

ANIA-CARING

Connecting, Sharing, and Advancing Nursing Informatics

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ANIA-CARING is a nursing informatics organization advancing the delivery of quality healthcare through the integration of informatics in practice, education, administration, and research.

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BENEFITS OF MEMBERSHIP

- Access to a network of informatics professionals domestically and internationally,
- An active e-list with the option to read e-mails online,
- An online, searchable membership directory,
- Quarterly newsletter indexed in CINAHL, Thomson Gale & EBSCO Publishing,
- Job Bank with employer paid postings,
- Reduced rate for the Computers, Informatics, Nursing (CIN) journal,
- Annual **ANIA-CARING** conference,
- Membership in the Alliance for Nursing Informatics, www.allianceni.org, and
- Meetings and conferences around the nation and the world.

Visit us at www.ania-caring.org and join or renew today!

ANIA-CARING 2011 Annual Conference "Nursing Informatics: Blazing the HIT Trail"

Lisa Anne Bove, MSN, RN-BC and James J. Finley, MBA, BSN, RN-BC

Nursing Informatics: Blazing the HIT Trail was the theme of the latest ANIA-CARING Annual Conference, held in Las Vegas, NV May 12 - 14, 2011. The ANIA-CARING Conference Planning team led by James J. Finley, MBA, BSN, RN-BC and Lisa Anne Bove, MSN, RN-BC engaged excellent speakers and attracted a record number of exhibitors and attendees. Thanks go to the ANIA-CARING Board and especially the Conference Planning Committee members: Victoria Bradley, DNP, RN, FHIMSS, Daniel Gracie, MSN, RN, Diane Humbrecht, MSN, RNC, Rhonda Struck, MS, BSN, RN, Vicki Vallejos, BSN, RN-BC, Bobbi Crann, MSN, RN-BC, Rosemarie Marmion, MSN, RN-BC, NE-BC.

We started the conference with pre-conference sessions and this year we offered six half day preconferences. Morning sessions included Designing Effective Training for HIT Implementations by Brenda Kulhanek, PhD(c), MSN, RN, CPHIMS and Mark Kulhanek, MA; Best Practice in Clinical Informatics by Victoria Bradley, DNP, RN, CPHIMS, FHIMSS; Cheryl Parker, PhD, MSN, RN, and Patricia Sengstack, DNP, RN-BC, CPHIMSS; and Project Management: The Next Level – Managing Scope, Risks, and Issues by Lisa Anne Bove, MSN, RN-BC; Susan M. Houston, MBA, RN-BC, PMP, CPHIMS. Afternoon sessions included Teamwork for Clinical Implementation Success by Marina Douglas, MS; Marian Celli, MS, RN-BC, FHIMSS; Nursing Informatics and Health Care Policy a panel including Kathleen McCormick, PhD, RN (Moderator); Amy Walker, MS, RN, NEA-BC, FACHE, CPHQ; Joyce Sensmeier, MS, RN-BC, CPHIMS, FHIMSS, and Judy Murphy, RN, FACMI, FHIMSS (Panelists); and a new offering presented with the Association of PeriOperative Registered Nurses (AORN) called One Small Step for IT, One Giant Leap for Perioperative Nursing by Denise Maxwell-Downing, MS, BSN, RN; Sharon Giarrizzo-Wilson, MS, BSN, RN, CNOR; Jessica Bianco, MS, BSN, RN, CNOR.

The main conference kicked off on Thursday evening with our second Regional Meeting and Dessert



▲ members network with speakers and board members

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By Susan K Newbold, PhD RN-BC FAAN FHIMSS

ANIA-CARING MEMBERSHIP PROFILE

As of 07/03/2011, there are 2781 members from 50 states and 34 countries: Afghanistan, Australia, Bermuda, Brazil, Canada, Chile, Croatia, England, Finland, Germany, India, Ireland, Israel, Jordan, Kenya, Kuwait, Lebanon, Malaysia, New Zealand, Pakistan, Panama, Philippines, Qatar, Romania, Saudi Arabia, Singapore, Slovenia, South Africa, South Korea, Spain, Taiwan, Thailand, UAE, USA.

GRADUATION

Doctor of Philosophy (PhD)

Noel Kerr, Peoria, IL, defended her dissertation entitled, "Creating a Protective Picture: A Grounded Theory of How Medical-Surgical Nurses Decide to Follow a Charting-by-Exception Policy on a Day-to-Day, Patient-by-Patient Basis," December 2010. She was hooded May 2011 and obtained her degree from the College of Nursing at Rutgers, Newark, NJ.

Heather J. Sobko, Crane Hill, AL, successfully defended her dissertation titled, 'Using Measures of Engagement with KP.Org to Determine Associations with Selected Clinical Outcomes,' University of Alabama, Birmingham, May 5, 2011.

Master of Science in Nursing (MSN)

Sara B. Balster, Middleton, WI, Walden University, Nursing Informatics, December 2010.

Kathleen Cerbin, South Bend, IN, MSN – Education, Walden University graduated February 2010. Kathleen is working on the post masters certificate in nursing informatics.

Jacqueline P. Fowler, Woodburn, KY, attended commencement at Vanderbilt University, Nashville, TN, May 2011.

Diane R. Klersy, Monroe City, MO, Walden University August, 2010.

Ellen R. Lynch, Mount Pleasant, SC, Medical University of South Carolina, May 2011: Nurse Educator.

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ANIA-CARING 2011 Annual Conference "Nursing Informatics: Blazing the HIT Trail"

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Reception. The four Regional Directors met with members in each region to network on options for education and networking at the regional level. This reception gave everyone an opportunity to network, get re-acquainted with colleagues and friends, and meet new friends in the Region where they worked and/ or live.

Friday mornings's opening keynote speaker was Pamela F Cipriano, PhD, RN, NEA-BC, FAAN who presented a look at Nurses as Meaningful Users of HIS: Blazing the Trail. Dr. Cipriano addressed how nursing leaders must emphasize the importance of nurses as partners in meaningful use and gain recognition of the critical role nurses play in using health information to improve care.

After the opening keynote, participants were invited to browse the exhibit hall and view posters. There were 28 posters available for review and the poster presenters shared information about their processes and findings. Healthcare vendors who supported the conference included American Nurses Credentialing



▲ Judy Murphy shares her knowledge

Center (ANCC), Clinical Computer Systems, Inc., Code Corporation, Covenant Health, Elsevier - CPM Resource Center, ESD, Grand Canyon University, Harrison Medical Center, Hospira, Howard Medical, ICWUSA.com, Inc., Indiana University Health, Innovative Consulting Group, Jaco, Inc., Jacobus Consulting, Man & Machine, MEDITECH, Metro/Intermetro, PEPID, SimEMR, Stinger Medical, SynaptiCore, Vanderbilt Univ. School of Nursing, Zebra Technologies, and Zynx Health. The rest of the day included breakouts following four tracks including Education and Career Development (ECD), System Implementations (ISI), Patient Care Outcomes (CPC), Innovations (INI), and Leadership (LD). Speakers came from all over

the US and presented topics on implementations in many units and facilities, education at the staff nurse, physician and higher education level, as well as innovative ideas from many informatics nurses.

