

# ENHANCING RESEARCH ON A CLINICAL DECISION SUPPORT AND GEOGRAPHIC INFORMATION SYSTEM: GETTING INVOLVED AS INFORMATIONISTS

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# NLM Administrative Supplement for Informationists

- First ever supplement of its kind
- Awarded to support current grants at one's institution
- Highlighting the value of informationists being included on research teams
- Announced in fall 2012—8 projects

# Objectives

- Choosing our project
- Overview of our parent grant (s)
- Our role and aims
- Lessons learned, informationist value, challenges

# Choosing our Project

# Choosing our Project

IUPUnih01sforNLMsupplement [Protected View] - Microsoft Excel

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	
4	SMALL MOLECULE INHIBITORS OF ONCOGENIC HUMAN PAPILLOMAVIRUS	NCI	###	7R01CA11	7	R01	CA	###	4				###	ANDROPHY, ELLIOT J	N	INC	2011	315474	
5	NUTRITIONAL REGULATION OF HNRNP-E1 AND RELATED GENES	NCI	###	5R01CA12	5	R01	CA	###	5				###	ANTONY, ASOK	N	INC	2011	278293	
6	ASTROCYTE DEVELOPMENT AND REACTIVE GLIOSIS	NEI	###	5R01EY01	5	R01	EY	###	3				###	BELECKY-ADAMS, TERI L	N	INC	2011	288227	
7	DEVELOPMENT OF ATTENTION TO MATERNAL SPEECH IN INFANTS WITH HEARING LOSS	NIDCD	###	5R01DC00	5	R01	DC	###	5				###	BERGESON-DANA, TONYA R	N	INC	2011	527432	
8	GABAERGIC MECHANISMS IN THE MODULATION OF BINGE-LIKE ETHANOL INTAKE IN MICE	NIAAA	###	5R01AA01	5	R01	AA	###	5				###	BOEHM, STEPHEN LEE	N	INC	2012	391497	
9	PHARMACOLOGICAL MANAGEMENT OF DELIRIUM	NIA	###	5R01AG03	5	R01	AC	###	2				###	BOUSTANI, MALAZ	N	INC	2011	518741	
10	TRANSLATION RESEARCH ON CHRONIC DISEASE SELF-MANAGEMENT	NIA	###	5P30AG02	5	P30	AC	###	8				###	CALLAHAN, CHRISTOPHER M	N	INC	2011	357054	
11	MODELING ALZHEIMER DISEASE COSTS AND TRANSITIONS	NIA	###	5R01AG03	5	R01	AC	###	2				###	CALLAHAN, CHRISTOPHER M	N	INC	YES	2010	666786
12	ALZHEIMER'S DISEASE MULTIPLE INTERVENTION TRIAL - ADMIT	NIA	###	5R01AG03	5	R01	AC	###	2				###	CALLAHAN, CHRISTOPHER M	N	INC	AC	2011	542494
13	BREATHE-INTERVENTION FOR HOT FLASHES; INTERFERENCE; AND ASSOCIATED OUTCOMES	NCI	###	5R01CA13	5	R01	CA	###	4				###	CARPENTER, JANET S	N	INC	2011	303463	
