

**Health Data**  
MANAGEMENT  
**VIRTUAL TRADE SHOW**

**Nursing I.T. Trends**

Becky Quammen  
CEO, The Quammen Group



## Nursing Informatics - Definition

- Nursing Informatics (NI) is the specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, and knowledge in nursing practice. Nursing informatics facilitates the integration of data and knowledge to support patients, nurses, and other providers in their decision-making in all roles and settings. This support is accomplished through the use of information structures, information processes and information technology.

*Scope of Standards of Nursing Informatics Practice - American Nurses Association 2001*



## Nursing Informatics - Goals

- The goal of Nursing Informatics is to improve the health of populations, communities, families, and individuals by optimizing information management and communication. This includes the use of technology in the direct provision of care, in establishing effective administrative systems, in managing and delivering education experiences, in supporting life-long learning, and in supporting nursing research.

*Scope of Standards of Nursing Informatics Practice - American Nurses Association 2001*



## Nursing Informatics – Standards of Practice

- Organized around a general problem-solving framework that closely resembles the familiar nursing process of
  - Assessment
  - Diagnosis
  - Identification of Outcomes
  - Planning
  - Implementation
  - Evaluation
- Supports all facets of Informatics Practice, including those without technology

*Scope of Standards of Nursing Informatics Practice - American Nurses Association 2001*



## Nursing Informatics – Solution

- An informatics solution may encompass technology and non-technology products such as:
  - Developing a database
  - Purchasing a new computer application
  - Creating nursing vocabulary
  - Design informatics curricula
  - Creating a spreadsheet
  - Tailoring an application to a particular environment
  - Designing a research study to describe required informatics competencies
  - Describing information flow in a process redesign
  - Creating a structure for information presentation

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## Nursing Informatics – History

- For three decades or more, nurses have held informatics roles and been key stakeholders in developing, implementing, and evaluating informatics solutions. Although implementing informatics solutions continues to be very important, more recently informatics nurse specialists have worked to develop and refine nursing's language, implement telehealth systems, establish NI educational programs and expand the focus.



## Nursing Informatics – Future

- Ubiquitous computing is becoming a reality and the continued innovation and miniaturization of technology is evident. Consequently partnering between nurses in all specialties and new technologies is becoming imperative
- Technological innovations are challenging many traditional processes  
Telecommunications technologies are one set of tools used in nursing practice
- Core competencies across informatics specialties should be identified in the near future. The distinctions among informatics specialties will continue to blur
- The speed of information transfer and the increasing availability of communication technologies will impact nurses and informatics nurse specialists in the future, making nursing practice and NI, in particular, more international in practices with world-wide standards, competencies and curricula

*Scope of Standards of Nursing Informatics Practice - American Nurses Association 2001*



**Nursing IT** is a topic that **transcends**

the collection, storage, reporting,  
and transmittal of data.

**Nursing IT** is a broad, collaborative and complex topic  
that **encompasses**.....



**People**



**Business  
Practice**



**Systems**



# Successful Use of IT in Nursing

## People

- Individual Motivation
- Fear of Computerization
- Personnel Costs
- Organizational Culture
- Big Picture
- Integration vs. Functionality

*Compromise*



## Business Practice

- Work Flows
- Process vs. Task Orientation
- Clear Vision and Priorities
- Business Plan
- Data Ownership
- Patience and Time

*Compromise*

## Systems

- Standards Compliance
- Interoperability
- Data Redundancy
- Vendor Product Strategies
- Best of Breed vs. Integrated

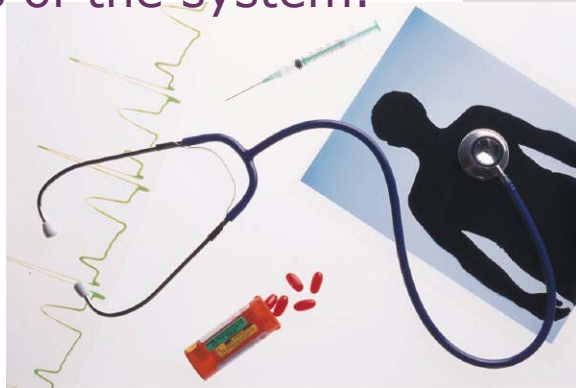
*Compromise*





## Nursing Information Technology

Encompasses much more than the relationship between the physical parts of the system.



