Helping
Cardiovascular
Professionals
Learn.
Advance.
Heal.

Translating Science and Evidence into Real World Clinical Care

Hong Kong
May 11, 2010

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American College of Cardiology

Today's discussion

- ACC Quality First and the National Cardiovascular Data Registry®
- Door-to-balloon (D2B) program helps significantly reduce D2B time in the US
- Pinnacle network – an overview
- Partnership Opportunities for International Quality Improvement and Research

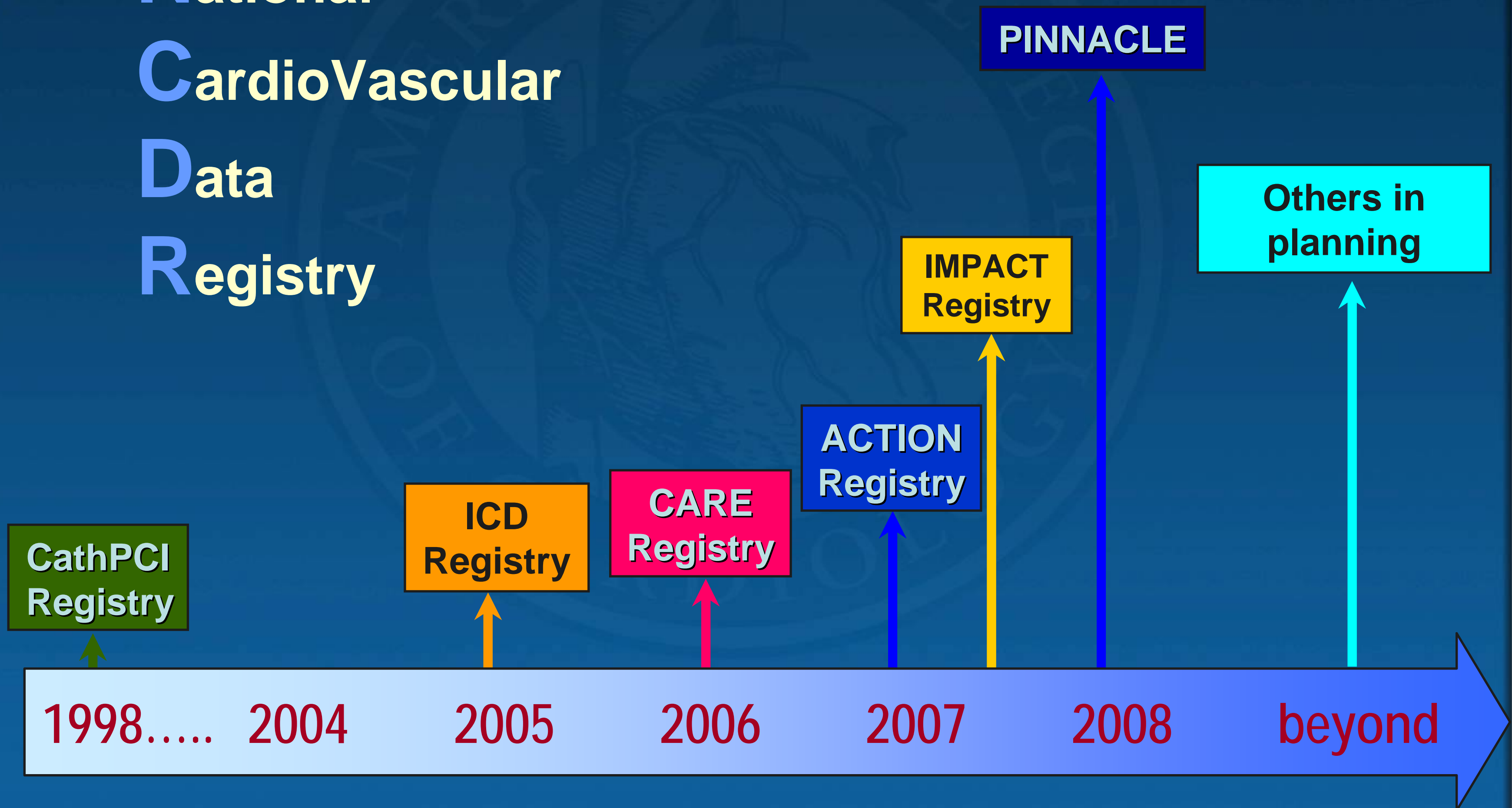
ACC Quality First

- Translating Science into Guidelines, Performance Measures and Appropriate Use Criteria
- National Cardiovascular Data Registry®
- PINNACLE Network™
- Quality Improvement Projects