14	COMPUTER DECISION AID FOR ADHD MANAGEMENT (CDAAM)	NLM	###	5R01LM01	5	R01	LN	###	2				###	CARROLL, AARON E	N	INC	YES	2010	504835
15	INCREASING COLORECTAL AND BREAST CANCER SCREENING IN WOMEN	NCI	###	5R01CA13	5	R01	CA	###	2				###	CHAMPION, VICTORIA LEE	N	INC	2011	623728	
16	ROLE OF SHP2 IN FLT3-ITD-INDUCED LEUKEMOGENESIS	NCI	###	5R01CA13	5	R01	CA	###	2				###	CHAN, REBECCA J	K	INC	2012	319550	
17	EVALUATION OF CANINE RETRACTION STRATEGIES	NIDCR	###	5R01DE01	5	R01	DE	###	4				###	CHEN, JIE	N	INC	2012	288645	
18	DNA LESION BYPASS POLYMERASES AND THERAPEUTIC COMPOUNDS	NCI	###	5R01CA11	5	R01	CA	###	6				###	CHOU, KAI-MING	N	INC	2011	223372	
19	NEUROFIBROMATOSIS TYPE 1 GENE REGULATES MYELOPOIESIS	NCI	###	5R01CA07	5	R01	CA	###	15				###	CLAPP, DAVID W.	N	INC	2012	312768	
20	FANCONI ANEMIA STEM CELLS ALLOW MOLECULAR CHARACTERIZATION OF ACUTE LEUKEMIA	NCI	###	5R01CA13	5	R01	CA	###	4				###	CLAPP, DAVID W.	B	INC	2011	380935	
21	GENETIC THERAPY FOR FANCONI ANEMIA	NCI	###	5R01CA15	5	R01	CA	###	2				###	CLAPP, DAVID W.	H	INC	2012	287595	
22	NEUROBEHAVIORAL ASSESSMENT OF ETHANOL SEEKING AND INTAKE IN THE RAT	NIAAAA	###	5R01AA01	5	R01	AA	###	5				###	CZACHOWSKI, CRISTINE L	N	INC	2011	323302	
23	IDENTIFICATION OF GENES THAT AFFECT PEAK BMD IN MEN AND WOMEN	NIA	###	1R01AG04	1	R01	AC	###	1				1870297	NS, MICHAEL J	N	INC	2011	592750	
24	WHOLE-BODY PET/CT ASSESSMENT OF TUMOR PERFUSION USING GENERATOR-PRODUCED 62CU	NCI	###	4R01CA14	4	R01	CA	###	3				###	FLETCHER, JAMES W	G	INC	2011	420747	
25	ROLES OF STAT PROTEINS IN TUMOR VACCINE DEVELOPMENT	NCI	###	5R01CA12	5	R01	CA	###	5				###	FU, XIN-YUAN	N	INC	2011	278293	
26	SELENIUM; OTHER RISK FACTORS AND COGNITIVE DECLINE IN RURAL ELDERLY CHINESE	NIA	###	5R01AG01	5	R01	AC	###	8				###	GAO, SUJUAN	N	INC	2012	510342	
27	MECHANISM OF REDOX REGULATION BY APE1/REF-1	NCI	###	5R01CA11	5	R01	CA	###	5				###	GEORGIADIS, MILLIE M	N	INC	2010	229792	
28	INDIANA ALZHEIMER DISEASE CENTER	NIA	###	2P30AG01	2	P30	AC	###	21				###	GHETTI, BERNARDINO FRANCESCO	N	INC	2011	1763493	
29	TGFβ2 IN THE BONE MICROENVIRONMENT: ROLE IN TUMOR METASTASIS	NCI	###	5R01CA06	5	R01	CA	###	16				###	GUISE, THERESA A	N	INC	2012	245002	