Health  
Outcomes

Cost

IT success is measured by the user and validated in the meaningful application of data.

*What's in it for me?*

*What's in it for my patient?*



So, how are we doing?



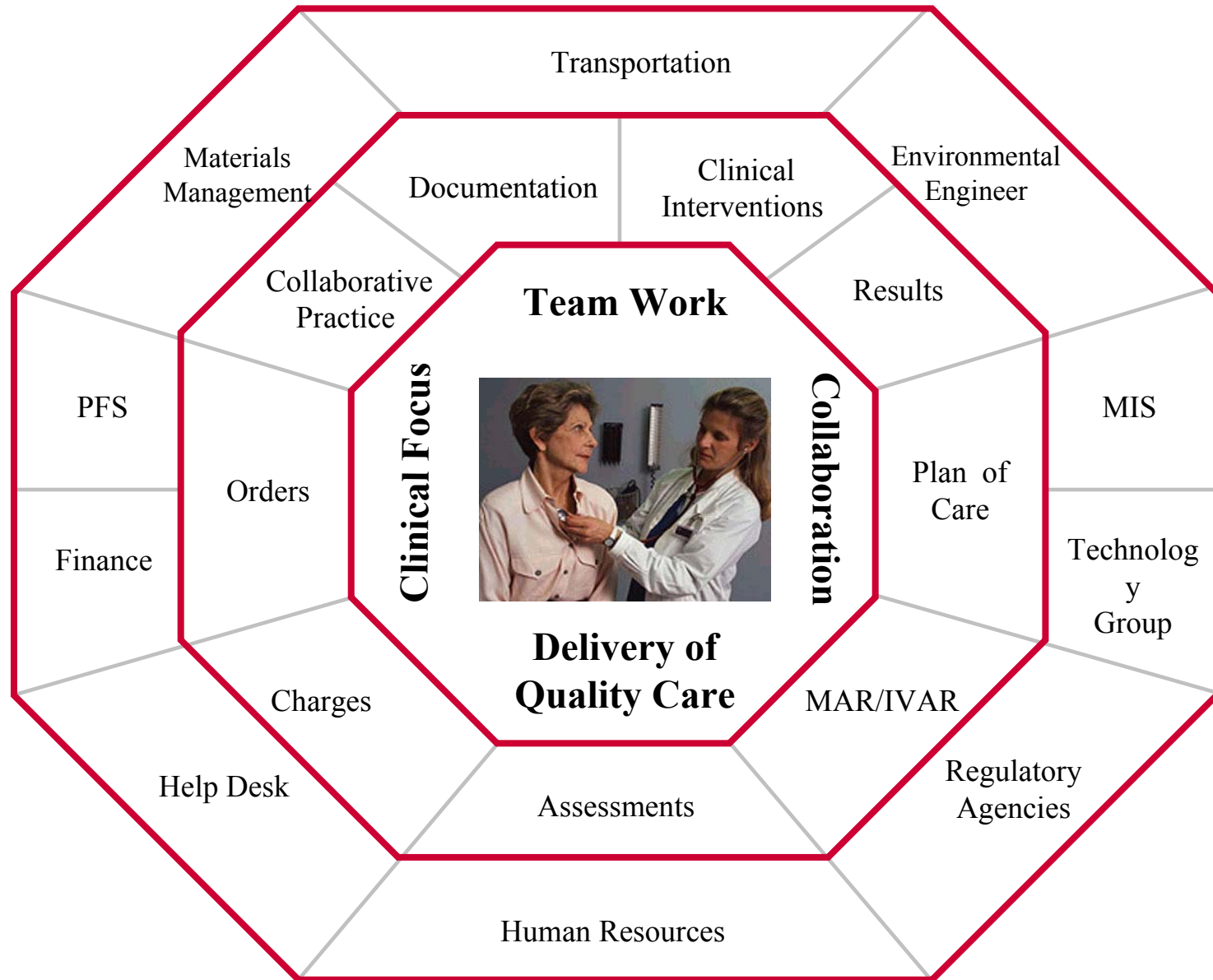


## Slow but Steady Progress...

- Patient documentation
  - Timely information
  - What the clinician needs when they need it
  - More information
- Secure access to clinical data in more places and in more ways
  - In the office, at home, on a variety of devices
- Clinician workflow efficiencies and productivity gains
- Administrative, financial and clinical decision-making
  - Concurrent
  - Retrospective
  - Trending



