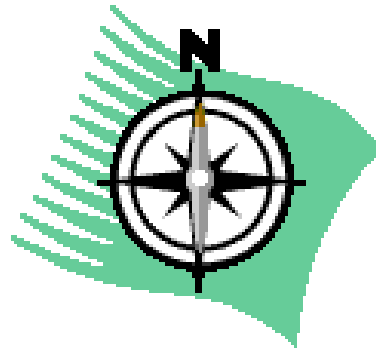


What Direction is Clinical Engineering Headed?



Carol E. Davis-Smith, CCE
Director, Premier Consulting Solutions

CMIA 3-Chapter Event

What direction is Healthcare heading?

- Hospitals will deliver \$156.6 billion in “savings” over the next 10 years
- Implementation of electronic health records (EHR) and electronic medical records (EMR)
- Continuously advancing technology
- Accountable care organizations (ACO)



Patient & Staff Safety

It is not the strongest of the species that survives, nor the most intelligent that survives.
It is the one that is the most adaptable to change.

In the long history of humankind (and animal kind, too)
those who learned to collaborate and improvise most effectively
have prevailed.

www.brainyquote.com/quotes/authors/c/charles_darwin.html



Where are we now?



Integrated Circuits

Nanotechnology

Biologics



AAMI's Preferred Future

- “Go To” resource
- Broad-based discussions (multi-disciplinary)
- Awareness of the impact on patient outcomes by the interaction between technology, people, and surroundings
- Defined profession



AAMI President, Mary Logan

A Systems Approach

to medical technology and healthcare delivery

A familiar system ...



The 5 “rights” of Technology Management

Place

Time

People

Communication

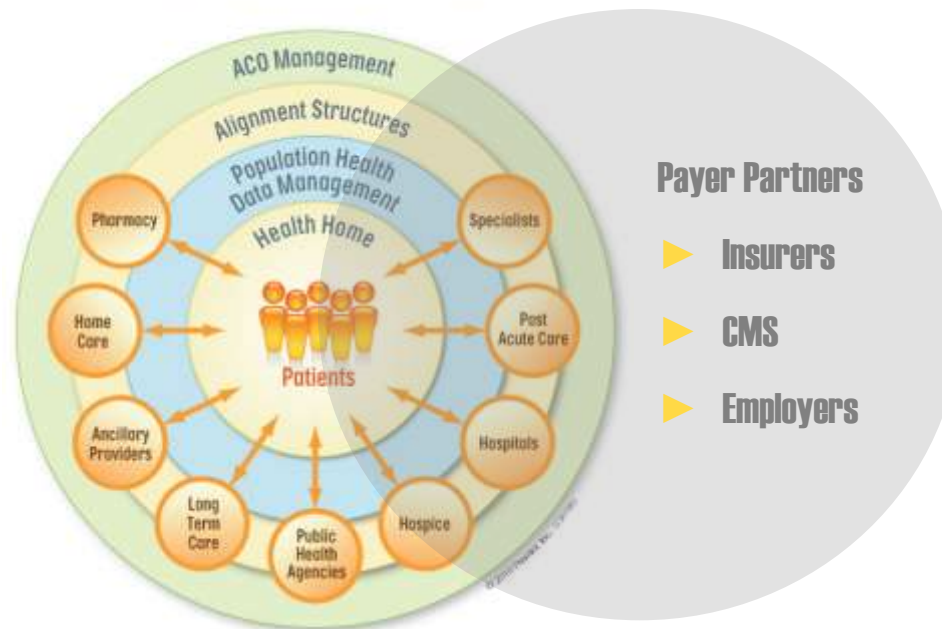
Application

The Place

What is an ACO?

Accountable Care Organizations (ACOs), while still evolving, are expected to connect groups of providers who are willing and able to take responsibility for improving the health status, efficiency and experience of care for a defined population.

ACO Operating Model



The Place

What is a Medical Home?

According to the American Academy of Family Physicians (AAFP):

“A patient-centered medical home integrates patients as active participants in their own health and well-being. Patients are cared for by a physician who leads the medical team that coordinates all aspects of preventive, acute and chronic needs of patients using the best available evidence and appropriate technology ...”