QCARE

Timeline of building a true…

National
CardioVascular
Data
Registry



NCDR®

	# of sites	# of Patient Records
CathPCI Registry:	1132	> 10 million
ICD Registry:	1145	> 250 thousand
CARE Registry:	166	> 9 thousand
ACTION-GWTG Registry:	445	> 120 thousand
PINNACLE Registry:	665	> 470 thousand
TOTAL	3,553	> 10.8 million

Multispecialty Representation

CathPCI

- Society for Cardiovascular Angiography and Intervention

ICD

- Heart Rhythm Society

CARE

- Society for Cardiovascular Angiography and Intervention
- Society for Interventional Radiology
- American Academy of Neurology
- American Academy of Neurosurgery
- Society of Vascular Medicine and Biology

ACTION

- American Heart Association
- Chest Pain Centers Society

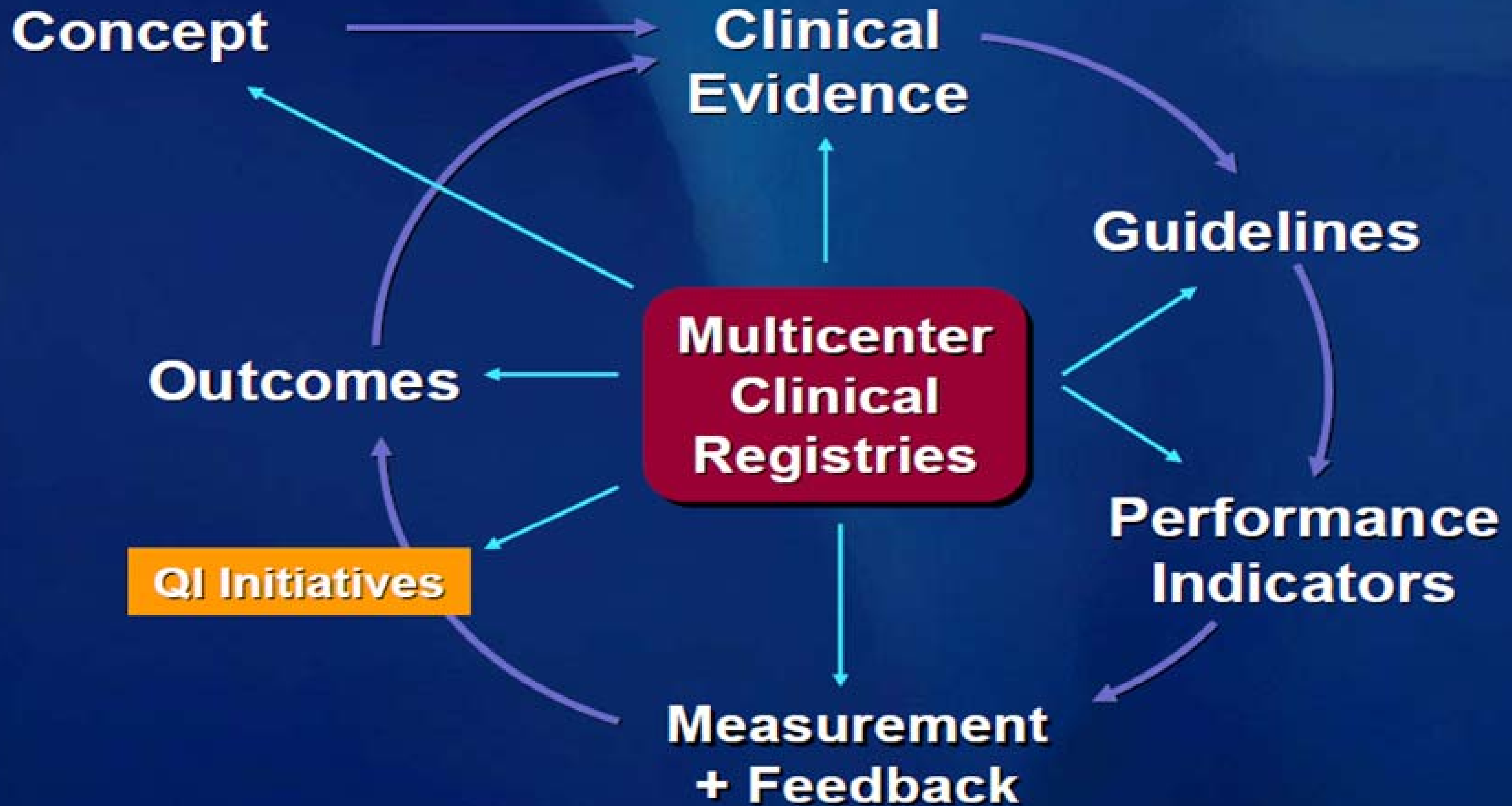
IMPACT

- American Academy of Pediatrics

Registry Can

- capture high quality clinical data efficiently
- be used for scientific discovery
  - track patients' longitudinal care
  - track drugs/devises
  - be linked to biological/imaging data
- complement/support RCTs
  - and perhaps be backbone for these
- helps drive new evidence into routine practice