30	PALLIATIVE CANCER CARE: MUSIC VIDEO FOR AYA-PARENT COMMUNICATION AND RESILIENCE	NCI	###	9R01CA16	9	R01	CA	###	5				###	HAASE, JOAN ELLEN	R	INC	2011	678314	
31	INDIANAPOLIS-IBADAN DEMENTIA PROJECT	NIA	###	5R01AG00	5	R01	AC	###	19				###	HALL, KATHLEEN S	N	INC	2010	933797	
32	ACTIVATION AND INHIBITION OF ALDEHYDE DEHYDROGENASE 2	NIAAAA	###	5R01AA01	5	R01	AA	###	4				###	HURLEY, THOMAS D.	N	INC	2012	348043	
33	ROLE OF HYPOXIA-INDUCED MIR-210 IN TUMOR METABOLISM	NCI	###	1R01CA15	1	R01	CA	###	1	A1			###	IVAN, MIRCEA	N	INC	2011	364233	
34	REPLICATIVE ADENOVIRUS AND ANTI-ANGIOGENIC THERAPY	NCI	###	5R01CA11	5	R01	CA	###	5				###	KAO, CHINGHAI	N	INC	2011	279215	
35	DOPAMINERGIC FUNCTION IN ALCOHOLISM	NIAAAA	###	5R01AA01	5	R01	AA	###	4				###	KAREKEN, DAVID A	N	INC	2012	517515	
36	DOPAMINERGIC FUNCTION IN ALCOHOLISM	NIAAAA	###	3R01AA01	3	R01	AA	###	1	A1S1			###	KAREKEN, DAVID A	N	INC	YES	2009	308852
37	THE ROLE OF APE1 IN NEUROTOXICITY OF CANCER TREATMENTS	NCI	###	5R01CA12	5	R01	CA	###	5				###	KELLEY, MARK R.	N	INC	2012	405107	
38	CLINICAL KNOWLEDGE HUB - CONCEPTUAL INTEGRATION OF RULES; DATA SETS; AND QUERIES	NLM	###	5R01LM00	5	R01	LN	###	2				###	KHARRAZI, HADI	N	INC	2010	241193	
39	REGULATION OF APP PATHWAY GENE PROMOTERS IN ALZHEIMER'S	NIA	###	3R01AG01	3	R01	AC	###	10	S1			###	LAHIRI, DEBOMOY K	N	INC	2011	167131	
40	REGULATION OF APP PATHWAY GENE PROMOTERS IN ALZHEIMER'S	NIA	###	5R01AG01	5	R01	AC	###	10				###	LAHIRI, DEBOMOY K	N	INC	2009	287640	
41	CHOLINESTERASE INHIBITORS IN ALZHEIMER'S DISEASE	NIA	###	5R01AG01	5	R01	AC	###	9				###	LAHIRI, DEBOMOY K	N	INC	2011	278893	
42	NON-HOMOLOGOUS END JOINING REPAIR IN HUMANS	NCI	###	5R01CA15	5	R01	CA	###	2				###	LEE, SUK-HEE	N	INC	2012	319550	
43	DELIVERING GEOSPATIAL INTELLIGENCE TO HEALTH CARE PROFESSIONALS	NLM	###	1R01LM01	1	R01	LN	###	1				###	LIU, GILBERT C	N	INC	2011	337488	
44	THE ROLE OF RIBOSOMAL PROTEINS IN THE P53-MDM2 PATHWAY	NCI	###	2R01CA09	2	R01	CA	###	11				###	LU, HUA	N	INC	2011	231459	
45	INTERPLAY BETWEEN 14-3-3GAMMA AND MDMX IN REGULATING THE P53 PATHWAY	NCI	###	5R01CA12	5	R01	CA	###	5				###	LU, HUA	N	INC	2011	275221	

