

Electronic Health Records



The Stennis Experience

Clay Andrews, MD

Sue Smith, RN



2008 OCHMO Conference

- First introduction to MedGate
- Invited to become the first Center for EHRS implementation and to become members of the EHRS development team
 - Scheduled meeting at KSC in August 2008



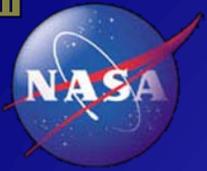
Implementation Experience





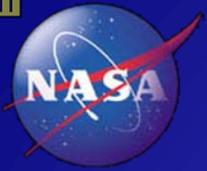
Planning Overview

- Analyzed record keeping needs
 - Currently use multiple databases in daily activities
 - Costing (MedSys)
 - Scheduling
 - Exam recall
 - Certification Reporting (TCRS)
 - Diagnostic Databases
 - Audio (HT Pro)
 - Vision (Titmus)
 - PFT (EasyOne)
 - Lab (LabCorp)
 - X-Ray (Digital)



Planning Overview

- Broadly considered EHRS applications
 - Record management
 - Scan options
 - Paper record storage and retrieval
 - Compliance with regulations
 - Record retention time
 - Required notifications
 - Certification notification
 - X-ray and lab data



Planning Overview

- Record access options
 - Laptops
 - Notebooks
 - PC's @ each workstation
- Record security
 - HIPPA requirements
 - NASA IT requirements

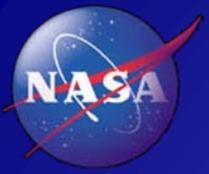


Security Concerns

- July 9,2009
-
- Dr. Andrews,

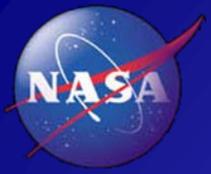
I am writing in reference to the impending digitization of my medical records held at the SSC Health Clinic. I feel that said action is a potential violation of my right to privacy, and I would prefer if my records were not digitized.

Thank you for your assistance in this matter.



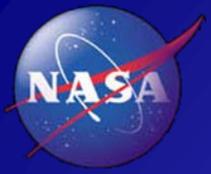
Preparatory Strategy

- Review workflow, forms, and paper record strategies
- Collect copies of current forms for KSC task force review
- Contact laboratory to explore direct feeds
- Interview Clinic staff for their concerns
 - Concerns about multiple forms
 - Concerns about x-ray management
 - Concerns about current electronic databases



August 2008 - KSC Trip 1

- SSC EHRS Team Members Include
 - Medical Records Specialist
 - Chief RN
 - Deputy Director
 - NASA COTR
- MedGate Formal Introduction
 - Development strategies
 - Introduction to base tables and their function



August 2008 - KSC Trip

- Provided Process Information
 - Exam Matrix
 - 49 Exams
 - Company-specific exam components
 - Copies of Forms
 - Numerous company-specific forms
 - Many forms proprietary to companies
 - Audio Data
 - For interface/data dump