Registries for Evidence Development and Dissemination



Adapted from Califf RM, Peterson ED et al. JACC 2002;40:1895-901

Quality can save Money!

Ed activation of Cath Lab and Immediate transfer by Care Team

- Door-to-balloon time decreased from 113 minutes to 75 minutes
- Transfer time reduced from147 minutes to 85 minutes
- Infarct size reduced (creatinine kinase)
- Hospital stays reduced by 2 to 3 days
- Cost reduced by over 30 percent

U. M. Khot et. Al., Emergency Department Activation of the Catheterization Laboratory and Immediate Transfer to an Immediately Available Catheterization Laboratoryto Reduce Door to Balloon Time in ST Elevation Myocardial Infarction. *Circulation. 2007; 116*

NCDR® Research Highlights

Total = 51 manuscripts

- 2008: 23 manuscripts
- 2009: 28 manuscripts
- 3 Federal Grants in 2009

Influence of NCDR® Research

Public Policy

Quality Improvement: Guideline Adherence
- Reducing D2B Times
- Clinical Indications & Outcomes

Quality Improvement: Translational Research

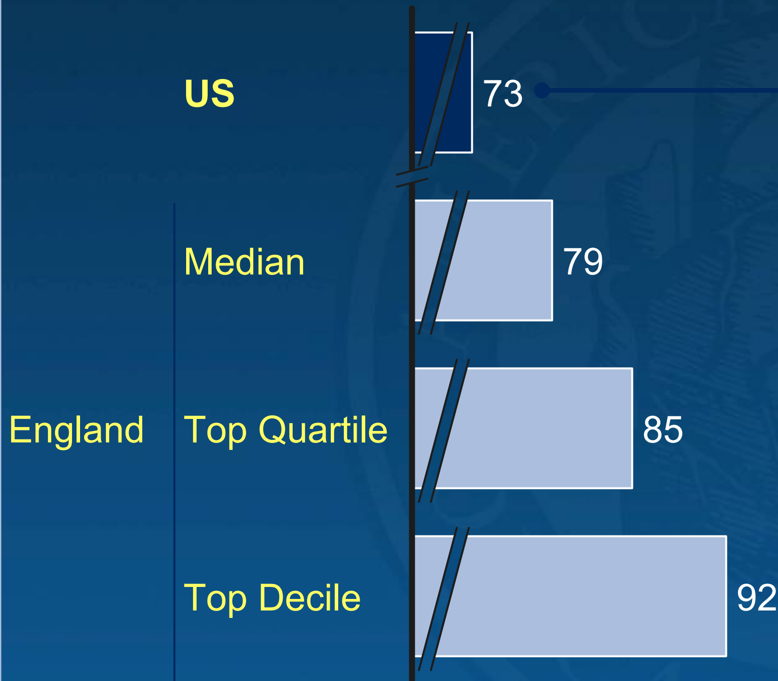
Post-Market Surveillance
- Adverse Events in Closure Devices