All participants were invited to join the ANIA – CARING Board of Directors for our annual business meeting luncheon. During the meeting, President Victoria M. Bradley, DNP, RN, FHIMSS introduced the current board. Membership, Financial, Education and Region Director reports followed. Victoria then thanked outgoing board members James J. Finley, MBA, BSN, RN-BC and Patrick Shannon, MS, RN, CPHIMS and passed the gavel to incoming president Curtis N. Dikes, RN, MSN, ACNP-BC,

CLNC, NEA-BC. New board members Karen Zorn, MSN, ONC, RN and Charles Boicey, MS, RN-BC, PMP were also introduced.



▲ Speakers allow time for questions and interaction with members

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ANIA-CARING 2011 Annual Conference "Nursing Informatics: Blazing the HIT Trail"

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Saturday started with Liz Johnson, MS, RN-C, FHIMSS, CPHIMS one of the healthcare industry's most accomplished executive nurse informaticists and a member of the Federal HIT Standards Committee. Liz's session titled The Growing Roles of Nurse Informaticists as Change Agents in the U.S. Health Care Reform demonstrated first-hand how today's nurses can grow, innovate, and help build stronger health care reform outcomes for their hospitals and communities through careers in nursing informatics. Participants then spent the rest of the day in a variety of breakout sessions, and another chance to visit posters and the vendors.

We closed the session with Barbara Wadsworth, MSN, RN, MBA, NEA-BC who helped to tie the conference together with her session titled Team Roundup: Tales from a CNO Blazing a Trail Worth Following. Barbara discussed key ways to create a herd of engaged staff able to overcome obstacles and implement successfully with innovation.

The poster presentation section of the conference continued to be one of the more popular and engaging activities. The range of topics extended from education to practice, research and implementation work. This year's winners of the "People's Choice Award" for posters were Susan Young, BSN, RN and Susan G. Stanley, MSN, RN from the Children's National Medical Center. They took home the top prize and a complimentary registration to the 2012 ANIA-CARING conference for their poster titled "An Electronic Nursing Handoff Tool using the SBAR Format."

We had over 450 attendees at this year's event – a record number. Most of the presentations were available to attendees on a flash drive distributed at the conference. Attendees could obtain up to 19.75 contact hours for participating. Evaluations indicated that most attendees received value from attending the conference. A special thank you to our sponsors - ESD, Indiana University Health, and Zynx Health and our 25 exhibitors.

Next year's conference is scheduled for ANIA-CARING 2012 Conference April 12-14, 2012 Renaissance Orlando at SeaWorld Orlando, FL. The call for abstracts for posters and presentations is July 5 - August 19, 2011. Please consider submitting an abstract for a poster and/or a presentation. We look forward seeing many of you next year!



Theresa Metta, Belleville, NJ, Walden University, April, 2011

Holly Tamez, Hemet, CA. attended commencement at Vanderbilt University, Nashville, TN, May 2011

Doris E. Watson, Catonsville, MD. MSN graduate, Walden University, December 2010.

Marguerite (Maggie) Windle, Collegeville, PA. MSN February 2011, the University of Phoenix

Master of Science (MS) in Nursing

The following are May 2011 graduates of the University of Maryland School of Nursing Informatics program.

Jennifer T. Carter, Apollo Beach, FL

Janette Dailey, San Angelo, TX

Gilda A. Elizee, Miramar, FL

Katherine P. Kiang, Gaithersburg, FL

Colette A. Miller, Sykesville, MD

Certificate in Health Informatics

Christie Burton, Rowlett, TX, graduated from The Duke University, Post-Masters Certificate in Nursing Informatics, Spring, 2011.

Certification in Nursing Informatics from the American Nurses Credentialing Center (ANCC):

Pamela S. Banchy, Lyndhurst, OH, June 2011

Donna M. DeBoever, Keller, TX, July 2010

Keisha A. Potter, Windsor Mill, MD April 22, 2011

Mary Gilchrist, Sequim, WA, April 2010

CPHIMS

Regina Cole, Atlanta, GA, February 2011, passed the HIMSS CPHIMS certification.

FREE NURSING INFORMATICS WEB CASTS/ARTICLES

With the sponsorship of Chamberlain College of Nursing and Gannett Education, several continuing events were conducted in early 2011 on various Nursing Informatics topics. ANIA-CARING member that participated as

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authors and speakers were **Melissa Barthold**, Jackson, MS; **Susan K. Newbold**, Franklin, TN; **Victoria M. Bradley**, Lexington, KY; **Judith A. Murphy**, West Allis, MI; **Diane J. Skiba**, Centennial, CO; **Marisa L. Wilson**, Baltimore, MD; **Sarah Fletcher**, Bowie, MD; **Michael Seaver**, Vernon Hills, IL; **Joyce E. Sensmeier**, CA; and **Connie Delaney**, Minneapolis, MN. Many of the events are still available at no charge. Go to www.nurse.com and input "informatics" into the search field.

PUBLICATIONS:

Cynthia R. Early, Roanoke, VA, co-wrote an article: Early, C, Riha, C, Martin, J, et al. Scanning for Safety: An Integrated Approach to Improved Bar-Code Medication Administration. *CIN: Computers, Informatics, Nursing*. 2011; 29(3):157-164.

Advance for Nurses (www.advancefor-nurses.com) publishes "Nursing Informatics & Technology: A Blog for All Levels of Users." ANIA-CARING contributors are: **Angela M. Lewis**, Anacortes, WA, **Nicole A. Mohiuddin**, Lake in the Hills, IL, **Susan K. Newbold**, Franklin, TN, **Sandy Ng**, San Francisco, CA, and **Denise D. Tyler**, Visalia, CA.

CONFERENCES:

20-23 July, 2011, Summer Institute in Nursing Informatics. Baltimore, MD. <http://nursing.umaryland.edu/sini/>, ANIA-CARING dinner Friday, July 22, 2011, register at www.ania-caring.org.

1-4 August 2011 HIC 2011, Brisbane Convention & Exhibition Centre, www.hisa.org.au

28-31 August, 2011 MIE2011, Oslo, Norway, www.mie2011.org/

29-30 August, 2011, HISA2011 Conference. Johannesburg, South Africa, <http://wp.me/pvCUS-Ja>

20-23 September 2011. HIMSS AsiaPac 2011 Conference & Leadership Summit. Melbourne, AUSTRALIA. <http://www.himssasiapac.org>

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Presidents Message: This is Our Organization...

Curtis N. Dikes, RN, MSN, BC-ACNP, CLNC

What an exciting time for ANIA-CARING! Our organization is now 2 years old as a joint and bigger and better nursing informatics association. We just elected our second Board of Directors, held our largest annual conference ever, and look forward to an exciting year ahead of us.