MEDICAL EXAMINATIONS

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 | | | | | |
|----|--|----------------------------|------------|-----|-------------------|--------|-------------|-------------------------|-----|---------------|------|----------|------------|---|-------|---------------------|------------|----------|-----|------------|-----|-----|-------------------|--------------|-------------|---------------------|----------|----------|----------|------------|----------------|------------|--------------|-----------------------|-----------------|--------|---------------------|-------------|-------------------------|-----|-----|-----|-----|-----|--|
| | ALCOH | BLOOD LEAD (ZPP) certified | BLOOD PHOS | CBC | CHOLESTEROL/ENRUC | COPIES | DRUG SCREEN | DOT 5 PANEL DRUG SCREEN | EKG | FBZONH PP | OSHO | GLAUCOMA | HEMOGUT 28 | HEMOGUT 30 (HGBAUC) (HDL/UGES LEVEL 10) | HPT/C | METIC URINE (TOTAL) | MRO REPORT | MRO VIST | PCB | PHOS URINE | PFO | PSA | PLAUMARY FUNCTION | SPERMATOLOGY | SICKLE CELL | SINUS CANCER SCREEN | SINUS 28 | TSH | TYPEFISH | URINALYSIS | URINE CHROMIUM | URINE LEAD | URINE NICKEL | URINE THIOH ORETHANOL | URINE VOLATILES | VISUAL | VITAL SCREENING/FAT | X-RAY CHEST | X-RAY CHEST B (BACKING) | | | | | | |
| 1 | Chauffeur | X | | | X | | A/FOSC | 40A | | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | X | | | | | X | X | XIA | | | | | | | | |
| 2 | Chauffeur DOT w/ MRO Report | X | | | X | | | X | X | | | X | 40A | 43A | X | | X | | | | | | | | | | X | | | X | X | | | | | X | X | XIA | | | | | | | |
| 3 | Chauffeur DOT w/ MRO Report & MRO Office Visit | X | | | X | | | X | X | | | X | 40A | 43A | X | | X | X | | | | | | | | | X | | | X | X | | | | | X | X | XIA | | | | | | | |
| 4 | Clean Room | X | | | X | | A/FOSC | X | | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | X | X | XIA | | | | | | | | |
| 5 | Confined Space | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | X | X | XIA | | | | | | | | |
| 6 | Diver | X | | | X | | A/NVFS | | X | X/A NVFS PASC | A/N | X | 40A | 43A | X/A | | | | | | X | | | | | X | | | A/N | X | | | | | X | X | XIA | | | | | | | | |
| 7 | DOT Exam | X | | | X | | A/PWR | X | X | | | | 40A | 43A | X | | X | | | | | | | | | | X | | | X | X | | | | | X | X | XIA | | | | | | | |
| 8 | Drug Screen | X/A | | | | | A/PWR | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | XIA | | | | | | |
| 9 | DOT Drug Screening w/MRO Report | | | | | | A/PWR | X | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| 10 | DOT Drug Screening w/MRO Report and MRO Visit | | | | | | A/PWR | X | | | | | | | | | X | X | | | | | | | | | | | | | | | | | | | | | X | | | | | | |
| 11 | Explosive handler / HE | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | X | | | X | | | | | | | X | X | XIA | | | | | | | |
| 12 | Flight | X | | | X | | | X | | | A/N | X | 40A | 43A | X/A | | | | | | X | | | | | | X | | | A/N | X | | | | | X | X | XIA | | | | | | | |
| 13 | Forklift 6000 / Lockout/Tagout (BASIC) | X | | | X | | A/FOSC | 40A | | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | X | X | XIA | | | | | | | |
| 14 | Forklift 6000 & 10000 / Heavy Equipment | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | | X | X | XIA | | | | | | |
| 15 | Forklifts - Certified | X/A | | | X | | A/FOSC | 40A | | | | 43A | 40A | 43A | 43A | | | | | | X | | | | | 40A | | | X | | | | | | | X/A | X | XIA | | | | | | | |
