

Health IT to support the patient-centered medical home.

Report to the NCVHS on the conference
Harmonizing Data Standards for Primary Care

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“The single most transformational step toward achieving the goal of a learning healthcare system would be the development and implementation of IT industry standards”

Institute of Medicine
Roundtable on Evidence Based Medicine

Primary Care Information Model: Big Picture

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 - *For most -- primary care*

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- Standards process has neglected primary care

High level standards

- Patient Registries
- Physician Designated as Personal Physician
- Why Patients Come When They Do
- Patient Goals and Values
- Clinically Meaningful Episodes of Care

My EHR is one of the top 5 in use and does NONE of these functions

“Health information technology (Health IT) has the potential to enable better care for patients, and to help clinicians achieve continual improvements in the quality of care in primary care settings. However, simply implementing current health IT tools will not bring about these results. To generate substantial and ongoing improvements in care, health IT adoption must go hand in hand with the implementation of a robust care model and the routine use of solid improvement methods by clinicians and other staff.”

Langley J, Beasley C. Health Information Technology for Improving Quality of Care in Primary Care Settings. AHRQ Publication No. 07-0079-EF. July 2007.

Basic things we need to know.

- **Who has _____?** [disease registries]
 - *the basis for point-of-care decision support, quality assessment*
- **Who gets _____?** [the probability of specific diagnoses from common presenting symptoms]
 - *basic clinical epidemiology in primary care*
 - *requires episodes of care*
- **What is the context in which care is provided?**
 - *competing demands, social problems, patient goals and priorities*
 - *multimorbidity*
- **What happened Out There?**
 - *Tracking care across settings - primary to specialty care, office to hospital*

STRUCTURE

Person:

- demographics
- social structure
- goals, preferences

Problem(s):

- current/active
- severity

Clinical Modifiers:

- prevention
- risk factors
- Significant events

Actions (“Process”):

- Decisions
- Interventions
- Plans

Time:

- Episode structure

Data import/export:

- Exchange protocols

**Primary care information model:
simple building blocks to capture complex reality.**

INPUTS

Patients
[templates or
interface
terminologies]

Clinicians
[natural
language,
interface
terminologies,
classifications]

**Automated
data feeds**
[HL7, XML]

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The International Classification of Primary Care (ICPC) provides the best framework to support the data model.

What is ICPC?

- Biaxial, alphanumeric classification of primary care problems *and related actions*
 - 17 chapters [A-Z]: body systems
 - Components in each chapter:
 - *symptoms and complaints* [01-29]
 - *diagnostic / screening / preventive services* [30-49]
 - *medication / treatment / procedures* [50-59]
 - *test results* [60,61]
 - *administrative* [62]
 - *referrals, other reasons for encounter* [63-69]
 - *specific diagnoses* [70-99]
- Organized into episodes of care

key features of ICPC

- Incorporates patient “voice” in Reason for encounter (RFE)
- Symptom diagnoses where appropriate
- Accommodates social problems (chapter Z)
- Episode-based - can track process of care for problem over time
- Limited granularity of basic code set – based upon prevalence of diagnosis
- NOT A TERMINOLOGY - mapped to standard terminologies, classifications

Maps and windows for ICPC

- ICPC-2-R to ICD-10
- ICPC-2-R to ICD-9-CM
- ICPC-2 to SNOMED-CT
- ICPC to controlled terminologies
 - *ENCODE-FM, TransHis*
 - *ICPC Plus*
- windows from ICPC to:
 - *CPT, SF-12, WONCA/COOP charts*
 - *work on ATC-codes, ICF*



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Aggregate views

*Disease registries
HEDIS
Quality assessment
Comorbidity*

Aggregate longitudinal views

*Prior probabilities
Posterior probabilities
Episode analysis
Risk factor-to-disease*

Cross-sectional patient views

*Active problems
"dashboard"
summary [CCR]
severity monitoring
prompts, reminders
visit view [template]*