There are numerous opportunities that are within reach for ANIA-CARING – attainable with the Board working together with the members in the coming year. I'm pleased to introduce the new Board of Directors for 2011-2012, which will make this happen:

Curtis N. Dikes – President
 Vicki Vallejos – Vice President
 Amy Jacobs – Treasurer/ Job Bank
 Denise Tyler – Secretary/ Newsletter
 Susan Newbold – Membership Director
 Daniel Gracie – Marketing Director
 Lisa Bove – Education Director/ Annual Conference
 Victoria Bradley – Education Director
 Charles Boicey – Region I Director
 Brian Norris – Region II Director
 Karen Zorn – Region III Director
 Stephen Prouse – Region IV Director
 Bobbi Crann, while not an elected Board member, is our Webmaster and project manager.



▲ Victoria Bradley turns the presidents gavel over to Curtis Dikes

This year's Board will focus on several activities, including carrying out our strategic plan, completing the final stages of organizational merger activities, executing an association management contract, creating educational opportunities, and increasing regional membership activities. ANIA-CARING is now large enough to sustain an association management firm that can take on the day-to-day operations and tactical duties of the organization. This will allow the Board of Directors to focus on strategy, current legislative and other activities we all need to be attuned to, outward communication, and overall growth of our organization.

Together we will make ANIA-CARING a better organization for us. And when I say "we," I mean "YOU" too! I'm embarking on a campaign to involve the membership more than ever into organizational efforts in the form of committees, volunteer opportunities and increased in-person and/or educational and social member events throughout the year. The Board is not the organization, the members are, and we want you involved! In the coming months you will see calls for participation asking for your involvement.

Please contact me, or any Board member, with your ideas and/or interest in joining or forming a committee that makes ANIA-CARING the organization you are proud to be apart of. Remember, we are here for you!



Data, data everywhere but not a thought to think! Making data MEANINGFUL for the patient and the care provider

Debbie Raposo BSN, LNC, RN-BC

Nurses, at first were afraid of the computer, afraid that the computer would replace them and their jobs. We as Informaticists tried to explain that the computer was a tool to aid them with their work – not to replace their valuable assessment and problem solving skill or their critical thinking.

The pendulum has swung the other way and we need to seek the balance. After two years of implementing, it appears that our nurses have come to think the computer is thinking for them. They have become accustomed to the reminders, warnings and pop ups. They have forgotten how to put the pieces of the puzzle together to form the true “PICTURE” of the patient.

The nursing process needs to return to the bedside with the aid of technology. Technology must supplement assessment skills and critical thinking knowledge. Technology can never replace them.

Real life tools can assimilate the data into a report or reports to alert the nurse to real time of gaps in documentation and thought process. The data in these reports can help point to potential cracks in the patient care that may affect their healthcare outcomes.

Reminders and flags should draw the attention of the nurse to let her /him know that something is missing, or not complete in putting the patient puzzle together.

Room/Bed	Account #	Admit Date	SKIN - SCORE	PU	W	COMP	EDU
RUN DATE: 02/10/11 SOUTHCOAST **TEST** NURSING SYSTEM PAGE 1							
RUN TIME: 1333 Audit - Skin Integrity							
RUN USER: PDR7638							
Location: BRN1							
250	2	0064796576	02/07/11	Y	18	N	N
251	2	0064784697	02/07/11	Y	13	N	N
252	1	0064790876	02/07/11	Y	15	N	N
254	2	0064819618	02/09/11	N	15	N	N
255	1	0064814775	02/08/11	Y	18	N	N
255	2	0064818594	02/09/11	Y	18	N	N
268	2	0064818867	02/09/11	N	13	N	N
269	1	0064824113	02/09/11	N	12	Y	N
271	2	0064823982	02/09/11	Y	17	N	Y
272	2	0064825474	02/09/11	Y	12	N	N
Total Patients Skin Integ:		13					
Patients With COMP:		3					
Patients With EDU:		3					
% WITH COMP:		23 %					
% WITH EDU:		23 %					
% WITH COMP & EDU:		23 %					

What are the missing pieces to the above puzzle? Why does a patient with intact skin and a Braden score of 17 and a wound not have a CCC component of care⁽¹⁾ or any education about that skin issue? How can a patient have a wound and intact skin at the same time? With this real time report as a tool, we can have a positive effect on this patient's outcome by intervening when we find the gap and not wait until the day of discharge.

CHF history

In this day of “Never Event” for a hospital acquired UTI from a Foley catheter, why are there 3 patients with a Foley greater than 5 days? Have we assessed the continued need for that Foley? Does the patient really still clinically need the Foley, or have we been so busy with everything else we need to “do” that we have not “thought” about the consequences of long term indwelling Foley's?

22-26 October, 2011 AMIA 2011 Annual Symposium. Washington, DC. Hilton Washington & Towers. AMIA NI-WG dinner Sunday, 23 October, 2011.
www.amia.org

23-25 November, 2011. HINZ Conference and Exhibition 2011 “Working Together...Working Smarter.” Papers, posters and workshop proposals on any aspect of health informatics are welcome. Submissions due 15 August 2011.
<http://www.hinz.org.nz/page/conference>. Speakers include Dr. David Blumenthal and Dr. Susan K. Newbold. Dr. Michelle Honey, Auckland, New Zealand, is on the Executive Committee of HINZ.

20-24 February, 2012. HIMSS12 Annual Conference and Exhibition,
www.himss.org

12-14 April, 2012 ANIA-CARING Annual Conference. Renaissance Orlando at SeaWorld®, Orlando, FL.

23-27 June, 2012, NI2012, Hilton Montreal Bonaventure, Montreal CANADA, www.ni2012.org. Sponsored by the International Medical Informatics Association. Papers due 31 August, 2011.

2-4 May, 2013, ANIA-CARING Annual Conference, Marriott Rivercenter, San Antonio, TX.

21-23 August, 2013, MedInfo2013 Copenhagen Denmark,
<http://www.medinfo2013.dk/>

16-20 November, 2013, AMIA 2013 Annual Symposium, Hilton Washington & Towers Washington, District of Columbia,
www.amia.org

Tba 2014, NI2014. Taipei, TAIWAN. Sponsored by the International Medical Informatics Association. Note year change to 2014.

15-19 November, 2014, AMIA 2014 Annual Symposium, Hilton Washington & Towers Washington, District of Columbia,
www.amia.org

AWARDS AND HONORS:

Diane R. Klersy, Monroe City, MO, was inducted into the Sigma Theta Tau International Honor Society of Nursing Phi Nu Chapter at Walden University in January 2011. She holds a certification from ANCC in Cardiac/Vascular Nursing and is Orthopaedic Nurse Certified from the Orthopaedic Nurses Nurses Certification Board.

Selection for Fellow in the American Academy of Nursing (FAAN); The following will be inducted into the American Academy of Nursing October 2011 in Washington, DC.

Dana Alexander, Monument, CO.

Judith A. Murphy, West Allis, WI.

Karen A. Monsen, Stillwater, MN.