New technologies and effectiveness
- Diffusion of new technology

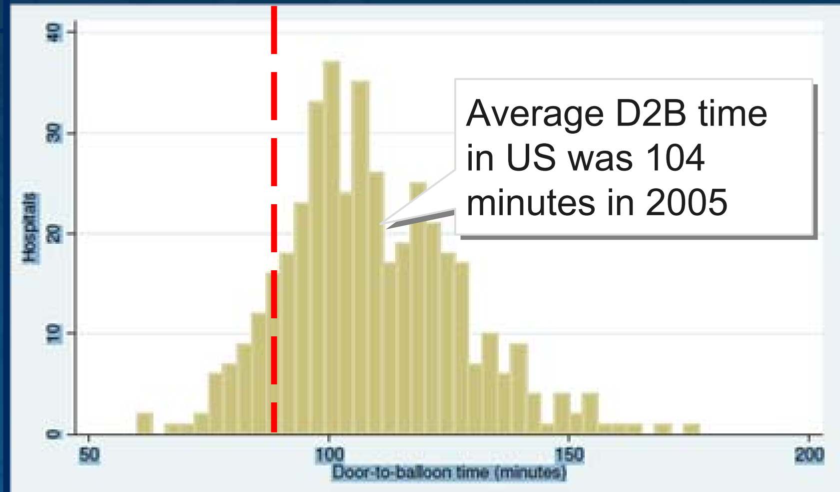
Door-to-Balloon (D2B)

1 Historically, D2B time in US has been sub-optimal and has varied significantly by hospital

Patients with D2B time less than 90 min, 2007



US Hospital D2B time distribution



Only 41% of US hospitals showed D2B times <90 mins in 2005

- **The clinical significance of D2B time well recognized in the US**
- **But most hospitals not aware of sub-optimal performance until ACC data feedback**
- **Major concerns from hospitals:**
  - **D2B time would be a publicly reported metric**
  - **Huge burden to achieve the goal of D2B time < 90 min**

SOURCE: MINAP 2008, ACC

2 Initiative details – The ACC created an integrated program combining both organizational requirements and clinical strategies

Organizational requirements

- **A** Senior management commitment
- **B** Team-based approach

Evidence-based strategies

- **a** ED physician activates the cath lab
- **b** Prompt data feedback
- **c** Single call activates the cath lab
- **d** Cath lab team ready in 20-30 minutes

4 evidence-based clinical strategies were selected based on feasibility assessment in addition to clinical evidence

Explicit goal with measurable outcome

D2B time of 90 min or less for at least 75% of non-transfer p-PCI patients with STEMI

SOURCE: ACC

2 ACC's strategic approach and careful design of the program made success possible

ACC strategically positioned the D2B program as an alliance with other organizations (e.g., AHA) and member hospitals

Define the goal
- Identify the key problem along the pathway
- Define an explicit program goal with a quantifiable target

Architect the program
- Review literature to identify evidence-based best practice strategies
- Assess feasibility of individual strategies
- Integrate organizational requirements into recommended strategies

Recruit and support member hospitals
- Carefully design and assemble program manual to assist members in implementation
- Acquire ACC local chapter support for recruitment
- Launch a dedicated website to promote the program

Share best practices
- Assess member performance and compare it to top performers
  - CathPCI registry
  - ACTION registry
- Share best practices and innovation through multiple learning channels
  - Member stories on website
  - Online community for members
  - Strategy-specific webinars
  - Workshops at AHA and ACC conferences

SOURCE: ACC

2

With the program manual as a powerful support tool, member hospitals were educated through multiple collaborative learning channels to successfully improve their D2B time

D2B

ILLUSTRATIVE

Online community
- Shared member stories on website
- Easy access to online resources

Webinars
- Frequent, strategy-specific, and easily accessible learning programs

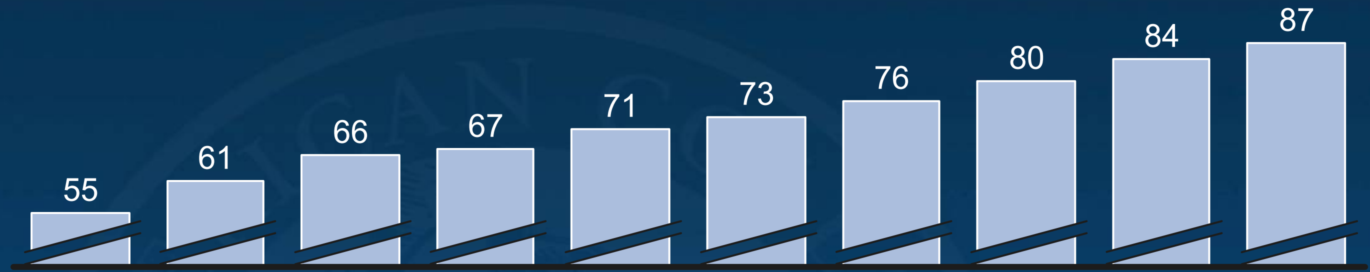
Workshops
- In-person networking and learning at AHA/ACC conferences