Longitudinal patient views

*episode history
comorbidity*

User-defined views

*Third-party payors
Statistical reporting
Patient safety*

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Longitudinal patient views

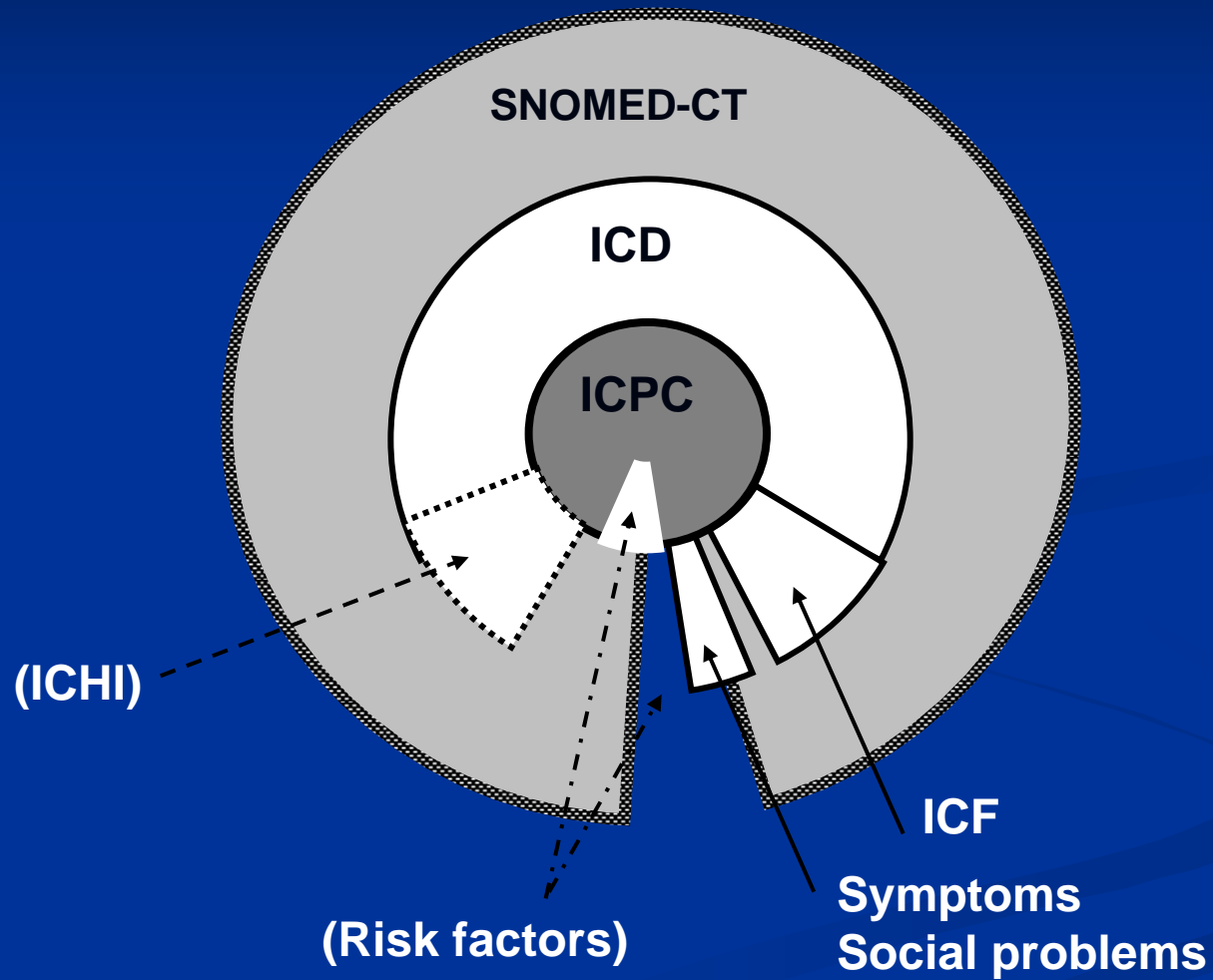
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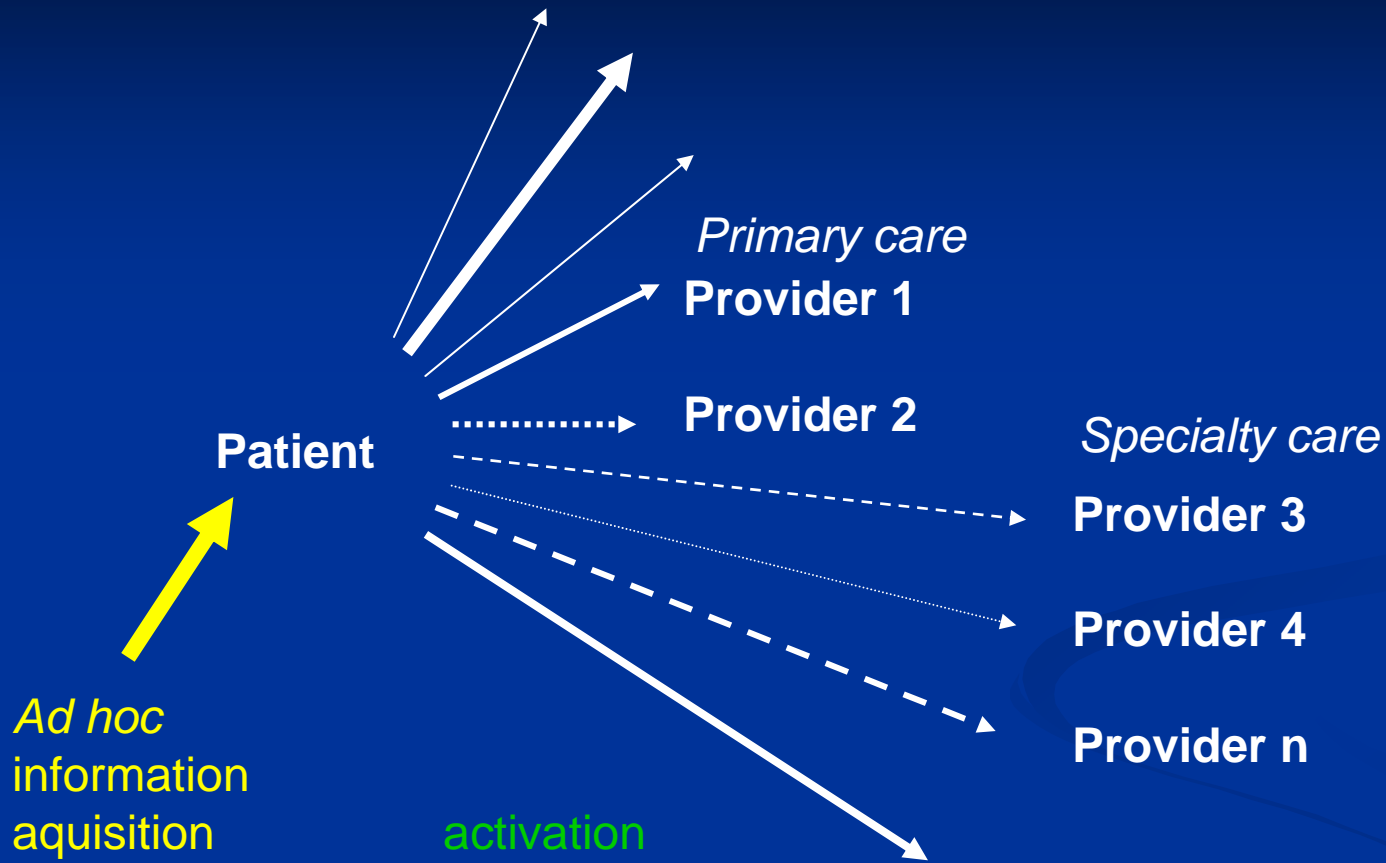
