Automating Quality Measurement

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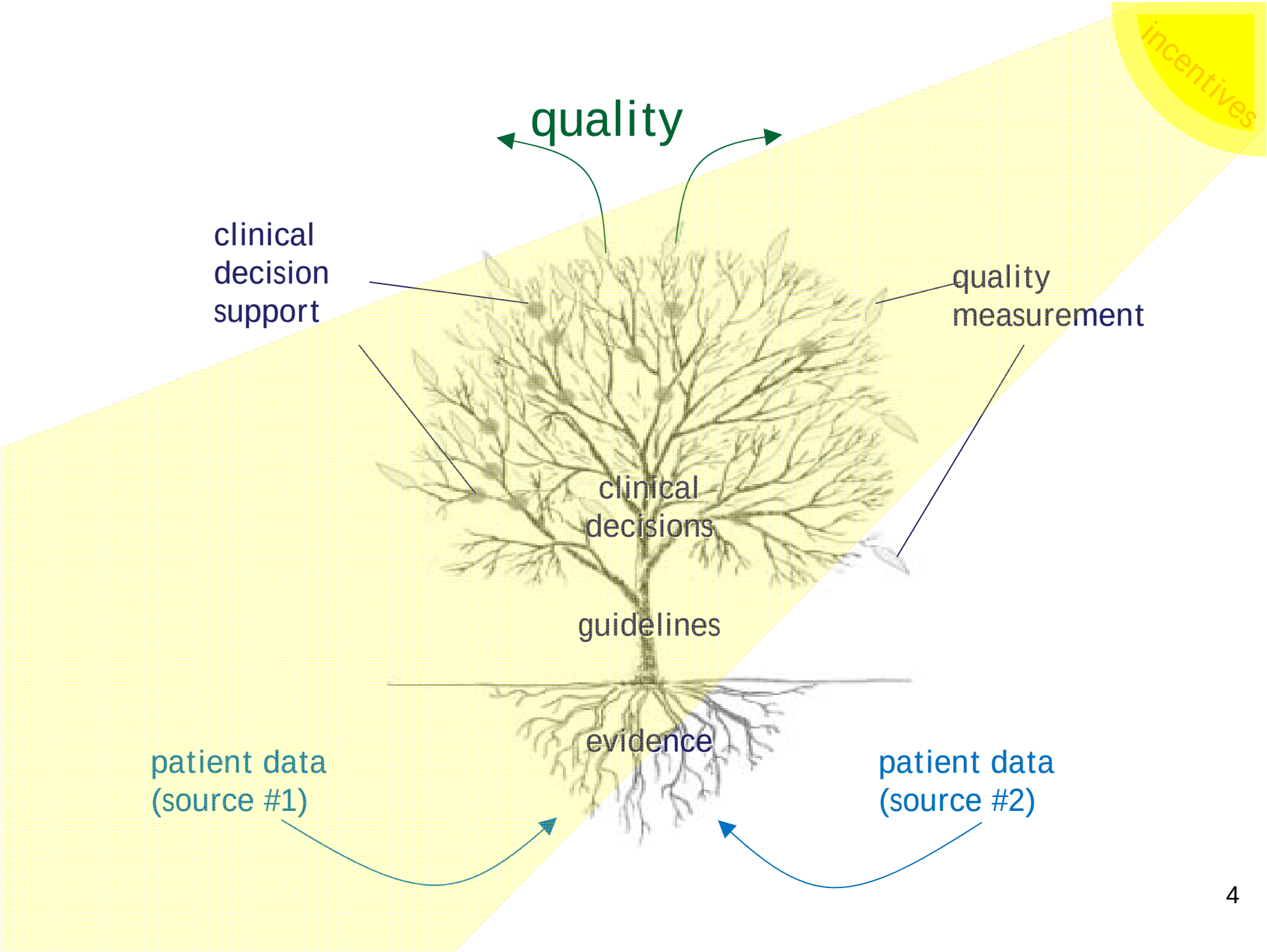
National Quality Forum

HUD WARNING
PARK
MP
APU NOD
RES-BRA
START

PARK
APU NOD
RES-DRA
START


incentives
quality
clinical
decision
support
quality
measurement
clinical
decisions
guidelines
evidence
patient data
(source #1)
patient data
(source #2)

Structure

NQF

Content » NQF » Mission

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- improve the quality of American healthcare by **setting national priorities** and goals for performance improvement
- **endorse national consensus standards** for measuring and publicly reporting on performance
- promote the attainment of national goals through **education and outreach** programs

National Technology and Transfer Advancement of Act of 1995 (NTTAA)