Program manual
- Carefully designed, user-friendly manual equipped member teams with tools for improvement, e.g.
  - Suggested organizational framework with clearly defined team roles and responsibilities
  - Supporting materials, e.g., guidelines for team build-ing, communication templates, self-diagnosis tools
  - Implementation tool kits, e.g., Process Flow Chart, "STEMI Alert" Checklist, Cath Lab Activation Protocol

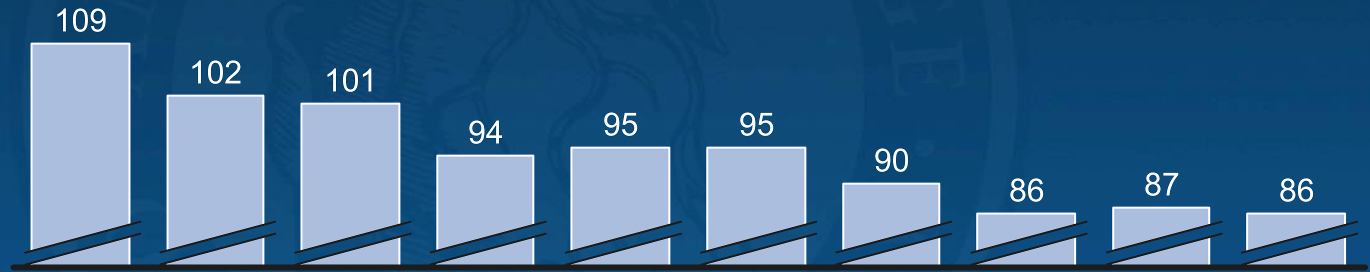
SOURCE: ACC

3 Impact to date – 87% of patients in member hospitals now receive PCI in 90 min or less

STEMI Patients with D2B less than 90 minutes, US
Percent of non-transfer in patients receiving PCI in member hospitals



National median D2B time for qualifying STEMI patients, US[1]
Minutes



	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Year	2006		2007				2008			
No. of member hospitals in D2B (US)	~200		~1,000				~1,100			

~1,400 US hospitals in total potentially eligible for D2B, i.e., conducting primary PCI for AMI

1 National median, Including both D2B member hospitals and non-members

SOURCE: D2B report; Cath-PCI registry; ACC

4

Key success factors – create a culture of improvement, with dedicated multi-disciplinary teams and detailed support materials

Perspectives

"To realize that we have revolutionized processes to significantly improve the lives of our patients is the greatest satisfaction we know."
– King's Daughter Hospital, KY

"The overall commitment to teamwork and STEMI patients brought our D2B time compliance rate up a whopping 81 pp to its current 85% (from 4%)."
– Resurrection Medical Center, IL

"When the ED physician started activation of the cath lab upon the identification of STEMI, success was immediate."
– Norton Audubon Hospital, KY

Key success factors

- Create a culture of improvement and motivation for change
- Gain support of top management team
- Help staff change from a "silo mentality" to a team-based approach
- Develop detailed, user-friendly program manual

Lessons for adopting this initiative

- Highlight organizational requirements
- Set clear and explicit goal with measurable outcome
- A combination of best practice strategies
  - e.g., hospitals implementing 4 or more strategies had the shortest D2B time

SOURCE: ACC

The PINNACLE Network™

Overview – ACC's Pinnacle program aims to help cardiac care practices to thrive clinically, professionally and financially

Background

- **Region – US**
- **Organization –** ACC (professional society)
- Performance of outpatient cardiac care has not been closely monitored nor assessed in the US
- Providers also face challenges recently including
  - emergence of reimbursement models based on efficiency and value

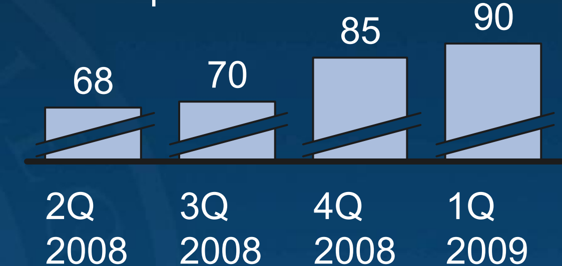
Initiative details

- **Pinnacle** (formerly IC3) by ACC:
  - the first office-based QI program in US
  - aims to help cardiologists address challenges clinically, professionally, and financially
- **Key components** of the program
  - the Pinnacle Registry: to support data collection and offer data feedback
  - Clinical decision support tools
  - Financial and daily operation management tools