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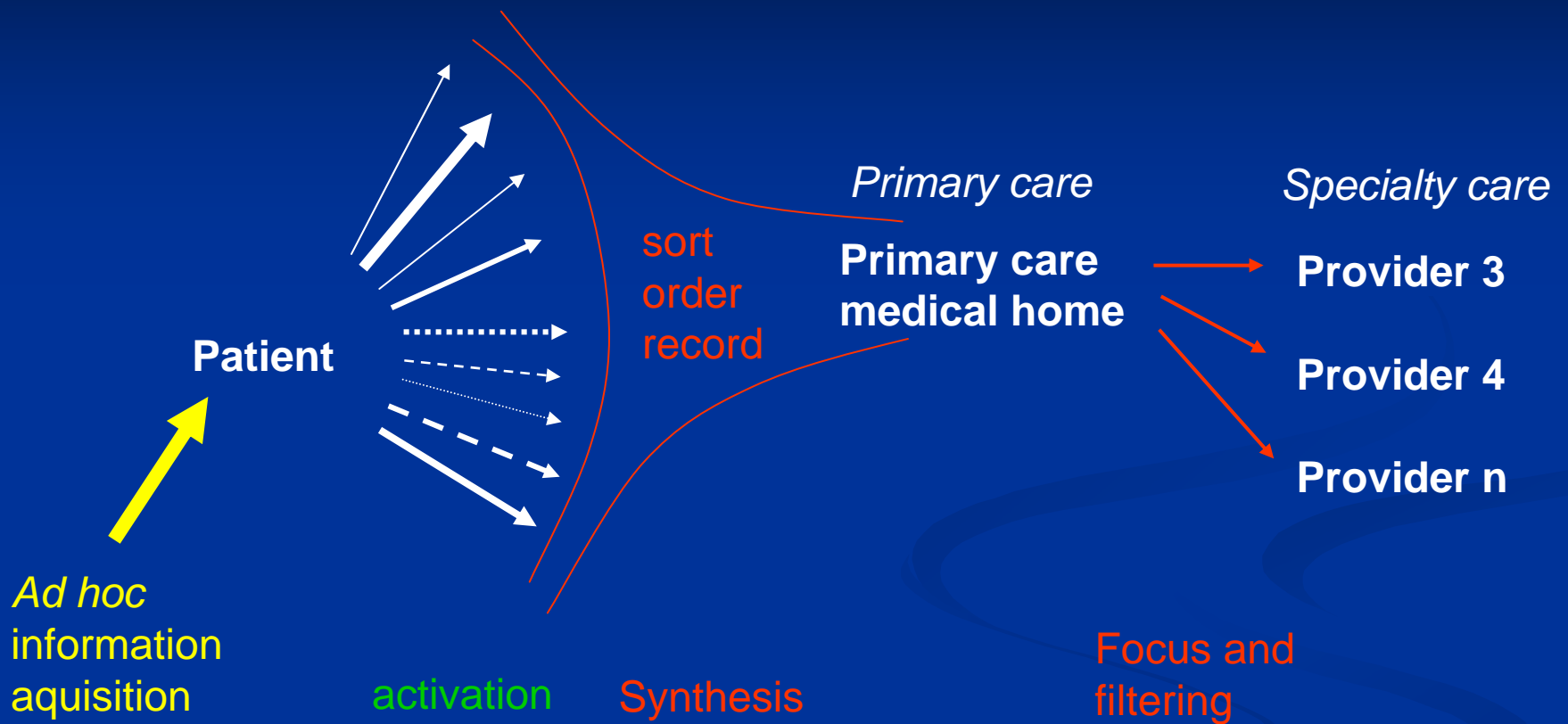
**ICPC-based software can provide the views
needed to support primary care practice.**

