THE ROLE OF INFORMATIONISTS IN DELIVERING GEOSPATIAL INTELLIGENCE TO HEALTH CARE PROFESSIONALS

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Objectives

- Overview of our parent grant
- Our role and aims
- Lessons learned, informationist value, challenges
Our Project

• CHICA-GIS
  • Child Health Improvement through Computer Automation (CHICA)
  • Geographic Information System (GIS)

"Delivering Geospatial Intelligence to Health Care Professionals"
Overview of our parent grant
What is CHICA?

- CHICA—Child Health Improvement through Computer Automation
- A pediatric computer-based decision support system (CDSS)
- Used in 4 pediatric clinics in central Indiana
- Connected with Regenstrief Medical Record System
What makes up CHICA?

- **Prescreener Form (PSF)**
  - Bubble form filled out by parent or child for check-in at clinic and health care worker
  - 20 yes/no questions
  - Scanned into CHICA

- **Physician Worksheet (PWS)**
  - Generated by CHICA from data on PSF and EMR data
  - 6 targeted physician preventive care reminders checked off by physician

- **Just-in-Time (JIT) handout for patients**
CHICA Pre-Screening Form

Name: Patient, Jenny D
Age: 9 mo DOB: Dec 20 2004
Date: Sep 26 2005 1:30PM
MRN: #9999999-7

Height: 27 1/2 in. Uncooperative / Unable to Screen: ☒ Vision ☐ Hearing ☒ BP

Weight: 14 1/8 oz. Vision Left: 20/20

HC: 44 0 cm. Vision Right: 20/20

BP: 90/60

Left Ear @ 25db: P F
Right Ear @ 25db: P F

Temp: 101.7 deg. F

4000 ☐ ☐
2000 ☐ ☐
1000 ☐ ☐
500 ☐ ☐

Pulse: 100 /min RR: ☒ 20

Box For Nursing Use Only - Box For Nursing Use Only - Box For Nursing Use Only - Box For Nursing Use Only

Parents: Thank you for answering these questions about your child. The answers will help your doctor provide better quality of care. If your child is age 11 or older, he/she should answer the questions privately. Answers are confidential, but if you prefer not to answer that is allowed. You may want to talk about these questions with your doctor.

Please fill in the circles completely with a pencil or pen.

Y N

Can Jenny feed herself a cracker or cookie? If you've never given her one, fill in no.

☐  ☑  Is Jenny having pain today?

Has Jenny ever slept on her stomach?

Has Jenny recently visited Asia, Africa, Latin America, or the Middle East?

Has your partner kicked, hit, or slapped you?

Does anyone smoke in Jenny's house?

Does Jenny ever use a walker?

Do you feel safe in your home?

Was Jenny's birth weight less than five pounds and eight ounces (2500 grams)?

Do you have a working smoke detector in your home or apartment?

Does Jenny ever copy you when you make some speech sounds like kissing, coughing or saying a word?

Does Jenny have sickle cell disease?

Have you set your hot water heater to less than 120 degrees F or 49 degrees C?

Has your partner or another adult threatened or hurt your children?

Has Jenny ever been alone in or near a bathtub, swimming or wading pool, or other body of water?

Does Jenny's car seat face forward?

Is Jenny receiving Fluoride to help protect her teeth?

Do you always place Jenny on her back or side to sleep?
Jenny had an inconclusive sickle cell screen on 12/21/2004. It's recommended that children with Hgb A+S+F be rechecked after they reach 6 months of age:

- Child needs retesting
- Ordered screen & path confirm
- Child has been rescreeched
- Sickle Cell POSITIVE
- Sickle Cell NEGATIVE or Trait

Milestones to eval today. Check if passed.

- Through Sickle cell problem
- Mom not present
- Milestones to eval today. Check if passed.
- Prematurity
- Family history of death
- No risk factors present

Assessments and Plan:

- 9 mo TB risk factor? → will rescreen
- Hgb A+S+F → will rescreen. Needs Pedi prx's

Feb 28 2005 8:19PM

Physician Preventive Care Reminders
What is CHICA-GIS?