Impact

Antiplatelet prescription after MI

Percent of eligible patients seen at member practices



- Number of US clinics in the Pinnacle program has risen dramatically
  - Apr 2008: 34
  - Dec 2008: 86
  - Oct 2009: 180

Key success factors

- Strategic design of value proposition
  - Incentives for participants
- Carefully architected data collection mechanism
- Strong alliances with selected partners

Time to Impact

- 1-2 years

Who could implement this initiative?

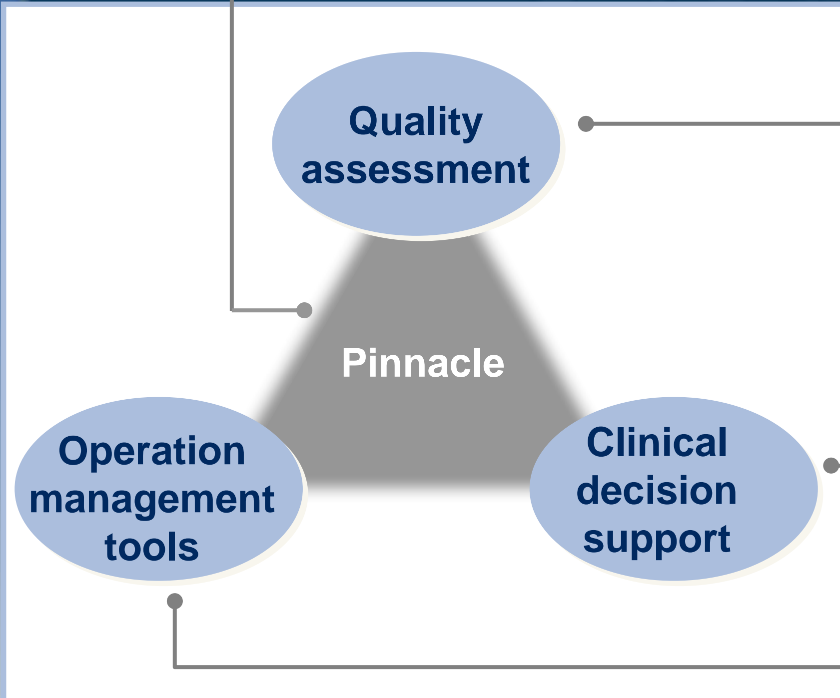
- Any system could implement aspects of the above, although only by working closely with providers could full benefits be realized

SOURCE: ACC

The Pinnacle program supports cardiology practices in multiple dimensions

AMERICAN COLLEGE of CARDIOLOGY PINNACLE NETWORK
Practice Innovation And Clinical Excellence

- Pinnacle completes the NCDR[1] registries which now cover both hospital and ambulatory setting performance



"Pinnacle aims to help (outpatient) practices thrive clinically, professionally, and financially."

- Centralized system for data collection from member practices
  - "Collect once, report to all"
- Frequent assessment and feedback of performance

- Clinical decision support tools ensures adherence to clinical guildlines
- Access to data management systems that translate data into clinical insights

- Financial management tools
- Workforce management strategies
- Guidance for the adoption of health information technology
- Risk management education, etc.

1 American College of Cardiology *National Cardiovascular Data Registry*

SOURCE: Interviews with American College of Cardiology, 2009

Pinnacle aims to make data preparation and submission easier for busy clinicians …

"Collect once, report to all"

Data collection example:
CHD performance

- BP measurement
- Symptom and activity assessment
- Smoking assessment
- Anti-platelet therapy
- Lipid profile
- Use of lipid therapy
- β-blocker post-MI
- ACE/ARB in EF[4] and DM[4]
- Screening for diabetes

3 data submission venues allow members to pick the most suitable option: web-based, EMR[3], or paper-based

Payors

CMS/PQRI[1] | United | BCBS[2] | Others …

Annual reports to payors via ACC automatically

ACC NCDR Pinnacle® registry

Ongoing data submission to ACC

Periodic data feedback to practice

Practice daily operation

1 CMS/PQRI– Physician Quality Reporting Initiative, Centers for Medicare and Medicaid Services, US Dept of Health and Human Resources
2 Blue Cross Blue Shield
3 Electronic medical records
4 Left ventricular ejection fraction (EF) and Diabetes Mellitus (DM)