<http://www.aafp.org/online/en/home/policy/policies/p/patientcenteredmedhome.html>

The Time

Appropriate application of technology

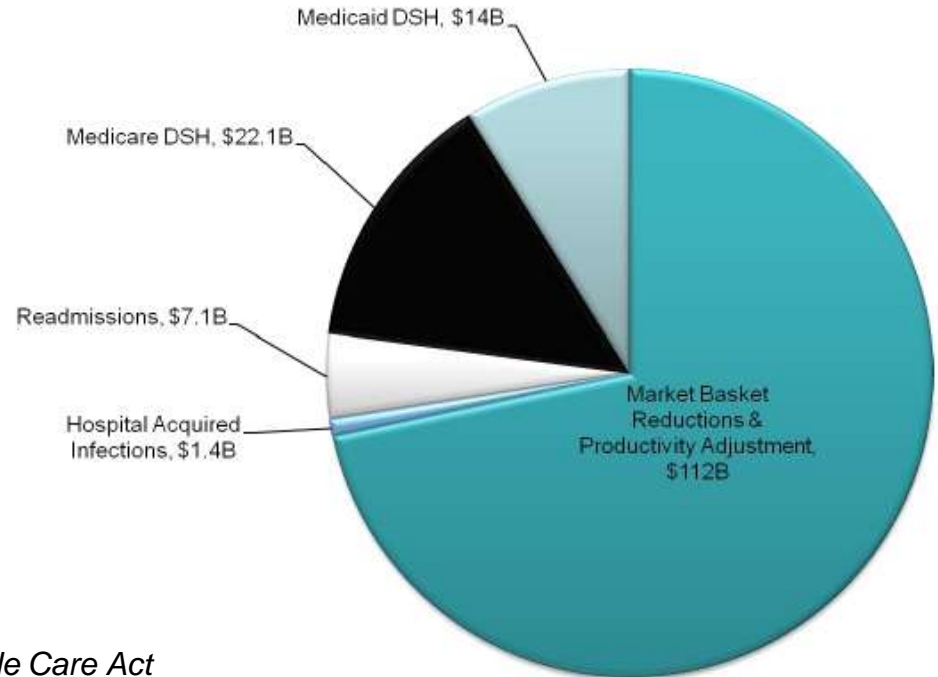
- Preventive care (e.g. Prenatal)
- Primary care
- Acute care
- Outpatient care (e.g. Surgery Centers, Rehab)
- Long-term care

Friedman, Emily. *It's Pretty, But How Does It Fit?* Hospitals & Health Networks Digital Magazine.
http://www.hhnmag.com/hhnmag_app/jsp/articledisplay.jsp?dcrpath=HHNMAG/Article/data/08AUG2010/080210HHN_Weekly_Friedman&domain=HHNMAG

The Time

Hospitals will deliver \$156.6 billion in “savings”

Hospital payment cuts



Public Law No: 111-148 – *Patient Protection and Affordable Care Act*

The Time

Accountable care organizations (ACO)

- Program begins no later than January 2012
- 3-year contracts with government
- Saves \$4.9 billion over 10 years

Providers must meet quality and spending benchmarks to share savings

Allows for payment models beyond fee-for-service





ACO Implementation Collaborative





Updated 07/23/2010

ACO Readiness Collaborative

The Time

Implementation of electronic health records (EHR) and electronic medical records (EMR)

EMR = The electronic record of health-related information on an individual that is created, gathered, managed, and consulted by licensed clinicians and staff from a single organization who are involved in the individual's health and care.

EHR = The aggregated electronic record of health-related information on an individual that is created and gathered cumulatively across more than one health care organization and is managed and consulted by licensed clinicians and staff involved in the individual's health and care.

National Health Alliance for Health Information Technology (NAHIT) – Organization disbanded in August 2009, stating “mission accomplished” as HIT had moved to the forefront to reinvent and reinvigorate the US health system.

The Time

CMS / HHS Electronic Health Record Incentive Program – Final Rule

Federal Register / Vol 75, No 144 / Wednesday, July 28, 2010 / Rules and Regulations