Fitting existing parts together to support primary care health IT.





Patient activation and incomplete knowledge transfer.



Value added by medical home: structured knowledge transfer

How NCVHS can help

- Endorse use of International Classification of Primary Care in clinical care (reduce resistance to ICD-10-CM!)
- Integrate Reason for Encounter codes from ICPC into ICD-10-CM (and part of the National Uniform Billing Committee standards)
- Create privacy standards that permit interaction and linkage of Personal Health Record and EHR
- Create privacy standards that permit outside data management agreements

How NCVHS can help

- Help “us” develop a working relationship with ONC: first priority is to convey message that work on primary care health IT is not finished
- Recommend to DHHS a standard for primary care data structure (ICPC) for further development, as has been done for domains of functioning/disability (ICF, in 2006)
- Help convincing others? HITSP, CCHIT, Vendors, HHS?





Transhis

RFE shortness of breath in 25-44 y.o. N=973 episodes.

<i>ICPC</i>	<i>Final Diagnosis</i>	<i>Prevalence</i>	<i>OR (post prob)</i>
R78	Acute bronchitis	27.8%	20.03
R02	Shortness of breath	12.7%	
R98	hyperventilation	11.7%	24.47
R96	Asthma	10.4%	57.09
R74	URI	8.6%	1.84
R75	Sinusitis	2.9%	0.82
R96	Pneumonia	2.8%	13.16

Source: EFP / Dutch Transition Project database

RFE shortness of breath in 65-74 y.o. N=788 episodes.

<i>ICPC</i>	<i>Final Diagnosis</i>	<i>Prevalence</i>	<i>OR (post prob)</i>
R78	Acute bronchitis	30.4%	7.25
R02	Shortness of breath	14.6%	
K77	Heart failure	10.5%	15.13
R	Emphysema/COPD	4.8%	21.14
R98	Hyperventilation	4.8%	12.92
R81	Pneumonia	4.3%	5.21
R96	Asthma	3.5%	4.0

Source: EFP / Dutch Transition Project database

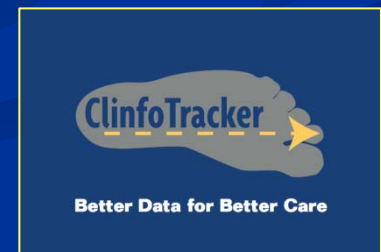
Comorbid conditions in men 45-64 (n=613) and men 65-74 (n=547) with diabetes

<i>Diagnosis</i>	<i>% 45-64</i>	<i>% 65-74</i>
Hypertension	22.8%	28.8%
Hyperlipidemia	13.2%	10.8%
Ischemic heart disease	8.0%	14.1%
Low back pain	8.0%	4.6%
Sleep problems	5.2%	6.8%
Depressive disorder	3.9%	4.6%
ED/impotence	3.4%	1.8%
Heart failure	-	7.1%

Source: EFP / Dutch Transition Project database

ClinfoTracker

- Episode-oriented clinical database built upon active problem list
- Used alongside EMR or paper record
- Structure from ICPC + ENCODE
- Rules engine provides prompt/reminder function for disease-specific care
- Functions as:
 - Self-updating disease registry
 - QI/HEDIS/chronic care model assessment tool
 - Practice-based research tool
 - Primary care researchable database



The medical home in action.

Mrs. White, a 55 year old woman you have known for years, books an appointment to see you this afternoon.

- She **electronically submits** from home her **reasons for encounter** - new symptoms of fatigue and nausea and discussion about screening tests.
- When she arrives, your EHR face sheet displays her active health problems (overweight, dyslipidemia) and medications (lovastatin), and **prompts** you that she is in need of a mammogram.
- As you clarify her symptoms and enter them into her record, you run a **decision support** routine that uses your PBRN's **longitudinal epidemiologic database** to calculate a list of likely diagnoses and their relative odds ratios for primary care patients in her demographic group.
- You discuss these possibilities with Mrs White, decide to assess the most likely diagnoses with laboratory tests, and confirm that she has new-onset Type 2 diabetes.

- Entering her diagnosis into her record **automatically enrolls her in your practice diabetes registry**, sends an **email notification** to her with the website for on-line patient education and asks her to schedule a visit with your practice nurse, who does diabetic training sessions.
- She self-monitors glucoses and posts results to the practice through the **secure patient portal**, where they are forwarded to your nurse who reviews the pattern of results.
- After a brief honeymoon period, her glucoses rise and you send her an **email message** to begin metformin, and send to her local pharmacy an **electronic prescription** for metformin.

- At her follow-up face-to-face encounter with you 3 months later, your EHR **prompts** you to carry out initial diabetic care measures and **reminds** you that her last recorded LDL-C is above target range. You spend much of this encounter discussing how she is adapting to her diagnosis and helping her set **treatment goals**, which are entered into the record.
- After the visit, she continues to monitor and forward her home glucose readings for review and adjustment of medications, and forwards all questions to the practice through her **patient portal**.
- As a new member of the diabetes disease registry, her data are included in the **practice summary report** on diabetes disease management compiled every 6 months for review within the practice and forwarded yearly to her insurance company to calculate pay-for-performance bonus payments.