Karen A. Monsen, RN, PhD, Assistant Professor, University of Minnesota School of Nursing, Minneapolis, MN. received the first Omaha System Excellence in Education Award during the April 2011 Omaha System International Conference in Eagan, MN.

BYTES OF INTEREST:

The International Medical Informatics Association (IMIA) Nursing Informatics General Assembly met in Funchal, Portugal March 2011. ANIA-CARING members attending - **Virginia K. Saba**, Arlington, VA, **Susan K. Newbold**, Franklin, TN, **Rosaleen Killalea**, Dublin Ireland, **Heimar de Fatima Marin**, Brazil, and **Corina Vernic**, Romania. Photo below courtesy of Corina Vernic.



Please send items for future newsletters to: Susan K. Newbold, sknewbold@comcast.net

Data, data everywhere but not a thought to think! Making data MEANINGFUL for the patient and the care provider

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RUN DATE: 02/18/11		ST. LUKE'S ADMISSIONS **LIVE** ADM		PAGE
RUN TIME: 1331		Current Inpatients w/Urinary Drainage Tube by Location		
RUN USER: PDR7638				
339-1	xxx NAME	0064742893	md xxx, MD	02/03/11
	Urinary Drainage Tube Insertion date:	02/03/11	# of Days Inserted:	15
341-2	xxx NAME	0064920424	md xxx, MD	02/17/11
	Urinary Drainage Tube Insertion date:	02/16/11	# of Days Inserted:	2
Total Pts on Unit w/an Active Urinary Drainage Tube:		2	Total Insertion Days for Unit: 17	
Location: ICU1				
Rm-Bed	Name	Acct	Attending:	Admit Date
ICU-3	xxx NAME	0064685134	md xxx, MD	01/29/11
	Urinary Drainage Tube Insertion date:	02/07/11	# of Days Inserted:	11
ICU-5	xxx NAME	0064736267	md xxx, MD	02/02/11
	Urinary Drainage Tube Insertion date:	02/06/11	# of Days Inserted:	12
Total Pts on Unit w/an Active Urinary Drainage Tube:		2	Total Insertion Days for Unit: 23	

CHF education

Why are there 5 patients with a known history of congestive heart failure without ANY congestive heart failure education? Patient care needs are becoming more complex. Because today's caregivers are bombarded with information from multiple systems and sources, they need to be able to transform that data into relevant patient specific information. Electronic documentation can be a helpful tool that provides clinicians with the necessary information they need to make appropriate care decisions; however, these tools should not be a substitute for good clinical judgment and clinical observation.

% With CHF & EDUCATION:		0		%	
Location: CN4B					
492	2	0012345678991	02/08/11	Y	✓ N
493	2	0012345678992	01/31/11	Y	✓ N
494	2	0012345678993	02/10/11	Y	✓ N
496	1	0012345678994	02/09/11	Y	✓ N
497	1	0012345678995	02/08/11	Y	✓ N
Patients With CHF:		6			
Patients With CHF & EDUCATION:		1			

Complexity of care combined with integral data touches every hospital care setting. Patient safety is paramount in any care setting. Electronic documentation helps enable our clinicians and care teams to visualize, access and act on relevant patient information at the patient's bedside more efficiently and effectively. This capability helps to improve patient health and safety throughout the continuum of care.

Nurses are busy doing the "tasks" of documenting with technology; we need to support them with the appropriate technology that will leverage their critical thinking, assessment skills and knowledge in order to deliver optimal patient care.

Dr. Benner's research of novice to expert supports this belief that we have expert clinicians struggling as novices of technology. The internal struggle and fear of "not knowing" is impacting their clinical judgment.

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Data, data everywhere but not a thought to think! Making data MEANINGFUL for the patient and the care provider

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- Dr Patricia Benner introduced the concept that expert nurses develop skills and understanding of patient care over time through a sound educational base as well as a multitude of experiences.
- She proposed that one could gain knowledge and skills ("knowing how") without ever learning the theory ("knowing that").
- She further explains that the development of knowledge in applied disciplines such as medicine and nursing is composed of the extension of practical knowledge (know how) through research and the characterization and understanding of the "know how" of clinical experience.
- She conceptualizes in her writing about nursing skills as experience is a prerequisite for becoming an expert.

About the Theorist:

Patricia E. Benner, R.N., Ph.D., FAAN is a Professor Emeritus at the University of California, San Francisco.

Nursing Informaticists need to create tools to help the expert clinician/novice technologist use the data in a meaningful way to improve patient outcomes and create expert clinical Informaticists at the bedside. Data is a powerful tool that can be used in conjunction with clinical expertise to improve quality and provide exceptional individualized patient care.

Remember this: A nurse makes a difference in the life of one patient at a time; a Nursing Informaticist makes a difference in the life of an entire population at a time! Celebrate what you do to enhance quality patient care by turning information into insight for every member of the healthcare community.

About the Author: Debbie Raposo BSN, LNC, RN-BC, is the Director of Clinical Information Systems at Southcoast Hospitals Group in Southeastern Massachusetts.

¹⁰CCC refers to Clinical Care Classification system for care planning created by Dr. Virginia Saba as the first approved standard terminology for electronic documentation. Southcoast Hospitals Group is the first site to bring this system "live." It has been live since 3/23/2009.

Nursing Informatics Competencies and Baccalaureate Nursing Students

Daniel Gracie, MSN, RN

Introduction: As information technology (IT) becomes more prevalent in our everyday lives, the profession of nursing is not immune from this progression. Nurses, being one of the largest professions of healthcare workers, are utilizing computers more often to assist in their daily work. Some examples of this are: administering medications, charting patient assessments and education, reporting outcomes and measurements from databases, and as an aid in guiding clinical decisions. This practice of fusing nursing skills with information technology to provide patient care has been called nursing informatics as by Graves and Corcoran (1989), who define nursing informatics as "*a combination of computer science, information science, nursing science designed to assist in the management and processing of nursing data, information, and knowledge to support the practice of nursing and the delivery of nursing care*" (p. 227). Recent passage of legislation that mandates and rewards early IT adoption in the healthcare setting will accelerate its adoption, making it the stethoscope of the 21st century (Murray, 2007). As nurses are confronted with this new reality it will be imperative that they have exposure and knowledge in order to play a meaningful and effective role in the multidisciplinary care team, as well as take part in system development and implementations. Recent literature and recommendations from influential nursing bodies such as the Institute of Medicine, the National League for Nursing, and the American Association of

Colleges of Nursing, have all placed great emphasis on increasing the prevalence of nursing informatics as a key component in all levels of nursing education (Institute of Medicine (IOM), 2003; NLN Board of Governors, 2008; American Association of Colleges of Nursing, 2008). The aim of this literature review is to determine the degree of computer technology and informatics knowledge that baccalaureate nursing students have been exposed to prior to graduation in the United States.