STAGE 1 Meaningful Use criteria (rules)– effective 2011 Data Capture & Sharing

Additional criteria (rules) to be published in 2013 and 2015

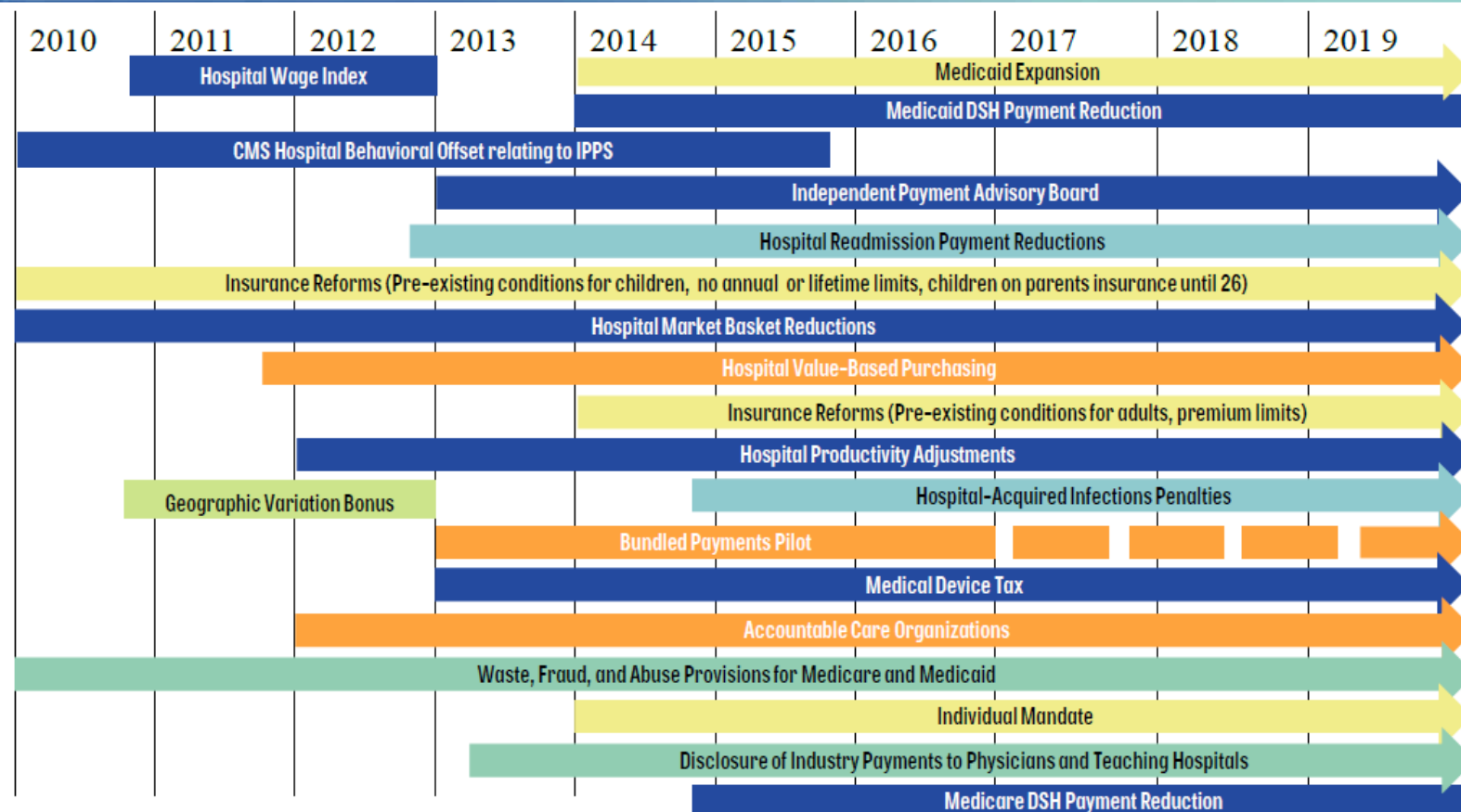
STAGE 2 Meaningful Use – Advanced Clinical Processes

STAGE 3 – Improved Outcomes

www.ihs.gov/recovery/documents/Overview%20of%20ARRA%20EHR%20Cert%20Criteria%20and%20MU.pdf

Health Reform Implementation Timeline

Key: = Coverage Provisions = Delivery System Provisions = Quality Provisions
 = Transparency Provisions = Payment Constraint Provisions = Geographic Variation Provision



The People

Physicians

Nurses

Clinical Technologists/Technicians

Therapists

Clinical Engineers / Biomedical Equipment Technicians

IT Engineers/Technicians

Facilities Engineers/Technicians

And yes,

Hospital & Health System Administrators

The C-Suite

(and all of your other Clinical Engineering customers)

Know Your Stuff

- Prepare ... Then prepare for the unexpected
- Know the benefits & challenges – technical, clinical, & business

Know Your Audience

- Tailor your presentation – language & interests

“The mind of an executive is going in multiple directions simultaneously. They have to think about all of the stakeholders involved, not just one set.” (Tony Montagnolo, EVP/COO at ECRI)

The C-Suite

(and all of your other Clinical Engineering customers)

Know Your Organization

- Collaborate with other departments – healthcare is a team sport!
- Exhibit leadership, not arrogance or indifference

Know Your Finances

- Know the financial impact
- Leverage the expertise of your CFO and other Finance department resources

The Communication

Electronic Health Records (EHR)

Electronic Medical Records (EMR)

Remote Alerts – Alarm Management

Integrated Communication

IEC 80001

The Communication

Medical Device Interoperability Key Initiatives



www.continuaalliance.org/index.html



www.ihe.net/pcd/



www.hitsp.org/

ASTM F2761
and the
Integrated Clinical Environment
www.astm.org/Standards/F2761.htm

Moorman, B. *Medical Device Interoperability: Overview of Key Initiatives. Biomedical Instrumentation & Technology. March/April 2010. pp132-138.*

The Communication

Remote Alerts – Alarm Management
Integrated Communication
Integrated medical devices
Data/Info distribution by mobile devices
Closed-loop technology



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© BluFi Wireless, LLC



© 2010-11 James J Martin IV Helikopter Web Design-Philadelphia



© Vocera

The Communication

IEC 80001 – Application of risk management for IT-networks incorporating medical devices – Part 1: Roles, responsibilities and activities

Consideration of the potential safety impacts in the design & implementation of IT-networks incorporating medical devices

Sept 28, 2010 – deadline for approval

What does this mean for clinical engineering?