- five key attributes of a "voluntary consensus standards-setting body:" openness, balance of interest, due process, consensus, and an appeals process
- obligates federal government to adopt voluntary consensus standards
- encourages federal government to participate in setting voluntary consensus standards

Content » NQF » Membership

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- A private, non-profit voluntary consensus standards-setting organization
- Broad membership (350+ members) organized into 8 Councils that
  - Provide stakeholder perspectives to all NQF deliberations;
  - Enable various groups within a council to convene, identify issues and relay information in a unified voice; and
  - Promote collaboration among different groups within a stakeholder perspective.
- **Councils:**
  - Consumers
  - Health Care Professionals
  - Health Plans
  - Provider Organizations
  - Public/Community Health Agencies
  - Purchasers
  - Research and Quality Improvement Organizations
  - Supplier & Industry

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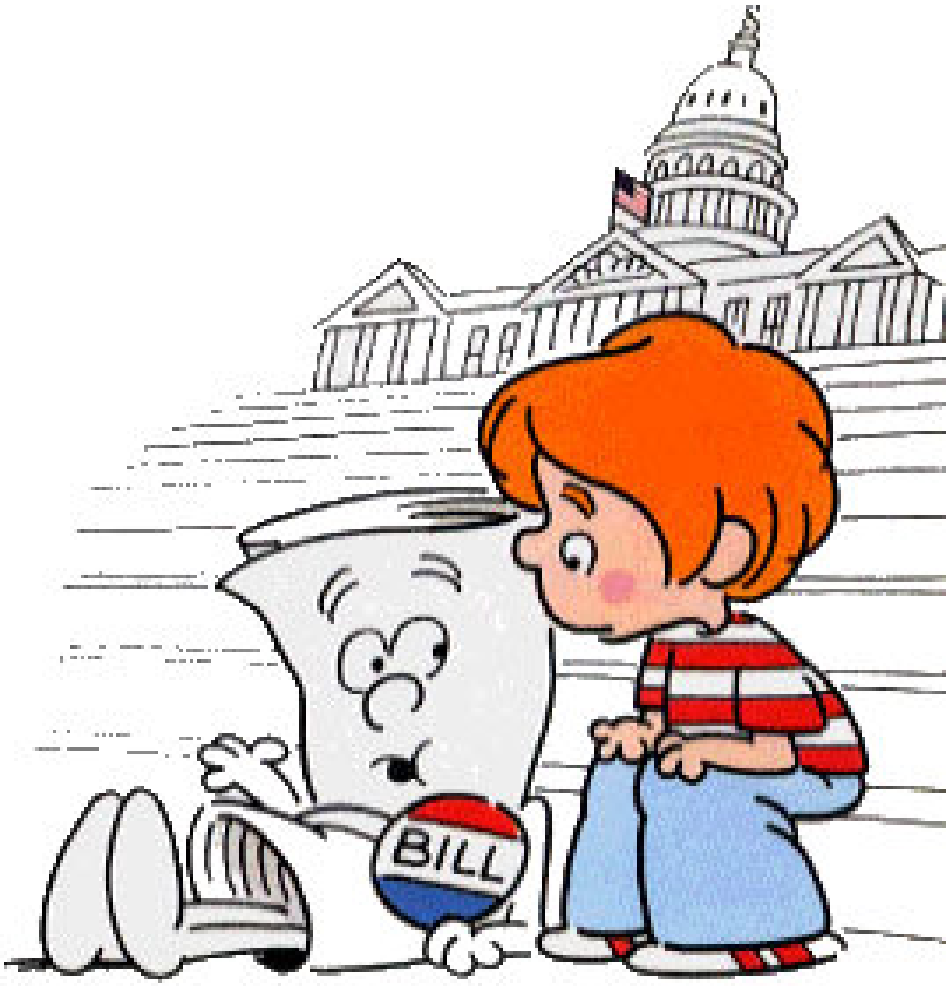
- importance
- scientific acceptability
- usability
- feasibility