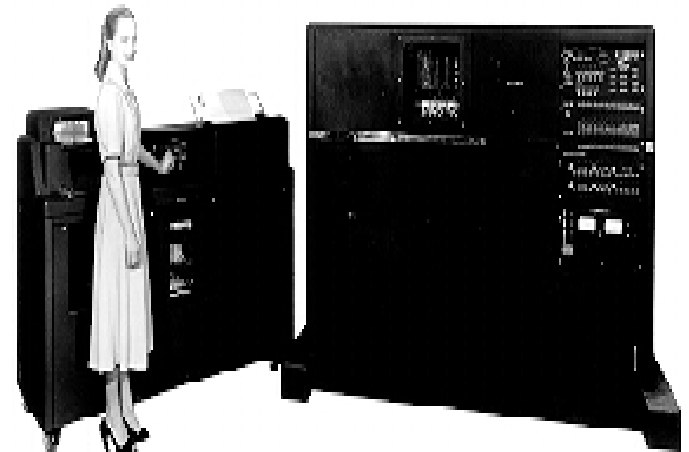
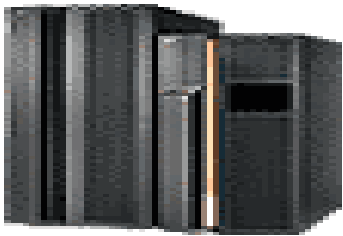
# Complexity Surrounding Nursing IT...





## Nursing – IT Trends

- Mature and Ubiquitous Technology Solutions
- Mid-Stage Technology Solutions
- Emerging Technology Solutions





## Mature and Ubiquitous Technology Solutions

- Order Management & Communication
- Clinical Repositories
- Departmental Systems (LAB, RAD, etc.)
- PACS
- Online Electronic Bed Management Systems
- Departmental Scheduling
- Staff Scheduling
- Intranet/Internet Based Reference Materials (Orders, P&P, Protocols, Drug Monographs)
- Phones, Pagers, In-house Communication Devices
- Wide Variety of Fixed & Mobile Devices



## Mid-Stage Technology Solutions

- Online and Integrated Electronic Patient Documentation
- Integrated Hemodynamic Monitors (Vitals Signs) with EMR
- Hand-held Devices for Data Collection & Input
- Online Fully Integrated Medication Administration Record
- Online and Integrated Rules and Alerts
- CPOE – Computerized Provider Order Entry
- Bar Code Technology
- Access and Security Technology
- Sophisticated Implementation Methodologies
- Organization of Nursing Practice through Technology
  - Time and Motion Templates
  - Nomenclature/Data Standardization Tools
  - Care Plan Standardization and Tool Sets





## Emerging Technology Solutions

- National Patient Databases for comprehensive patient record across disparate providers
- Patient Health Cards – contain all medical records and information
- Advanced Biometric Access and Security functionality
- Voice recognition within electronic medical records
- Hands free communication tools
- RFID



## Mature and Ubiquitous Technology Solutions

- Clinical Systems
  - Order Management & Communication
  - Clinical Repositories
  - Departmental Systems
  - PACS



## Mature and Ubiquitous Technology Solutions

- Enterprise Systems
  - Online Electronic Bed Management Systems
    - Nurse assignments are no longer hand written
    - Determine the real-time census of units
    - Reports available to track lengths of stay
    - Monitor delays in patient movement
    - Determine bed availability quickly
    - Spend less time negotiating on the telephone
  - Departmental Scheduling Systems
    - Deployed as standalone or in centralized models



# Mature and Ubiquitous Technology Solutions

- Administrative & General Workflow
  - Staff Scheduling
    - Allows healthcare facilities to create templates for the various skills and skill mixes that exist across their units and facilities
    - Using this template a computerized system optimizes staffing based on identified and known constraints
    - Facilitates identification of staff preferences in mind
    - Logic identifies when a skill mix is off
    - Logic identifies when a nurse is being asked to go to an area that she/he is not trained for
    - Time required for schedule creation has decreased significantly
    - Staff satisfaction has improved
  - Intranet Based Reference Materials (Orders, P&P, Protocols, Drug Monographs)
  - Phones, Pagers, In-house Communication Devices