- Creating Just-in-Time handouts (JITs), specifically tailored to exercise, dental clinics, & academic support (tutoring)
- GIS component of the JIT, working with a local GIS partner (Polis Center)
1. Data gathered from pre-screening form – parent section
   - Dental Referral: “Has (child name) been to the dentist in the past year?”
     (Target Population: Children older than 1 year of age)
   - Tutoring Referral: “Do you think (child name) is struggling in school and needs tutoring help?”
     (Target Population: Children older than 7 years of age)
   - Data gathered from pre-screening form – clinic staff section
     - Physical Activity Referral: Patient Height and Weight
       (Target Population: Children older than 5 years of age)

2. Positive response(s) in Box 1
   - Yes
     - Additional data gathered from EMR (e.g., patient home address, insurance) inputted into CHICA

3. CHICA Provider Worksheet
   - Behavioral counseling
   - Just-In-Time (JIT) Handout
     - Referral options

4. Selection on JIT of Referral Resource by parent/patient in consultation with physician

5. Exit Algorithm: Repeat surveillance in appropriate timeframe

6. JIT scanned into CHICA

7. Referral form automatically faxed by CHICA to selected resource including a Follow-up Form

8. Follow-up Form Faxed Back?
   - No
     - Exit Algorithm: Repeat surveillance in appropriate timeframe
   - Yes
     - Follow-up question printed on pre-screener at next appt

9. Just-In-Time Patient Handout
   - Resource Specific Information
   - Map Document

10. Exit Algorithm: Repeat surveillance in appropriate timeframe
Just In Time handout - Exercise
Why CHICA-GIS?

• Places patients can visit to improve their health: dental, physical, & academic
• More patients will get the help/support they need, in their communities
• Helps physicians do an informed job of referring patients to services in their neighborhoods
What is our role in this project?
Role of informationists in CHICA-GIS (proposed)

• Monitor accuracy & literacy level of referral data & automatically generated documents
• Develop a knowledge management plan for CHICA-GIS
• Participate in community health information outreach services
• Dissemination
Role of informationists in CHICA-GIS Projects

• Accuracy of information
  – Tutoring resources
    • Current database very scant
    • No single good resource for central Indiana
    • Phoning all IMCPL branches
    • Google searches, follow up phone calls
    • Continue to add to database

• Doubled amount of tutoring resources available in database
Role of informationists in CHICA-GIS Project

- Accuracy of information
  - JITs
    - Usability/overall design
    - Shortened URLs/space allocation
    - Consistency across all three types (exercise, dental, tutoring)
- Phone Survey
  - Input on rating system for referral locations
  - Additional questions to survey tool
Role of informationists in CHICA-GIS

• Knowledge Management
  • Initial thought:
    • capturing tacit knowledge of CHICA-GIS processes, associated documents
  • Evolved into management of the knowledge that exists to make the CHICA system work
  • The PIs wanted to discover links that might be missing in the system logic
Role of informationists in CHICA-GIS

• Knowledge Management Plan
  • Currently no comprehensive map/catalog showing connections between rules
    • Ex. No current connection between parents smoking and child’s asthma in the CHICA rules
  • Set of rules that govern decision support (Arden rules)
  • Rules added as needed
  • Mapping current rules for building future rules
  • Discovering new relationships in the CHICA system
Example of CHICA system logic

If (Box1=true) AND NOT (Box2=true) then
    CALL storeObs With "Abuse_Concern","yes_md";
    CALL storeNote With "I am concerned about possible abuse.", "CHICA NOTES";
endif;
If (Box2=true) then
    CALL storeObs With "Abuse_Concern","reported";
    CALL storeNote With "I have reported the family to CPS", "CHICA NOTES";
endif;
If (Box5=true) then
    CALL storeObs With "Abuse_Concern","no";
    CALL storeNote With "I do not suspect abuse in this case.", "CHICA NOTES"
endif;
Map of System Logic

Legend:
- Pre-Screening Form (PSF) — Potential Link
- Physician Worksheet (PWS) — Existing Link
- Domestic Violence Concern
- Abuse Concern
Knowledge Map of System Logic

Legend:
- Pre-Screening Form (PSF)
- Physician Worksheet (PWS)
- Potential Link
- Existing Link
- Variable
Role of informationists in CHICA-GIS

• Community Health Information Outreach Services
  • Develop a communication plan to share basics of CHICA-GIS with referral locations
  • Providing health information resources at referral locations
  • Identify barriers to the adoption of CHICA-GIS in the community
Lessons learned

Informationist value

Challenges
Value added by informationists

- Searching expertise
  - Increased tutoring locations in the database through more extensive searches

- Organization and display of information
  - Recommended changes to patient handouts from end user/usability perspective

- Knowledge mapping
  - Employed controlled vocabulary to CHICA in order to map system
Challenges/Obstacles

• Communicating our role
• Staying on track
• Steep learning curve with CHICA system
• Balancing w/other job requirements
• Evaluation
• New jobs
Questions?

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