liaison
- Introduction to physicians
  - Understanding importance of participation
  - Allow physicians to opt in/ opt out
  - Allow patients to opt in/ opt out
- Flexibility most important
Patient Joel

- **After PES**
  - A1C testing on time & decreased level to 8.9
  - Improved communication led to more frequent testing, more PCP visits and better adherence
  - Reduced ER Admits, UC visits, and improved compliance & ultimately cost decreased

- **Before PES**
  - A1C testing sporadic and level remained at greater than 13
  - Missed appointments and testing
  - 3 Urgent Care visits in prior year
  - 2 ER visits and one ER admit in implementation year
IPA Results – 5 Star

- IPA went from 2 Star in Domain 2 for DM to 4.5 Stars following the implementation of PES for DM

- CKD Program is in process for 5 Star improvement

- IPA is using a dashboard report card for all physicians and each patient visit can indicate “current status”
Detection & surveillance: Continuously finding intervention opportunities

With PES…

- Automatically identify patients
- Create opportunities for personalized communications

Implications…

- Benefit from early stage detection
- Patient awareness and activation
- Increase revenue from CMS
Key Performance Indicators

Performance Improvement: 2011 vs. 2010

Improvement in Key Measures

- Cholesterol Testing: 52.1% vs. 78.2%
- Nephropathy Testing: 1.6% vs. 31.4%
- Blood Sugar Control: 43.1% vs. 76.1%
- Cholesterol Control: 25.5% vs. 48.9%

2010: Dark Blue; 2011: Orange
Key Performance Indicators

Performance Improvement: 2011 vs. 2010

Relative Change from Baseline

- A1C: -5.4%
- CHOL: -2.5%
- CREA: -4.4%
- HDL: 4.9%
- LDL: -5.9%
- TRIG: -2.0%
Effect of PES on Utilization per Patient per Year

Diabetes Tests

0.08 $P = 0.252$

Primary Care Visits

0.13 $P = 0.001$

ER visits

-0.01 $P < 0.001$

Hospital days

-0.02 $P = 0.036$

Radiology Tests

-0.05 $P = 0.242$

Inflation-Adjusted Claims

-164.13 $P = 0.047$

n=188 patients with diabetes
Summary

- The “Performance Era” has started
- Diabetes and other chronic diseases are “must have” areas for performance
- Engaging patients is critical to improvement
- Automated systems to support providers and staff can make the difference in
  - Quality
  - Costs
  - Rewards
Thank You!

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