# Choosing our Project

- Who wrote what?
  - We wrote the admin supplement
  - With other awardees, PI wrote the supplement
- How did other awardees choose their projects?
  - Some emailed ALL eligible grant PIs (marketing opportunity)
  - Some emailed targeted grant PIs

# 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 (s)

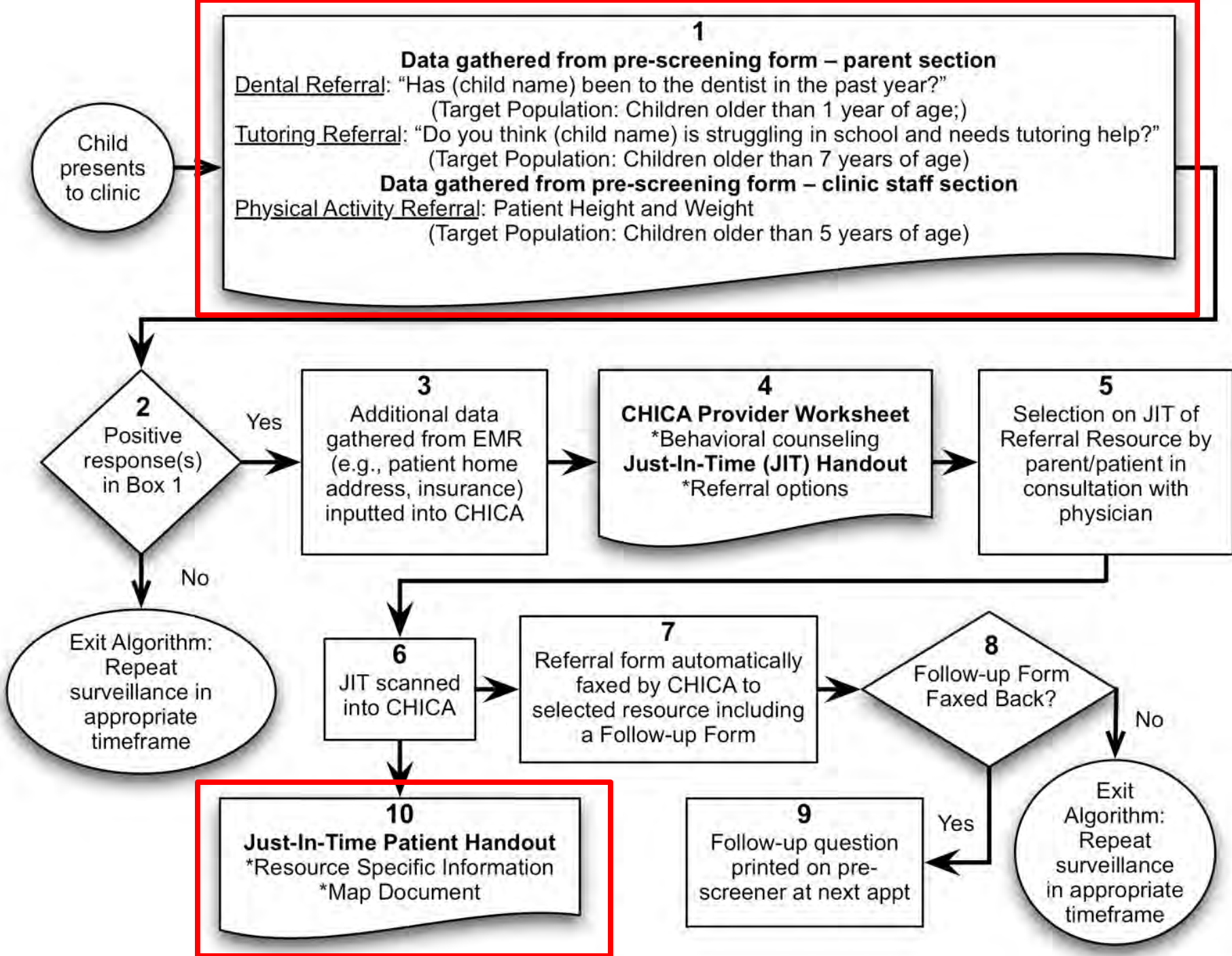


# What is CHICA?

- 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)—printed off, filled out by parent or child for check-in at clinic, health care worker
  - 20 yes/no questions
- PSF scanned, OCRRed, fed into CHICA
- Physician Worksheet (PWS)—printed off, filled out by physician
  - 6 targeted physician preventive care reminders
- Just-in-Time (JIT) handout for patients



# 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)



## Physical Activity Resource

Patient: Patient, Practice

Date: Jul 30 2012



From: "Expert Committee Recommendations on the Prevention, Assessment, and Treatment of Child and Adolescent Overweight and Obesity." [http://pediatrics.appublications.org/content/vol120/Supplement\\_4/index.shtml](http://pediatrics.appublications.org/content/vol120/Supplement_4/index.shtml)

*Imagine something that would make you live longer, feel stronger, and be healthier – physical activity is that one thing.*