Search strategy: A comprehensive review of qualitative and quantitative research articles was performed in PubMed, OVID CINAHL, OVID Nursing Database, and Ovid Medline databases. The following MeSH

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search terms used in this review were: Computer Literacy; Nursing, Education, Baccalaureate; Nursing Education Research; Nursing Informatics/Education; and Students, Nurses. Articles prior to 2007 that did not include baccalaureate nursing students, with samples of schools located outside of the United States, conference proceedings/abstracts, and those lacking a peer review were excluded. In the initial search, 24 potential articles were identified; after applying the exclusion criteria, four journals were selected as applicable to utilize in this article (see Table 1).

Review of the Literature: Elder and Koehn (2009) conducted a two-part evaluation of 109 baccalaureate nursing students in the mid-western United States to determine how students rated their skills in word-processing, spreadsheets, databases, and basic as well as advanced computer skills.

This self-survey was followed up with a computer-based evaluation, where students were required to perform some of these activities to compare their perceptions with actual performance. The authors found that students perceived their skills in some of the tested areas to be near expert, yet their assessments revealed that many performed at marginal levels required to pass a class. Students in this study did perform well in the internet portion of the assessment,

although 20% reported that government agencies controlled the information online to ensure its accuracy. The study authors recommended that nursing education needs to utilize computer-based tested assessments of incoming students' skills to provide immediate feedback and allow for remedial education in the specified areas.

Fetter (2009) utilized a modified version of the Staggers, Gassert, and Current (2001) tool to assess graduating seniors in a baccalaureate nursing program. The students completed the self-assessment on each of the 43 novice nurse IT competencies, which were based on the ANA's Nursing Informatics: Scope and Standards of Practice. The competencies included such areas as: theory and clinical courses, hardware and software requirements and skills, and general comments. The students' top ranked competencies were: using internet sources, word-processing, networks, operating systems, and the keyboard. The lowest ranking items on the assessment were: using applications to document, creating a care plan, valuing informatics knowledge for practice and skill development, and using applications for data entry.

To survey baccalaureate deans and directors perceptions of nursing informatics in their programs, McNeil et al (2006) created the IT Education in Nursing Curricula Survey. Survey results showed that many current programs place greater importance on computer literacy skills rather than informatics literacy skills. Additionally, half of the respondents reported not having any informatics education in their region and many were unable to add informatics curriculum due to lack of qualified teaching faculty and non-supportive environments. Half of the respondents felt that the current and future demand for nurse informaticists was low.

Table 1.

First Author alphabetical (date)	Focus	Data Collection Tool Used	Sample Size
Elder (2009)	Descriptive, correlational study to compare student ratings of their computer competency to their skills on a computer-graded assessment	The Computer Competencies Survey and Computer Competencies Assessment	109 students
Fetter (2009)	Student evaluation using established informatics competencies to benchmark graduate performance.	Investigator adapted based on The Staggers Gassert, and Curran (2001) tool	42 students
McNeil (2006)	Analysis of qualitative data from a national online survey of BSN education programs describing the current level of integration of computer literacy and information literacy skills and competencies of nursing faculty, clinicians, and students.	The IT Education in Nursing Curricula Survey	266 programs
Ornes (2007)	BSN curriculum evaluation of nursing informatics content.	Based on Categories of Informatics Competencies for the Beginning Nurse by Staggers, Gassert, and Curran (2001)	18 BSN required course syllabi

To evaluate course syllabi in a baccalaureate program for nursing informatics competencies, Ornes and Gassert (2007) created a tool based upon the Categories of Informatics Competencies for the Beginning Nurse by Stagers, Gassert, and Curran (2001). The informatics competencies utilized for this study were: administration, communication, data access, documentation, patient education, patient monitoring, basic desktop software, and systems. The authors found no evidence of administration, documentation, and patient education in any of the 18 reviewed syllabi and concluded that students receive limited informatics exposure and furthermore that they may not be sufficiently prepared to use information technology.

Synthesis: Two prevailing themes are apparent in the literature reviewed: 1) Definitions of nursing informatics vary amongst academic settings and 2) Student nurses do not possess adequate computer and informatics skills to enter the healthcare environment today with adequate nursing informatics skills. Although government agencies have implemented policies requiring the use of technology and informatics in the healthcare workplace, nursing schools have come up short in adapting their curriculum to this change.

Stagers, Gassert and Curran (2001) defined the computer and informatics skills of a beginning-level nurse, which has been equated to a BSN prepared nurse, and their definition could serve as a consistent standard among academic settings. These competencies are listed in Table 2 and have been utilized to aid the integration of nursing informatics into the baccalaureate education (Ornes & Gassert, 2007). The combination of nurses lacking adequate computer and informatics skills in conjunction with nursing educational institutions failing to provide technology education has the potential to produce nurses who are clinically competent yet unable to function in today's healthcare environment. Baccalaureate nursing education is running out of time to embrace this historical change in healthcare.

Table 2.

Computer Skills and Informatics Knowledge Competencies of the Beginning Level Nurse
<p>Stagers, Gassert, and Curran (2001)</p> <ul style="list-style-type: none"> • Computer Skills • Administration (searching for patient information) • Communication (using e-mail) • Data Access (using computerized data that relates to care-planning programs) • Documentation (documenting vital signs) • Patient Education (using information technology in the process of patient education) • Patient Monitoring (performing electrocardiography) • Basic Desktop Software (using word processing) • Systems (using operating systems for functions such as copying and deleting) <p>Informatics Knowledge</p> <ul style="list-style-type: none"> • Data (recognizing the use and importance of nursing data for improving practice) • Impact (recognizing the time, effort, and skill required) • Privacy and security (using ethics) • Systems (using networks)

Implications for practice: Baccalaureate nursing students are graduating to a reality of obsolete paper charts, clinical reference materials a click away and federal mandates for electronic medical records by 2014. More than ten years after the published recommendations of The National Agenda for Nursing Education and Practice progress has been slow to penetrate educational institutions and the nursing profession. The report, A National Informatics Agenda for Nursing Education and Practice. Report to the Secretary of the Department of Health & Human Services, recommends educating nursing students and practicing nurses in core informatics content, preparing nurses with specialized skills in informatics, enhancing nursing practice and education through informatics projects, preparing faculty in informatics, and increasing the collaborative efforts of nursing informatics (National Advisory Council on Nurse Education and Practice, 1997). These five goals are an ideal starting point to begin formulating a consistent informatics agenda in baccalaureate programs. Schools of nursing should make computer courses a recognized portion of pre-requisite coursework, assess student computer and informatics skills on admission, and integrate computer and informatics skills throughout all levels of required coursework for students. Deans and directors should consider making informatics education a core component of faculty education and professional development. The creation of learning partnerships with informatics departments at hospitals in which their students perform clinical rotations, as well as nursing informatics professional organizations can provide expert knowledge and further resources. Although

implementing these recommendations may sound like a daunting task, national nursing organizations (see Table 3) have made toolkits available to assist in this curriculum addition. As the healthcare environment changes, nursing students and nursing education must adapt to meet these changes in order to adequately prepare nurses for the ever-changing and ever-increasing technologic environment that awaits them.