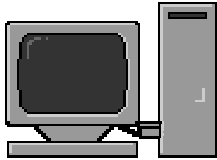


## Mature and Ubiquitous Technology Solutions

- Wide Variety of Mobile Devices
  - Designed to augment clinical workflow needs
  - Can be personalized to the care giver and specific documentation or data entry needs
  - Laptops
  - PDAs
  - Notebooks
  - COWs (Computers on Wheels)
  - Many Others

*...is about getting the right information  
to the right person at the right time.*

# The Right Tool for the Job



## Clinical Solution Assessment Document

<i>Hardware Device</i>	<i>Cost</i>	<i>Technology</i>				<i>Access</i>					<i>User Interface</i>			<i>Average Total (excluding cost)</i>
		<i>Wireless</i>	<i>Speed</i>	<i>Security</i>	<i>MIS Support</i>	<i>HH</i>	<i>Cart</i>	<i>Room Fixed</i>	<i>Hall Fixed</i>	<i>Station Fixed</i>	<i>Functionality</i>	<i>Visual Ease</i>	<i>User Experience</i>	
<i>Laptop</i>	\$\$\$	1	2	2	2	2	1	1	1	1	2	1	2	1.50
<i>Handheld</i>	\$	1	2	3	3	1	1	1	1	1	3	3	3	1.92
<i>PC</i>	\$\$	1	2	1	1	3	3	2	2	2	1	1	1	1.70

Legend:  
 1=Good  
 2=Marginal  
 3=Poor

# Mid-Stage Technology Solutions

**Achieving the Right Balance**

**Patient Safety  
Workflow  
Quality Patient Care**



**Supporting  
Clinicians Through  
Automation**





## Mid-Stage Technology Solutions

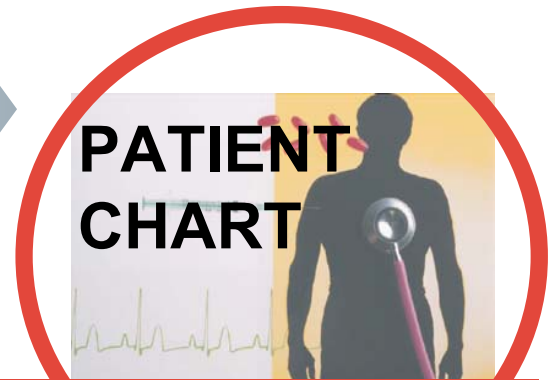
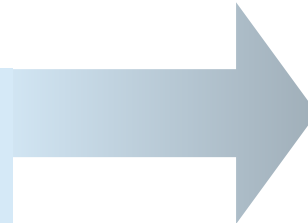
- Online and Integrated Electronic Patient Documentation
  - Online documentation of vital signs, intake and output, nursing notes, and assessments
  - Integrated with online MAR for documenting of pain response, vital sign response, and lab values associated with medications
  - Integrated with physician, ancillary, and other care giver documentation



# Clinician's Access to Paper Record



- Attending Physician
- Nursing
- Consulting Physician(s)
- Respiratory Care
- Case Management
- Nutritional Services
- Risk Management
- IV Team
- Patient Financial Services
- Infection Control
- Wound Management
- Pastoral Care
- Clinical Process Improvement
- Cardiology
- PT/OT/Speech
- Others