### FOR PARENTS & PATIENTS

- Get 60 minutes every day of moderate physical activity
- Limit screen time to less than 2 hours per day
- Remove TV / computer from bedroom
- Limit sugary beverages
- Eat 5 servings of fruits and vegetables every day
- Eat breakfast daily
- Encourage family meals
- Decrease the number of times you eat out at restaurants

### FOR PHYSICIANS

- Assess daily activity patterns  
**USE MAP AND CONTACTS ON BACK OF THIS PAGE TO CONNECT FAMILY WITH A COMMUNITY RESOURCE FOR PHYSICAL ACTIVITY**
- Assess dietary behavior
  - Snacking habits
  - Emotional eating
- Assess attitudes
  - Perception of body weight & body image
  - How does parent feel about child's weight?

### FOR PHYSICIANS

- Readiness / barriers to change
- On a scale of 1 to 10, how ready are you to start making changes in how you eat or how you exercise?
- Laboratory workup
- Risk factors or unknown family history:
  - Measure BP, and consider lipid panel
  - In those  $\geq 10$ , consider glucose & LFT's

Doctor: Doctor Provider

Clinic: Pecar Health Center

Clinic Contact Info: (317) 266-2921

#### Other resources:

Fit City  
<http://www.fitcity.org>

INShape Indiana University  
<http://www.in.gov/inshape>

# Just In Time handout- Exercise

Patient: Patient, Practice

Date: Jul 30 2012



### 1 Zumba at the Walker

Zumba

Street 617 Indiana Ave  
Zip 46202 Phone (317) 236-2099  
Times Mon 5:30pm-6:30pm  
Ages  
Costs \$8 for a class or sign up for 6 weeks for \$40; no

### 2 Indy Parks - Fall Creek and 16th Park

ball fields, basketball courts, tennis courts, open

Street W 16th St & Fall Creek Pkwy E Dr  
Zip 46202 Phone (317) 327-7808  
Times dawn to dusk  
Ages any  
Costs free

### 3 IU Natatorium

indoor pool, fitness center, free weights, cardio

Street 901 W New York St  
Zip 46202 Phone (317) 274-3518  
Times Mon-Thu 5:30am-8:00pm, Fri 5:30am-7pm  
Ages any age  
Costs \$6 per visit, one month membership \$42.00

### 4 IU Track and Soccer

treadmills, bicycles, ellipticals, stairmasters, weight

Street 1001 W New York St  
Zip 46202 Phone (317) 274-9749  
Times  
Ages any  
Costs \$22 per month for track and soccer stadium

### 5 Arthritis Foundation

aquatic, walking programs

Street 615 N Alabama, Ste 430  
Zip 46204 Phone (317) 879-0321  
Times varies by program, call for times  
Ages 18+  
Costs varies by program, call for pricing

### 6 Invoke Yoga - Downtown

yoga and pilates classes, heated sessions,

Street 970 Fort Wayne Ave, Ste C  
Zip 46202 Phone (317) 631-9542  
Times Mon-Fri 4pm-8:15pm, Sat 7:45am-1:30pm, Sun  
Ages 18+  
Costs Community classes start at \$8 monthly and

# 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

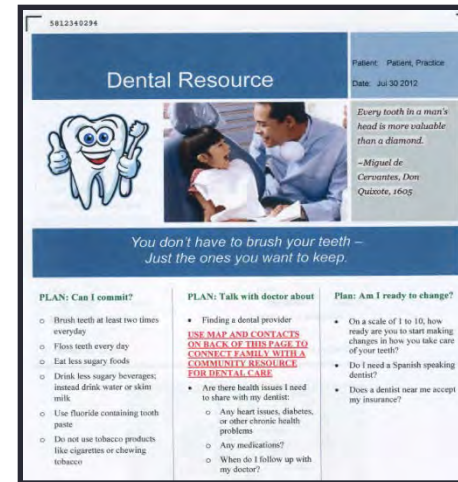
- Accuracy of information

- 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



**DELIVERING GEOSPATIAL INTELLIGENCE TO HEALTHCARE PROFESSIONALS  
TELEPHONE INTERVIEW SCRIPT**

Hola, me llamo \_\_\_\_\_. Estoy llamando de la oficina del/de la <<name of pediatrician.>>  
¿Usted es su mama/papa o guardian?