| 16 | Hazardous Energy Worker | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | | X | X | XIA | | | | | | |
| 17 | Health Maintenance | O | | | O | | | | O | | | O | 40A | 43A | O/A | | | | | | | | | | | A/NASA | O | O/A USGS | O | | | | | | O | O | O | O/A | | | | | | | |
| 18 | Health Maintenance - Certified Firearm | X | | | X | | X/A | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | X | X | XIA | | | | | | |
| 19 | Isopyrates | X | | | X | | A/PWR | X | | | | 43A | 40A | 43A | X/A | | | | | | | | | | | | | | | X | | | | | | | | X | X | XIA | | | | | |
| 20 | Pre-Placement | X | | | X | | A/PWR | A/PASA | 40A | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | | X | X | XIA | | | | | | |
| 21 | QPO Pre-Placement | X | | | | | | 40A | | | | 43A | 40A | 43A | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |
| 22 | PAGAGON Pre-Placement | X | | | X | | | X | | | | 43A | 40A | 43A | 43A | | | | | | | | | | | | X | | | X | | | | | | | | | X | X | XIA | | | | |
| 23 | USGS Pre-Placement (United) | X | | | | | | | | | | | 40A | 43A | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | | |
| 24 | Propellant handler / Drydock | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | | | X | X | XIA | | | | | |
| 25 | Quality Eye Inspector | X/A | | | | | | | | | | | 43A | | | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | |
| 26 | Respirator | X | | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | 43A | | | | | | | | | | | 40A | | | X | | | | | | | | | | X | X | XIA | | | | |
| 27 | See | X | | | X | | | X | | | A/N | X | 40A | 43A | X/A | | | | | | X | | | | | | X | | | A/N | X | | | | | | | X | X | XIA | | | | | |
| 28 | Surveillance Asbestos | X | | | X | | A/FOSC | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | | | X | X | XIA | PA | | | |
| 29 | Surveillance Dioxin | X | | | X | X | | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | | | | X | X | XIA | | | |
| 30 | Surveillance Dioxin 5 Month | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | | |
| 31 | Surveillance GMAL / Environmental Lab | X | X/A | | X | | | X | | | | 43A | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | | | | X | X | XIA | | | |
| 32 | Surveillance Lead | | | | | | | | | | | X | 40A | 43A | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | | |
| 33 | Surveillance Mercury | X/A | | | X | | | X | | | | 43A | 40A | 43A | X/A | X | | | | | | | | | | | | | | | | | | | | | | | | | X/A | X | XIA | | |
| 34 | Surveillance Mercury 6 Month | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | |
| 35 | Surveillance Painter | X | X/A | | X | | A/FOSC | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | | | | | X | X | XIA | | |
| 36 | Surveillance PCB | X | | | X | | A/FOSC | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | X | | | X | | | | | | | | | | | X | X | XIA | | |
| 37 | Surveillance Pesticide | X | | | X | X | A/FOSC | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | |
| 38 | Surveillance Pesticide 3 Month | | | | X | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | |
| 39 | Surveillance Radiation Water Calibration | X | | | X | | | X | | | | A/N | | 40A | 43A | X/A | | | | | | | | | | | X | | | A/N | X | | | | | | | | | X/A | X | XIA | | | |
| 40 | Terminator Physical | X | | | X | | | | | | | 43A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | |
| 41 | Welders/Respirator | X | X/A | | X | | A/PWR | A/FOSC | X | | | 43A | 40A | 43A | X/A | | | | | | | | | | | | X/A | | | X | | | | | | | | | | | | X | X | XIA | |