SOURCE: Interviews with American College of Cardiology, 2009

Clinical decision support tools allow quality improvement at the point of care

ILLUSTRATIVE

A decision support tool helps patients make the right treatment decision

Sample: patient-specific clinical visit output to support decision making

NCDR IC[3] - CAD Registry | **SAMPLE CLINIC VISIT OUTPUT**

A

…oe Sample | Medical Record #: 12-345 | March 26, 2007

Medical History:
1. Coronary artery disease
2. Heart Failure
3. Depression
4. Rheumatoid Arthritis
5. Active Smoker

Current Medications
1. Metoprolol XL 50mg qd
2. Clopidogrel 75mg qd
3. Lisinopril 20mg qd
4. Spironolactone 25mg BID
5. Sertraline 50mg qd

B

Vitals and Health Status over Past Year: Weight = 174lbs; BMI = 24.5

Vital Signs | Seattle Angina Questionnaire Scores

Physical Signs of Volume Overload (Check those Present): ☐JVP, ☐rales, ☐Hepatomegaly, ☐Ascites, ☐Edema, ☐S3, ☐S4

Latest Laboratory Data:
Lipid Panel 01/06/06: Chol = 145, HDL = 60, LDL = 68, Trig = 86
Creatinine 01/06/06 = 1.2 Potassium 07/16/06 = 4.5 HbA_{1c} 09/23/05 = 5.5

C

Guidelines recommendations to consider:
1. Participation in Cardiac Rehabilitation

Performance Measures to Consider:
2. Smoking Cessation Counseling

Therapeutic Recommendations:
Change the following Medications: ☐None

Arrange the following tests:

Education Provided:

Follow-up Appointments:

A **Patient basic information**
- Name, age, sex, etc.

Patient medical history
- CHD
- Heart failure
- Active smoker

Current medications
- Metoprolol XL 50 mg qd
- Clopidogrel 75mg qd

B **Vitals and health status of the patient over past year**
- Seattle Angina Questionnaire scores

Latest Lab Data of the patient
- Lipid panel
- HbA1c

C **Guidelines recommendations to consider:**
1. Participation in Cardiac Rehabilitation

Performance measures to consider:
2. Smoking cessation counseling

Clinical decision support tools by Pinnacle

- Significantly improve clinician adherence to guidelines
- Translate the best available evidence into routine clinical care
- Transform performance measurement into quality improvement at the point of care
- Help increase efficiency at the practice

SOURCE: Interviews with American College of Cardiology, 2009

Pinnacle also supports members with daily operations and financial management

Challenges to practices

- Legislative and regulatory threats to payment
- Demand to demonstrate performance and justify clinical decisions
- Emergence of reimbursement models based on efficiency and value
- Rise of new and untested business arrangements

Pinnacle's approach to solution

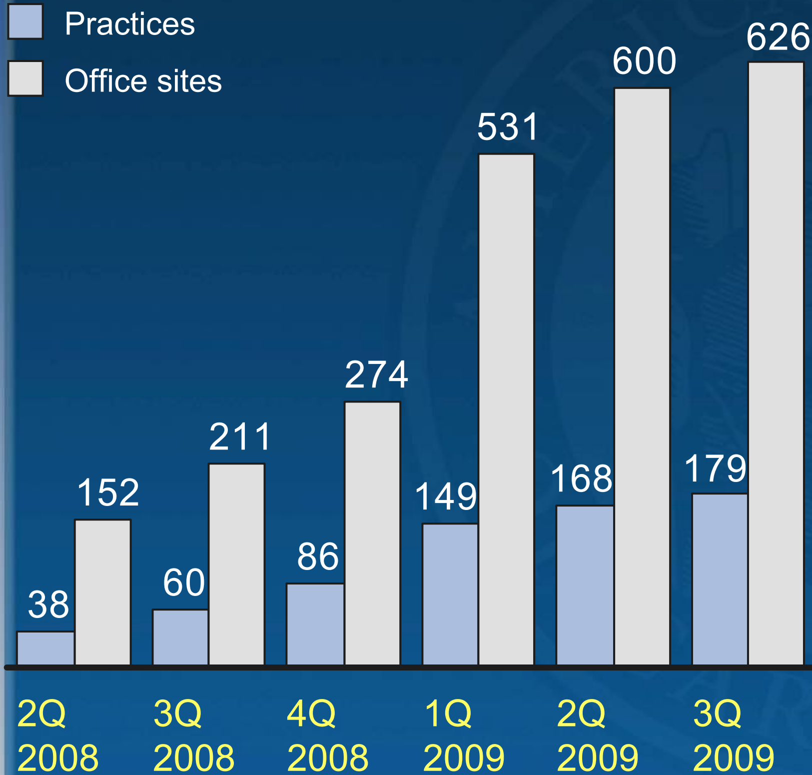
Financial and workforce management tools to help members address challenges