- Educate yourself
- AAMI IT Horizons (2010)

http://www.aami.org/publications/ITHorizons/2010/18-20_StandardsRegs_Cooper.pdf

The Application

Old Technologies ... New Applications

New Technologies ... Old Applications

New Technologies ... New Applications

CE-IT Convergence

More medical devices are ...

computers

Networked

exchanging data with IT systems

Healthcare Organizations are experiencing ...

More integration

More problems

Users want solutions, not confusion

CE-IT Convergence

Adapting to & Leveraging Required Skills

Hospitals are exploring the creation of hybrid roles.

Learning as much as possible about computers, networks and systems is wise.

Communication and collaboration among relevant groups are key.

Clinical Engineering departments & individuals who ...

... understand both CE and IT are becoming increasingly valuable because they can communicate with both sides

Visit www.ceitcollaboration.org for complimentary resources and to learn more about the CE-IT Community.

Awareness of Advancing (Disruptive) Technology



MIT students are developing a very-low-cost portable ventilator that could save hundreds of lives during emergencies and in rural areas, where hospitals often lack high-tech medical technologies.

Utilizing nuclear magnetic resonance spectroscopy, German researchers have developed a magnet that could lead to a pocket-sized MRI machine. This technology could revolutionize medical testing and research in other scientific fields.



Sensatex's Smart Shirt monitors vital signs, external impact and other bodily functions to help hospital staff more effectively treat patients.

Everything is changing. Are **you** changing too?

We can't solve problems by using the same kind of thinking we used when we created them.

Imagination is more important than knowledge.

Anyone who has never made a mistake has never tried anything new.

~ Albert Einstein

http://www.brainyquote.com/quotes/authors/a/albert_einstein.html



References & Resources

AAMI Technology Management Council (TMC)

TMC Connect (www.aami.org/tmconnect)

- complimentary resources, sample documents, and more

AAMI's Benchmarking Solution (www.aami.org/abs)

- compare performance, policies, and procedures against similar departments at other facilities

TMC's LinkedIn page (www.linkedin.com)

- 1,000+ members sharing best practices

TMC BMET Profession video (www.aami.org/student)

- to raise awareness of the BMET field
- YouTube and Vimeo

AAMI News: August 2010, Vol 45, No 8 – Sharpen Skills Before Meeting C-Suite (www.aami.org/publications/AAMINews/Aug2010/c.suite.html)

References & Resources

CE-IT Community (www.ceitcollaboration.org)

- A Clinical Engineering / IT Collaboration
- AAMI, ACCE, and HIMSS

Premier healthcare alliance ACO Collaboratives

- Implementation & Readiness collaboratives
(www.premirinc.com/about/news/10-may/aco052010.jsp)

Friedman, Emily. It's Pretty, But How Does It Fit? Hospitals & Health Networks Digital Magazine.

(www.hhnmag.com/hhnmag_app/jsp/articledisplay.jsp?dcrpath=HHNMAG/Article/data/08AUG2010/080210HHN_Weekly_Friedman&domain=HHNMAG)

Smarter Technology – Planning and Leadership For A Better World

(www.smartertechnology.com)

IHS Office of Information Technology

(www.ihs.gov/recovery/documents/Overview%20of%20ARRA%20EHR%20Cert%20Criteria%20and%20MU.pdf)

References & Resources

Advanced (Disruptive) Technology examples

Portable (and Ultra-Low-Cost) Ventilators Could Save Lives in Rural Areas and During Disasters

<http://www.smartertechnology.com/c/a/Technology-For-Change/Portable-and-UltraLowCost-Ventilators-Could-Save-Lives-in-Rural-Areas-and-During-Disasters>)

Intelligent Clothing Fibers Could Have Medical Applications

<http://www.smartertechnology.com/c/a/Technology-For-Change/Intelligent-Clothing-Fibers-Could-Have-Medical-Applications>)

An MRI Machine in the Palm of the Hand

<http://www.smartertechnology.com/c/a/Technology-For-Change/An-MRI-Machine-in-the-Palm-of-the-Hand>)