Available As Needed

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|----------------------------------|---|-----|--|---|--|--------|---|--|--|--|---|-----|-----|-----|--|--|--|--|--|--|--|--|--|--|--|---|--|--|---|--|--|--|--|--|--|--|--|--|--|--|---|---|---|-----|----|--|
| 1 | Pre-Placement Temporary | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | |
| 2 | Pre-Placement Temporary Painter | X | X/A | | | | | | | | | X | 40A | 43A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | |
| 3 | Pre-Placement TTBC | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | F | | |
| 4 | PWR Basic Limited | X | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | |
| 5 | Surveillance Beryllium | X | | | X | | A/FOSC | X | | | | X | 40A | 43A | X/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | XIA | PA | |
| 6 | Surveillance Phos/Painter | X | X/A | | X | | A/FOSC | X | | | | X | 40A | 43A | | | | | | | | | | | | | X | | | X | | | | | | | | | | | | | X | X | XIA | | |
| 7 | Surveillance Phosphorus/Lead/LOX | X | X/A | | X | | A/FOSC | X | | | | X | 40A | 43A | | | | | | | | | | | | | X | | | X | | | | | | | | | | | | | X | X | XIA | | |



August 2008 - KSC Trip

- Provided Process Information
 - Exam Matrix
 - 49 Exams
 - Company-specific exam components
 - Copies of Forms
 - Numerous company-specific forms
 - Many forms proprietary to companies
 - Audio Data
 - For interface/data dump



August 2008 - KSC Trip 1

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KSC Trip 1 Results

- Continue developing and reviewing base tables
- Adjust thinking to adapt to MedGate format
- Plan storage and maintenance of paper records
- Weekly coordination with KSC EHRS task force



Exam Matrix

John C. Stennis Space Center
 Medgate ~ Exam Components
 7/13/2009

| Addendum Name | <u>SURV /CERT</u> | Medgate Exam Name | ADDENDIUM | SEX | AGE FROM | AGE TO | START DATE | END DATE | RECALL GAP | RECALL PERIOD | MANDATORY |
|--------------------------------|----------------------|--------------------------|---|-----|----------|--------|------------|----------|------------|---------------|-----------|
| SSCCHAUFFERFL6K | Chauffeur FL 6000 | SSCCHAUFFER SSCFL6000 | AUDIOGRAM Audiogram Audiometric | B | 0 | 99 | | | 1 | Year | X |
| | | | CBDIFF CBC w/Differential | B | 0 | 99 | | | 1 | Year | X |
| | | | EKG Electrocardiogram | B | 40 | 99 | | | 1 | Year | X |
| | | | TONOMETRY Tonometry | B | 40 | 99 | | | 1 | Year | X |
| | | | FECALOCULT Fecal, Occult Blood Sample ClinicalTest | B | 40 | 99 | | | 1 | Year | X |
| | | | HA1C Hemoglobin A1C | B | 40 | 99 | | | 1 | Year | X |
| | | | PSA TEST Prostate Specific Antigen Test | M | 50 | 99 | | | 1 | Year | X |
| | | | CMP Complete Metabolic Panel | B | 40 | 99 | | | 1 | Year | X |
| | | | URINEDIP Dip Urine Screen ClinicalTest | B | 0 | 99 | | | 1 | Year | X |
| | | | VISIONTITMUS Titmus Vision Test (Acuity, Depth, Fields) | B | 0 | 99 | | | 1 | Year | X |
| | | | VITALS Vital Signs (BP, Temp, Pulse, Resp) | B | 0 | 99 | | | 1 | Year | X |
| | | | XRAYCHEST X-Ray, Chest (14 x 17 PA View) | B | 0 | 99 | | | 1 | Year | X |
| SSCFOODHLDR | Food Handler | FOODHANDLR | AUDIOGRAM Audiogram Audiometric | B | 0 | 99 | | | 1 | Year | X |
| | | | CBDIFF CBC w/Differential | B | 0 | 99 | | | 1 | Year | X |
| | | | EKG Electrocardiogram | B | 40 | 99 | | | 1 | Year | X |
| | | | TONOMETRY Tonometry | B | 40 | 99 | | | 1 | Year | X |
| | | | FECALOCULT Fecal, Occult Blood Sample ClinicalTest | B | 40 | 99 | | | 1 | Year | X |
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| | | | PSA TEST Prostate Specific Antigen Test | M | 50 | 99 | | | 1 | Year | X |
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| | | | URINEDIP Dip Urine Screen ClinicalTest | B | 0 | 99 | | | 1 | Year | X |
| | | | VISIONTITMUS Titmus Vision Test (Acuity, Depth, Fields) | B | 0 | 99 | | | 1 | Year | X |
| | | | VITALS Vital Signs (BP, Temp, Pulse, Resp) | B | 0 | 99 | | | 1 | Year | X |
| | | | XRAYCHEST X-Ray, Chest (14 x 17 PA View) | B | 0 | 99 | | | 1 | Year | X |
| PPDTBTEST TB Manoux Test (PPD) | B | 0 | 99 | | | 1 | Year | X | | | |