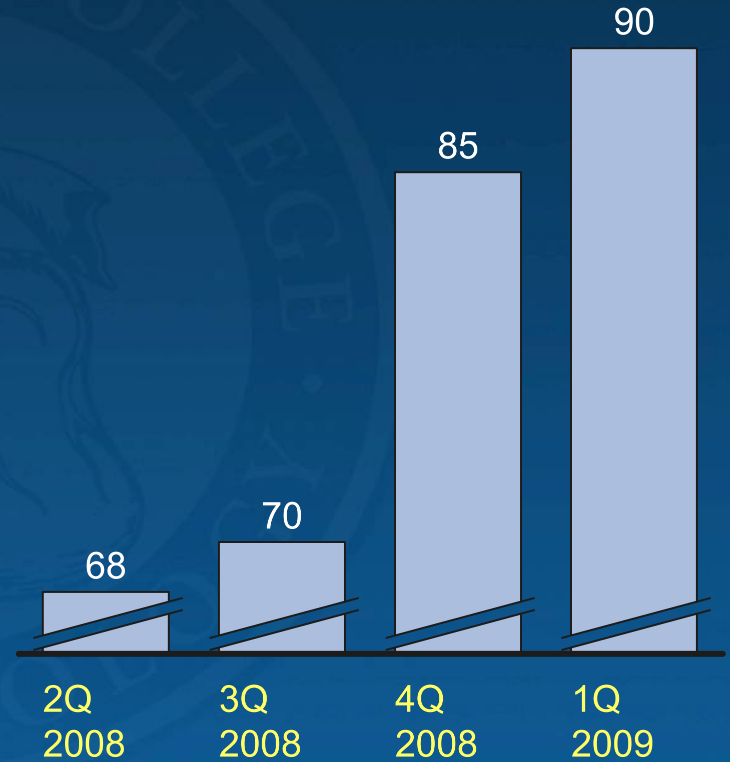
- **Financial management tools** to help practices thrive in financial head winds
- **Workforce strategies** to help optimize capacity allocation and improve operational efficiency
- **Guidance** for the adoption of health **information technology**
- **Risk management** education and training materials
- Strategies to **lower the cost** of liability premiums

These tools offer additional incentives to practices to join Pinnacle, which helps achieve the ultimate goal of quality improvement with more members

SOURCE: Interviews with American College of Cardiology, 2009

Impact: early impact of the Pinnacle program has been positive





SOURCE: American College of Cardiology Foundation, 2009

Science **tells us what we can do;**

Guidelines **what we should do;**

Registries **what we are actually doing.**

Partnership Opportunities for
International Improvement
and Research

What it takes to drive change

- Realignment of incentives for all involved constituencies – payers, hospitals, physicians, and other clinicians
- Threats to the status quo in the US – health care reform, public reporting and transparency, payment reform, economic forces
- Convincing governments that professional societies can increase quality and reduce unnecessary spending at the same time
- Vision, clarity of intent, and leadership
- Luck (improves considerably with hard work)

How to engage the physician community

- Valid data
- Clinical data
- Quantifiable impact and performance feedback
  - NCDR CathPCI Registry dramatic evidence of 27% reduced morbidity and mortality simply from obtaining a pre-hospital EKG
- The importance of the profession and a trusted source
- Practice realignment around teams of care
- Data-driven coordination between hospital and outpatient, primary and specialty providers, and patient and clinician
- Payment incentives and payment reform
- Transparency and public reporting in the US – coming for other countries?

“The right objective for health care is to increase value for patients, which is the quality of patient outcomes relative to the dollars expended.”

- Michael Porter

Harvard Business School

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