## **BARRIERS**

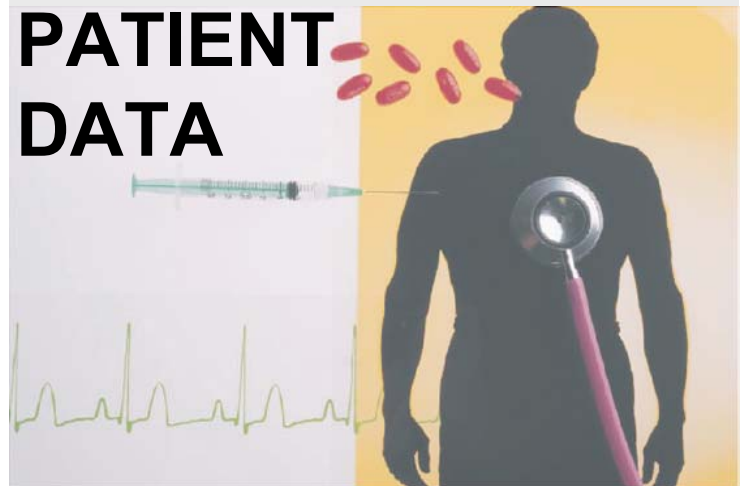
- Record must be on unit
- All clinicians and support personnel must walk to location of chart
- One person can access the chart at a time
- Legibility of chart input
- Timely filing of data results into chart
- Finding clipboard for most current information
- MAR at different location
- Redundant information

# Clinician's Access to Online Record



- Attending Physician
- Nursing
- Consulting Physician(s)
- Respiratory Care
- Case Management
- Nutritional Services
- Risk Management
- IV Team
- Patient Financial Services
- Infection Control
- Wound Management
- Pastoral Care
- Clinical Process Improvement
- Cardiology
- PT/OT/Speech
- Others

## ELECTRONIC PATIENT DATA



### **BARRIERS:**

- Systems Availability
- User Acceptance



## Mid-Stage Technology Solutions

- Integrated Hemodynamic Monitors (Vital Signs) with EMR
  - Vital signs are automatically updated to the patient EMR
  - Eliminates paper documentation and accurately captures patient information at the point of care
  - Devices are fixed in the patient room or mobile on COWs (Computers on Wheels)



## Mid-Stage Technology Solutions

- Hand-held Devices for Data Collection & Input
  - Assist with obtaining, verifying, and communicating data
  - Cardiology, Transplant, and other clinically significant data can be entered directly online
  - Eliminates the need for bulky data collection sheets
  - Enhances the ability for version control of data entry documents



## Mid-Stage Technology Solutions

- Online Fully Integrated Medication Administration Record
  - Significant time reduction associated to documenting medications
  - Significant time reduction associated with transcription of medications to paper MAR
  - Decreased transcription errors
  - Increased patient safety

# Medication Administration Record

before

Flagyl 500mg	IV	06	14	22	06	14	E	0604	E										
Clayman 500mg	IV	06	14	22	06	14	E	0604	E										
S. immediate 300mg	IV		09	21		09	R		R									11AS	21 pm
Flavoxyl 100mg	R	T							R30	ND		0130	2000	AD	0400	AD	1500	AD	2000
Insulin U-100	R	T				0400	1200		0720	ND		0000	0600	ND	1200	AD	1800	AD	1530
Atorvastatin 20mg	R	T				2400	0630	1530		ND		0330	0730	ND	2330	AD	0530		2000
Metformin 500mg	R	T							0720	ND				0000	AD	0600	AD	1200	AD
Trach care	T									ND					0600	AD			
Vancomycin 500mg	IV	06	14	22	04	13	E	0604	E					14	AD	0530	AD	11AS	22 pm
Lasix 30mg	IV					18													
Lasix 30mg vgt	IV					06													
Lasix 30mg vgt	IV					18													
Lasix 30mg vgt	IV					18													