Hace dos semanas, su niño/a fue cuidado visto en la clínica <<clinic name>> por <<name of pediatrician.>>

Quisiéramos saber si su doctor recomendó algo para ayudar con <<los ejercicios, la prevención de caries dentales, o mejorar las notas en escuela.

Estamos invitando a 2,226 padres a participar en una entrevista telefónica de 10 minutos. Si decide Ud. participar, las respuestas que Ud. comparte nos ayudarán a entender mas sobre como mejorar los consejos dados por los doctores.

Por favor sepa Ud. que su nombre, el nombre de su niño/a y lo de que hablamos se mantendrá privados. No vamos a compartir sus respuestas con nadie afuera del equipo del estudio incluso ni al/a la doctor de su hijo/a.

Me gustaría recordarse Ud. que esta entrevista es voluntaria y confidencial.

Aunque es posible que algunas partes de esta entrevista habría grabada le aseguro que yo estoy haciendo las preguntas en una forma estándar, toda la información que me da Ud. permanecerá confidencial y se usará únicamente con el propósito de investigaciones.

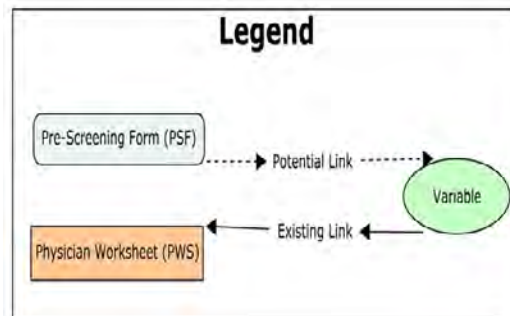
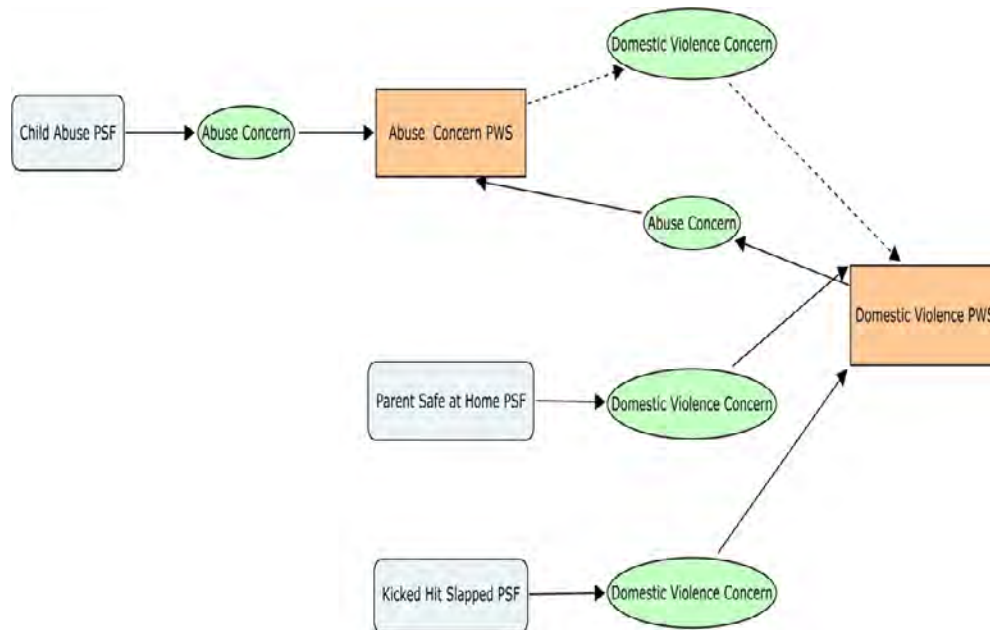
# Role of informationists in CHICA-GIS

- Knowledge Management
  - One of the most exciting aspects of the project
  - 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
  - Practical implications

# Role of informationists in CHICA-GIS

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

# Mapping the rules: conceptual and logical relationships in a system for pediatric clinical decision support AKA come see our poster!