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Preparation for Stage 1 Meaningful Use Attestation as an Eligible Hospital

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Abstract

The intention of this article is to provide an overview of Meaningful Use (MU) to Clinical Informatics Professionals, Clinicians, Medical Providers and other interested Healthcare Workers: the definition and origination of Meaningful Use, the Federal incentive structure for Meaningful Use of a certified EHR, and the necessary preparation before embarking on the implementation of Meaningful Use. A focus on requirements and considerations for Eligible Hospitals is also included along with lessons learned by the authors during a Meaningful Use feasibility assessment project at a

large healthcare provider in a major metropolitan area in the southern US.

Keywords: meaningful use, eligible hospital, quality measures, federal incentives, EH

Meaningful Use, often abbreviated as “MU”, is a component of the American Recovery and Reinvestment Act (ARRA)/Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009. This act is intended to improve American health care delivery and patient care through investment in health information technology. MU is most easily defined as the successful demonstration of implementing, adopting and meaningfully using electronic health record technology by providers of medical care. The ARRA/HITECH Act provides the administrative structure, operational guidelines and technical support to providers, enables coordination and alignment within and among states, establishes connectivity to the public health community in case of emergencies, and assures the workforce is properly trained and equipped to be “meaningful users” of EHRs (electronic health records).

The three main components of Meaningful Use are:

1. Using a certified EHR in a meaningful manner, such as CPOE or e-prescribing.

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2. Using certified EHR technology for electronic exchange between providers and healthcare entities of health information to improve quality of health care.
3. Using certified EHR technology to submit clinical quality and other measures to CMS and other bodies. (CMS, 2011)

MU is an important component of electronic health record implementations, clinical transformation and process improvement, achievement of quality initiatives and regulatory requirements, and optimization of existing systems and technologies within health care organizations and provider offices and clinics. Because the application of MU is so intertwined within healthcare practices and reporting, it touches everyone who works in the healthcare field:

- Physicians and other providers
- Nurses and other clinicians
- Medical Office and Allied Health workers
- Financial, Quality, Compliance and Risk Management departments and specialists
- CXOs and executives in all business lines
- IT Workers (Clinical and Non-clinical IT analysts, architects, programmers, consultants, etc.)

ARRA/HITECH is not just about MU. It additionally ties MU together or links it to other components of the ARRA/HITECH and Affordable Care Acts of 2009 and 2010, including:

- PCMH (Patient Centered Medical Home) and ACOs (Accountable Care Organizations)

- PQRI and eRx (CMS' Physicians Quality Reporting Initiative and stand-alone ePrescribing program)
- Establishment of RECs (regional extension centers) and Beacon Communities
- ICD-10, HIPAA 5010 and other programs whose cumulative timelines extend until at least 2021 for full implementation. (CMS, 2011)

For more information about these components refer to the CMS website https://www.cms.gov/EHRIncentivePrograms/30_Meaningful_Use.asp

With the publication of the Code of Federal Regulations (CFR) defining the Electronic Health Record Incentive Program **Final Rule**, the Meaningful Use section of the ARRA/HITECH Act became final in July 2010. This CFR Final Rule provides the guidelines and expectations to hospitals and health professionals on how to adopt and use electronic health record technology in a meaningful way to help improve the quality, safety, and efficiency of patient care.

Incentives for MU: The ARRA/HITECH Act authorizes the Centers for Medicare & Medicaid Services (CMS) to provide reimbursement incentives for eligible professionals (EP) and eligible hospitals (EH) who are successful in becoming meaningful users of certified EHR technology. These incentive payments for EPs, EHs and Critical Access Hospitals (CAH) will begin in 2011 based upon a number of factors and can be a result of participation in both Medicare and Medicaid incentive programs. Incentive payments can begin to be paid out in any year from 2011 to 2015, but payments will decrease for those that attest for 2014 and later. (Table 1)

Hospital incentive amounts begin with a \$2 million base payment for Medicare plus an additional amount depending on ratios of Medicare patient admissions and

Table 1. CMS financial disincentives for an eligible hospital (EH)

	No EHR 2015	No EHR 2016	No EHR 2017	No EHR 2018	No EHR
2015	1% penalty	1% penalty	1% penalty	1% penalty	1% penalty
2016	\$0K	2%	2%	2%	2%
2017	\$0K	\$0K	3%	3%	3%
2018	\$0K	\$0K	\$0K	3-4%*	3-4%*
2019+	\$0K	\$0K	\$0K	\$0K	3-5%*
TOTAL	\$0K	\$0K	\$0K	\$0K	\$0

*Medicare penalties—a decrease in payments for all Medicare professional services—potentially increases starting in 2018 if the HHS Secretary finds the portion of certified/meaningful use EHR users is less than 75%; not to exceed a 5% penalty.

other parameters, for a total amount between \$4-8 million per average-sized (250 bed) hospital. Medicaid EHR MU incentive amounts for hospitals are similar to those for Medicare and depend on a variety of factors, including Medicaid admissions, types of Medicaid patients, and other parameters. An example of these incentive payments can be reviewed in Table 2.

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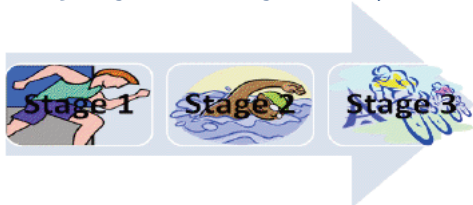
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Provider incentive amounts for Medicaid start with an initial first year payment of \$21,250, with five additional payment period years to a maximum of \$63,750. Unlike the Medicare program, providers can qualify for maximum Medicaid incentives as long as they begin demonstrating meaningful use by 2016; MU payments for the Medicaid program continue until 2021.

The 3 Stages of Meaningful Use:

There are currently 3 planned stages for implementing Meaningful Use. (Figure 1) Healthcare organizations are currently working towards Stage 1 requirements, which are separated and can be attested to in 3 separate ways:

Figure 1.
3 Stages of meaningful use implementation



eligible professionals (EP), eligible hospitals (EH), or Critical Access Hospitals (CAH). For EPs this attestation includes a core and menu set of objectives that are specific to EPs, more specifically 25 meaningful use objectives. To qualify for an incentive payment, 20 of these 25 must be met. These 20 objectives consist of 15 required core objectives and 5 optional objectives chosen from the list of 10 menu set objectives.

For EHs and CAHs, there are a total of 24 meaningful use objectives. To qualify for an incentive payment, 19 of these 24 objectives must be met. Of these 24 there are 14 required core objectives (Table 3), and then 5 objectives may be chosen from the list of 10 menu set objectives (Table 4).