January 2009 - KSC Trip 2

- **SSC EHRS Team Member Participation**
 - Medical Records Specialist
 - Chief RN
 - Deputy Director
- **Multi-Center input**
 - Highlighted differences in workflows among various Centers
 - Provided a variety of useful ideas
- **Introduced to working model of MedGate**
 - Developed familiarity of program flow
 - Experienced workflow through MedGate
 - Introduced to Report Generator



KSC Trip 2 Results

- Clarified use of base tables
- Began studying report writer functions
- Began process of matching MedGate reports to SSC specific needs – a work in progress
 - Most will be processed in Excel
 - Hope to use report data to create company specific forms
 - Procedure reports will be paired with charge data for billing



KSC Trip 2 Results

- Developed close working relationship with primary EHRS task force at KSC
- Weekly Webex coordination
- Eventual modification of base tables for SSC exams while remaining within standard MedGate parameters
- Continued familiarization with program
- Planned “go live” for April or May



May 2009 – SSC Training

- 4 day On-Site Training for all Clinic staff
 - Planning imminent “go live”
 - Formal staff introduction to MedGate
 - Intensive scenario work flow practice
 - Initial staff feedback
 - “This is overwhelming”
 - “It (MedGate) doesn’t seem to be very user friendly”
 - Increasing acceptance with training
 - “This might work after all”
 - “I really like that report feature”



Challenges

- How much of old record to keep in clinic
- How to access system from patient rooms
- How to charge different companies for services rendered
- How to reconcile company specific forms with new electronic record
- How to adapt MedGate components to meet our needs without customizing specifically to SSC



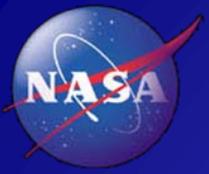
Resolutions

- Paper Records
 - Have pulled all inactive charts for remote storage
 - Will thin active charts, keeping only last two years of data in Clinic
 - Will scan selected data to store in EHRS
- X-rays
 - Active patients kept in Clinic, others stored remotely
- All patient care areas of the clinic have been outfitted with desktop computers to allow access to the electronic records.



Resolutions

- Expect report writer to provide a complete and detailed count of clinic activities to allow billing back to companies
- Now exploring methods to use report writer to capture data from MedGate onto custom forms created in Excel
- Clarifying exam parameters
 - Specific exams
 - Recall intervals
 - Age criteria



Current Status

- Coordinating via weekly Webex
- Refining and using base tables to create Center specific exam requirements
- Trying configurations in test environment
- Awaiting resolution of IT security issues
- In early stages of customizing marriage of MedGate reports with Excel



End Results

- We understand this will be painful in the beginning
- We see a very useful program with just a little perseverance
- We look forward to the challenge of making this right for us and to the rewards of having it right
- MedGate will work for us

FINALLY

AN ODE TO SPELL CHECKERS

- I have a spelling checker
- I disk covered four my PC.
- It plane lee marks four my revue
- Miss steaks aye can knot see.
- Eye ran this poem threw it.
- Your sure real glad two no.
- Its very polished in its weigh,
- My checker tolled me sew.
- A checker is a blessing.
- It freeze yew lodes of thyme.
- It helps me right awl stiles two reed,
- And aides me when aye rime.
- Each frays comes posed up on my screen
- Eye trussed too bee a joule.
- The checker pours o'er every word
- To cheque sum spelling rule.
- Bee fore wee rote with checkers
- Hour spelling was inn deck line,
- Butt now when wee dew have a laps,
- Wee are not maid too wine.
- And now bee cause my spelling
- Is checked with such grate flare,
- There are know faults in awl this peace,
- Of nun eye am a wear.
- To rite with care is quite a feet
- Of witch won should be proud,
- And wee mused dew the best wee can,
- Sew flaws are knot aloud.
- That's why eye brake in two averse
- 'Cuz eye dew want too please.
- Sow glad eye yam that aye did bye
- This soft wear four pea seas.
- A non no muss