Patient: Patient, Jenny D (F) MRN: #9999999-7  
 DOB: 12/20/04 Age: 9 mo Apt. Date: Sep 26 2005  
 Doctor: Paul Biondich Apt. Time: 7:30PM

**A Vital Signs:**  
 Height: 27.5 in. ( 59 %)  
 Weight: 14.5 lb. ( 2 %)  
 6.6 kg.  
 BMI: 14 ( %)  
 Head Circ: 44.0 cm. ( 58 %)  
 Temp: 101.7 F  
 Pulse: 100  
 RR: 20  
 BP: 90/60  
 Pulse Ox: NM %  
 Hear (L): N Hear (R): N

**Physical Exam:** NI Abnl  
 General:    
 Head:    
 Skin:    
 Eyes:    
 Ears:    
 Nose / Throat:    
 Teeth / Gums:    
 Nodes:    
**History and Exam Comments:**  Additional notes on back...  
 mom/dad both present  
 -CTA (B) SW  
 -RRR SW

# Physician Preventive

**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->
- Child has been rescreened->
- 
- Ordered screen & path confirm
- Sickle Cell POSITIVE
- Sickle Cell NEGATIVE or Trait

- Sleep/appetite problem
- Mom not present
- Milestones to eval today. Check if passed.
- Prematurity ->
- Family history of deafness->
- No risk factors present
- Refer for Audiology screening
- Refer for Audiology screening
- Failed Any ->
- Feed Self
- Stand Holding On
- Take 2 Cubes
- Imitate Speech Sounds
- Development referral

**Assessments and Plan:** Medication Education Performed:  Y  N  N/A

9mo ± TB risk factor? → will rescreen  
 Hgb A+S+F ... will rescreen.  
 Needs Pediarix #3  
 PV Hib #3  
 Prevnar #3

Staff: Signature: \_\_\_\_\_

# Care Reminders



# 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



# What we've learned so far

- PIs are nice
  - Also excited that you want to work on their project
- Good discussions can be had in informal settings (as well as in conference rooms)
- This is a real cool project!
- Timelines are good for everyone

# Value (we see) functioning as informationists

- Adding value/enrich quality
  - Increasing tutoring locations in the database
- Providing a different perspective
  - New to the project, view documents from end user/usability perspective
- Long-term enhancement to the CHICA-GIS system
  - Broader implications to improve a clinical decision support system

# Challenges/Obstacles

- Staying on track
- Evaluation
  - How do we know this is working/helping?
  - How do we know this will “benefit” the library?
- Dividing & conquering responsibilities
- Balancing w/other job requirements
- Communicating our role

# Challenges/Obstacles

- PI changed direction of knowledge management
- Arden Rules
  - Having to learn a rule system entirely new to all of us
  - Understanding decision support syntax
- New jobs!
  - PI at different institution
  - Informationist in new job

# Interested in applying?

- 2<sup>nd</sup> round of informationists supplemental awards currently open
- Submissions now open
- Due November 5, 2013
- Earliest start date February 2014

<http://grants.nih.gov/grants/guide/pa-files/PA-13-276.html>

# Why apply?

- Raises library profile in institution
- New way to market library skills
- Bringing your researchers more \$ may make them happy
- Helping to move libraries forward/help institutions think about libraries differently

(really, we're still using the same skills we've always had, just packaging/presenting them differently)

# Many thanks to:

- Carly Zimmerman, SLIS intern
- Gil Liu, CHICA-GIS PI
- Steve Downs, CHICA PI

# Questions?

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