According to the text of the CFR, “The objectives represent a wide range of activities, some of which are commonplace... while others are ambitious goals even for the most sophisticated EHR user of today...The measure more accurately reflects our view of what is feasible for Stage 1 than the objective itself.” (CMS, 2011)

Stage 2 is expected to be implemented in 2013 with Stage 3 expected to be put into place in 2015. These future stages will continue to expand on the baseline established in Stage 1 and will be further developed throughout future rule making. In February 2011 the proposed Stage 2 and 3 Meaningful Use measures were submitted for public comment. From this proposal several changes and additions were projected including:

- All Stage 1 Menu Objectives will be moved to Core in Stage 2, making “optional” Menu Objectives mandatory. Added Stage 2 and 3 objectives will “raise the bar” for improving advanced care processes and health outcomes, primarily through increasing the interconnectivity, care continuity and clinical decision support mechanisms of the measures.
- Stage 2 will focus on augmenting providers’ health information exchange frameworks, enhancing electronic of records including care coordination and continuity of care, and increasing patient access to electronic records.
- Threshold percentages for meeting measures will be increased in Stages 2 and 3. For example CPOE will be required to be used for 60 to 80% of unique patients admitted to the hospital, instead of 30% in Stage 1. (Lansky, 2010)

Table 2. Sample CMS financial incentives for an eligible hospital (EH)

Based upon 2007 financial data from a 440-bed hospital in the Midwest					
Base Amount					\$2,000,000
Discharge-Related Amount	21,521	discharge			\$4,074,400
Total					\$6,074,400
Total Hospital Charges					\$134,703,000
Charity Care					\$13,317,000
Difference					\$121,386,000
% Paid Care					90%
Medicare (A&C) Inpatient (IP) Bed Days					46,079
Total IP Bed Days					94,628
Total Paid IP Bed Days					85,165
Medicare Share %					54%
Initial Total					\$3,280,176
Transition Factor %	Year 1	Year 2	Year 3	Year 4	
	100%	75%	50%	25%	
Attestation to MU in 2011	2011	2012	2013	2014	Total
Incentive payment	\$3,280,176	\$2,460,132	\$1,640,088	\$820,044	\$8,200,440
Attestation to MU in 2014	2014	2015	2016	2017	Total
Incentive payment	\$2,460,132	\$1,640,088	\$820,044	\$0	\$4,920,264
Difference in Incentivation					\$3,280,176

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The final step is the Attestation. In attestation, data is submitted to CMS and state EMR MU websites attesting that the EH or EP is meeting the measures. Initially an attesting EH does not have to meet the MU objectives and measures during the demonstration period. More specifically, for the Medicare program, an EH or CAH need only to demonstrate MU for a 90-day period during the first payment year by supplying a reportable numerator and denominator to CMS. Then they must demonstrate meeting the measures for the full year in all subsequent years. For the Medicaid EHR Incentive Program an EH may qualify for incentive payments if they adopt, implement, upgrade or demonstrate meaningful use in their first year of participation. Refer to the Meaningful Use Implementation Timeline (Figure 1) and Important Stage 1 Dates for Meaningful Use (Table 5) for specific timing required for these activities.

Table 3. Meaningful use menu measures for eligible hospitals (EH)

Meaningful Use Menu Measures for EH
Incorporate Lab results into HER
Drug-Formulary Checks
Patient Lists by Condition
Advanced Directives
Patient Education
Electronic Access for Patients
Medication Reconciliation
Summary of Care Record
Submit Immunization data
Submit syndromic surveillance data

Steps to Participation: There are 3 steps to participation in either or both the Medicare and Medicaid incentive programs: Registration, Reporting, and Attestation. Registration is completed on the CMS website for participation in Medicare and Medicaid programs; it could be begun as early as January 2011 and could be completed before a certified EHR is in place. Reporting for Medicaid participation is only necessary if an EH is demonstrating implementation and MU of a certified EHR and meets inclusion threshold criteria. For Medicare program participation, demonstration of MU is for a consecutive 90 day period in year one and for a full year in subsequent years. The reporting period for each year is October through September.

Focus on Eligible Hospitals: Under the Medicare EHR Incentive Program, Eligible Hospitals (EH) include hospitals which are "Subsection (d) hospitals" in the 50 states or District of Columbia that are paid under the Inpatient Prospective Payment System (IPPS), designated as Critical Access Hospitals (CAHs), or are Medicare Advantage (MA-Affiliated)

Table 4. Meaningful use core measure objectives for eligible hospital (EH) stage 1 final measure

Meaningful Use Core Measure Objectives for EH	Stage 1 Final Measure
Allergy List	90%
Drug-Drug-Allergy Checking	Enabled
Electronic Exchange	Perform at least one test
Medication List	80%
Privacy and Security	Conduct Risk Analysis
Problem List	80%
CPOE (Medication orders)	30%
Clinical Quality Measures	2011-Attest 2012-Electronic submission
Clinical Decision Support	One Rule
Clinical Summary	50%
Copy of Health Information	50%
Demographics	50%
Electronic Copy of Discharge Instructions	50%
Smoking Status	50%
Vital Signs	50%

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Hospitals. Eligible Hospitals (EH) under the Medicaid EHR Incentive Program include acute care hospitals (including CAHs and cancer hospitals) with at least 10% Medicaid patient volume and children's hospitals (no Medicaid patient volume requirements) (Federal Register, 2011)

of 3 hospitals live could attest if they had a high enough numerator amongst the patient population of the 2 live hospitals. If one has CPOE levels at 90% of medications in the 2 hospitals that make up 50% of the unique patient admissions, then the reportable percentage would equal 45% (the threshold is 30%). The same could be said for all other measures to which the health system could attest. However, if all 3 hospitals were reporting under separate CMS numbers, then each hospital would have to meet that 30% threshold independently in order for each of them to attest. For example, one might choose to only register and attest for Hospital A and Hospital B, if Hospital C is not on a certified EHR and will not be attested to in 2011.

Table 5. Important stage 1 dates for attestation of meaningful use for eligible hospitals (EH) and eligible providers (EP)

Important Stage 1 Dates for Meaningful Use	
1-Oct-10	Reporting year began for eligible hospitals (EH) and CAHs
1-Jan-11	Reporting year began for eligible professionals (EP)
5-Jan-11	Registration for the Medicare EHR Incentive Program began
3-Jan-11	For Medicaid providers, states began launching their EHR MU programs (several EPs and two hospitals have already received first Medicaid incentive payments)
Apr-11	Attestation for the Medicare EHR Incentive Program begins
May-11	EHR Incentive Payments expected to begin
3-Jul-11	Last day for eligible hospitals (EH) to begin their 90-day reporting period to demonstrate meaningful use for the Medicare EHR Incentive Program
30-Sep-11	Last day of the federal fiscal year. Reporting year ends for eligible hospitals (EH) and CAHs
30-Nov-11	Last day for eligible hospitals (EH) and critical access hospitals (CAHs) to register and attest to receive an Incentive Payment for Federal fiscal year (FY) 2011
31-Dec-11	Reporting year ends for eligible professionals (EP)
29-Feb-12	Last day for eligible professionals (EP) to register and attest to receive an Incentive Payment for calendar year (CY) 2011

Depending on whether a health system is reporting under one CMS number or individual numbers the requirements for attestation may differ. For example, if a 3 hospital health system reports to CMS as one CMS entity, the numerator and denominator would be the combination of the 3 facilities combined, regardless of whether or not both are live on a certified EHR. Therefore, a health system that has 2

responsibility for implementing Meaningful Use study thoroughly and often the available literature and guidelines, which are all subject to frequent change.