after

NOVOLIN R U-100 NOVOLIN R U-100 *Q6H DAILY IV ROUTINE # 255 NURVERIF BY:TBW9D0 ON: 03/04	0600DM0E84	0600NUR026 NIST D=8 UNITS SITE=L20 M=BC=255	0600JCO39A		
INSULIN SLIDING SCALE - SEE DETAILS EVERY 6 HOURS IF BG 0-180 = 0 U 181-230 = 4 U 231-270 = 8 U 271-300 = 12 U >300 = 14 U USE FOR -HUMULIN R 03/04 12:00 TO /	1200AAVC24 D=12U SITE=R20 M=BC=300 CID-TBW9D0 1800MVC204 D=8U SITE=L3 M=BC=231 CID-TBW9D0 2400NUR026 D=12UNITS SITE=R20 M=BC=296	CID-MMVD54 *1800MMVD54	1800		
ACETAZOLAMIDE 500 MG IV ONCE ONCE ROUTINE # 271 NURVERIF BY:TBW9D0 ON: 03/05	1130TBW9D0				
LAST DOSE OF 3 DOSES 03/05 11:30 TO 03/05 11:30					
Sites: 1-Hand 2-Forearm 3-Upper Arm 4-Antecubital	5-Subclavian 6-Chest 7-Jugular 8-Femoral Artery	9-Femoral Vein 10-Radial 11-Scalp 12-Umbilical	13-Foot 20-Abdomen 21-Buttocks 22-Anterior Thigh	23-Lateral Thigh 24-Lower Leg 99-(Other)	
Ports: A-Peripheral B-Central Ven Cath	C-Proximal D-Medial	E-Distal F-Sideport	G-Arterial H-Venous	I-Access Needle J-PICC	K-Foley Cath Z-(Other)
					*DISC - D/C * - NOT ADMIN



## Mid-Stage Technology Solutions

- Online and Integrated Rules and Alerts (Workflow)
  - Drug-allergy alerts based on order entry functionality
  - Drug-drug interaction alerts
  - Alerts for abnormal lab values and vital signs
  - Alerts for new orders
  - Alerts for order renewals
  - Alerts for scheduled patient events



## Mid-Stage Technology Solutions

- CPOE – Computerized Provider Order Entry
  - Nurses no longer struggle to read physician handwriting
  - Reduces verbal orders
  - All providers can enter orders directly online
    - Integrated rules and alerts
    - Integrated allergy check
  - Decreases chances for transcription error
  - Reduces delays in patient care





## Mid-Stage Technology Solutions

- Bar Code Technology
  - Barcodes on patient bands and medication packaging helps to double check that the right medication is being given to the right patient at the right time
  - System alerts the nurse immediately if any inconsistencies or potential problems exist
  - Internal back-up systems are in place to back-up information regularly so a MAR can be printed in the event of system downtime
  - Integration with electronic MAR and documentation systems becoming more common place



## Mid-Stage Technology Solutions

- Access and Security Technology
  - Single Sign-On
  - Biometric



## Mid-Stage Technology Solutions

- **Sophisticated Implementation Methodologies**
  - Sophisticated planning and implementation methodologies take the guess work out of project management
  - Include workflow, communication, risk mitigation, system design and analysis, as well as overall task management activities
  - Tightly integrated financial management tools to ensure projects stay on track and in budget



## Mid-Stage Technology Solutions

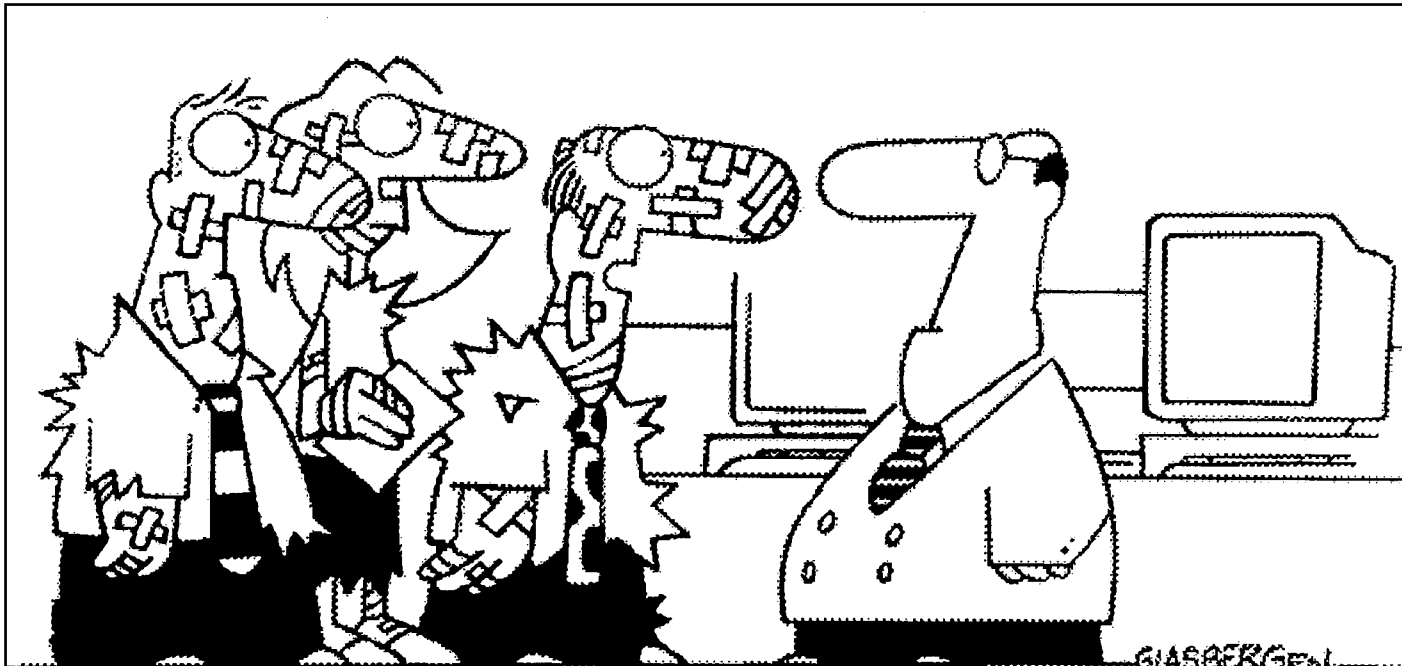
- Organization of Nursing Practice through Technology
  - Time and Motion Templates
  - Nomenclature/Data Standardization Tools
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## Emerging Technology Solutions

- National Patient Databases for comprehensive patient record across disparate providers
- Patient Health Cards – contain all medical records and information (advance directives)
- Integration with retail pharmacy (home meds)
- Advanced biometric access and security functionality
- Voice recognition within electronic medical records
- Hands free communication tools



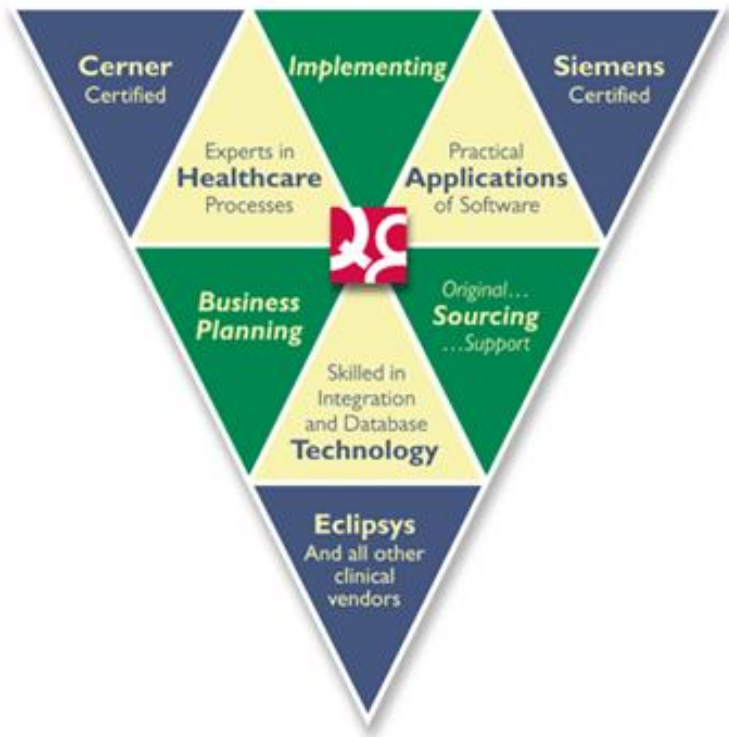


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**“Frankly sir, we’re tired of being  
on the cutting edge of technology.”**



## Consulting That Works



## **Becky Quammen** CEO

In Collaboration with  
Rhonda Bartlett, RN  
Chief Clinical Informatics Officer

**The Quammen Group**  
1400 S. Orlando Avenue, Suite 204  
Winter Park, FL 32789  
407-539-2015 (Office)  
[becky@quammengroup.com](mailto:becky@quammengroup.com)  
[rbartlett@quammengroup.com](mailto:rbartlett@quammengroup.com)  
[www.quammengroup.com](http://www.quammengroup.com)