It can take several months or more to prepare your existing system for MU. The work involved includes a thorough gap analysis to validate current system configuration and end user workflows. Depending upon when your vendor's product was certified, there may be updates or upgrades to newer versions that would be required for your system to meet certification criteria. These upgrades or updates may require some redesigning of actual end user workflows, adjusting clinical content and build, as well as designing, building, and editing reports. In addition, these upgrades may introduce new application features or an updated user interface; it is important to thoroughly read and understand the release notes

Implementing Meaningful Use and preparing for Attestation is more complex than having an EHR vendor product that is certified. Due to its far reaching impact and interlinking within healthcare and all the EHR end users, it requires thorough analysis and well-developed project work plans. It will be important to treat preparations for attestation of Meaningful Use as a project. A detailed Project Plan should be developed with specific resources dedicated to understanding MU requirements, the readiness of the current EHR system in place, analyzing the current EHR environment, and then preparing the EHR system for MU reporting and attestation. Be aware that all vendors have made efforts to interpret the CMS requirements for Meaningful Use, but their interpretation of a specific measure may not correlate to the understanding of your organization. It is crucial for those charged with oversight or

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provided by the vendor for all software updates, and the corresponding impact on your organization.

It is of crucial importance to understand the impact of a MU implementation against other IT projects currently in progress in your organization. For example: if your organization is implementing new software application modules and there is only one “build” environment available for use, the updates and build required for MU may interfere with the operation or design of things that have already been built for those other projects. A well designed and controlled build and environment migration strategy must be in place; the more implementation initiatives that are underway, the more complex the strategy required. Engage your vendor to understand the work effort required to migrate this build (i.e., can the migration be automated or is duplicate manual build required).

Your reporting software may also require upgrades; for example, if your vendor provides reports written in Crystal Report Writer, you may not be operating on the same version of the software in which the reports were originally written. Depending on whether you are using the vendor’s

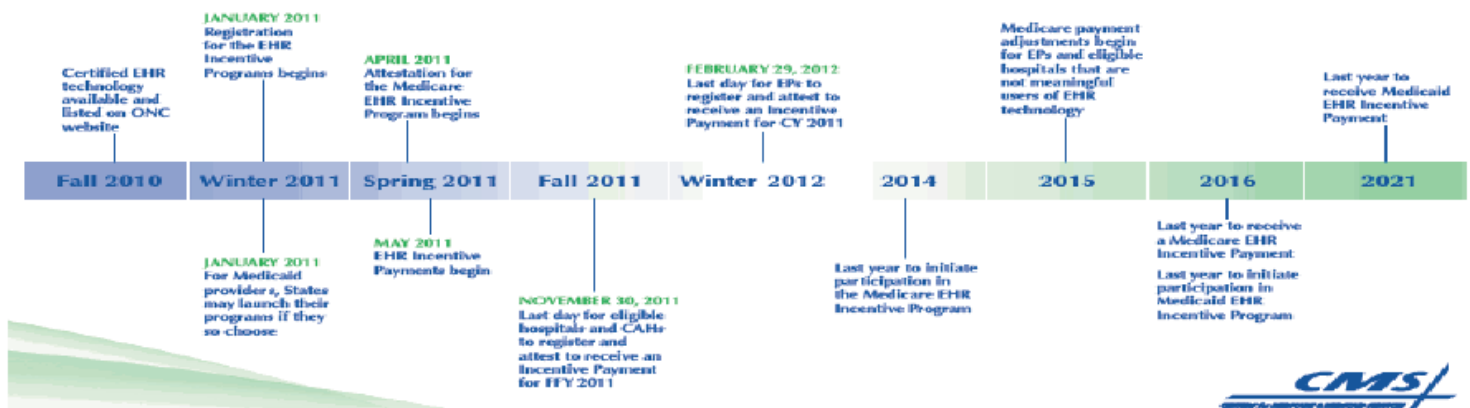
standard reporting software and database table structure (i.e., have you created custom tables and/or views) you may need to alter your custom software, tables, stored procedures and/or views to align with the certified version of your vendor’s product

There are system performance and server space demands that also need to be taken into consideration, due to the large amounts of data to be reviewed, compiled and stored for reporting. Engage your vendor early in the process, and ask vital questions:

- Are there operating system or application environment upgrades or updates that we need before attempting implementation?
- Does our environment currently have enough server space to accommodate the MU data? What has been the experience of other clients in terms of space needs, especially clients that are similar to us in size, number of patients seen and procedures ordered?
- What is the critical path for the technical pieces required for the implementation, and what tasks such as application build are dependent upon them, and which tasks can be conducted in parallel?
- What has been the experience of other clients in terms of implementation time and work effort?

Most if not all of these changes will require regression and application testing as well as unit testing before moving build content to your live environment. Additionally you will need to write new test scripts that account for the MU workflows; it is necessary to test positively (the provider, patient and order data that you expect to see on the reports is there) and negatively (provider, patient and data that should NOT be on the reports isn’t there). Adequate time for testing plus remediation time (time to make corrections to build in the event of errors encountered during testing) should be built into the project plan. End users will require training on new content or workflows as well as refresher training on the required workflows that may have been replaced over time by short cuts or workarounds; be sure to engage your training department to understand their lead time on making changes to the existing training materials and delivering the new content.

Figure 2. CMS meaningful use implementation timeline from 2010



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Compliance with regulatory rules of Federal, State and Accrediting agencies, establishing organizational policies related to MU, documenting reporting and attestation methods and results, performing internal audits, and retaining documents for supporting external audits will also need to be part of the plan. Ownership of MU content will need to be established with the technical as well as clinical teams to ensure future work does not disrupt the integrity of MU workflow and reporting. Privacy and security related work including conducting security risk analyses, risk management and mitigation are also part of MU preparedness.

Conclusion: Meaningful Use is an ambitious undertaking for any organization or professional, but it is one that has the potential to greatly improve the quality and efficiency of patient care in addition to providing a tangible benefit in Federal incentive payments in the near term. It is also a wise undertaking for any organization or professional receiving Medicare or Medicaid reimbursements: while the adoption of Meaningful Use is not required, beginning in the year 2015 failure to have implemented a certified EHR and successfully demonstrated Meaningful Use will result in financial penalties applied to Medicare and Medicaid reimbursements.

Thorough study of the requirements for Meaningful Use, a careful readiness assessment and detailed implementation project planning are critical to the success of adopting Meaningful Use in your organization. Do not overestimate the ability of your organization to implement Meaningful Use, or underestimate the time required to do it properly. Engage your vendor early and solicit feedback not only from them, but from other clients of your vendor or individuals experienced with implementation of Meaningful Use, as an aid in developing your own plan for success.

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