Content » NQF » CDP

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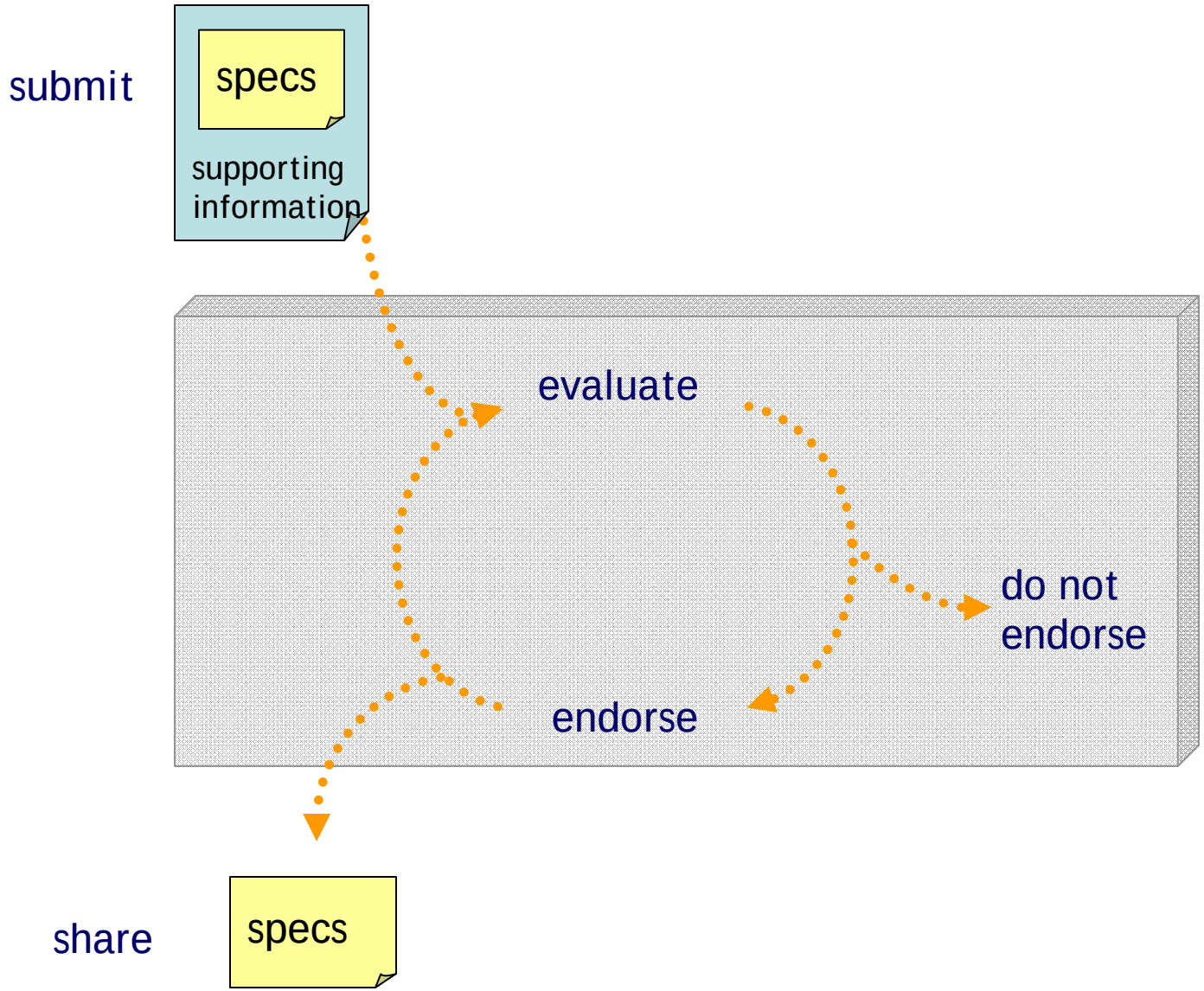

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27 multi-stakeholder organizations

- Consumers
- Purchasers
- Quality alliances
- Health professionals/providers
- Public sector: CMS, NGA, CDC, AHRQ, NIH
- Accreditation/certification groups
- Health plans

Co-Chairs:

INSTITUTE FOR HEALTHCARE IMPROVEMENT

Donald Berwick
Institute for Healthcare Improvement

NCQA Measuring quality. Improving health care.

Margaret O'Kane
National Committee for Quality Assurance

Content » NQF » National Priority Partners

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CONSUMERS

- National Partnership for Women and Families
- Consumers Union
- AARP
- AFL-CIO

PURCHASERS

- National Business Group on Health
- The Leapfrog Group
- Pacific Business Group on Health
- Chamber of Commerce

HEALTH PROFESSIONALS/PROVIDERS

- AMA's PCPI
- American Nurses Association
- National Association of Community Health Centers

QUALITY ALLIANCES

- AQA
- Hospital Quality Alliance
- Quality Alliance Steering Committee
- Alliance for Pediatric Quality

PUBLIC SECTOR

- Centers for Disease Control and Prevention
- Centers for Medicare and Medicaid Services
- Agency for Healthcare Research and Quality
- National Institutes of Health
- National Governors Association

ACCREDITATION/CERTIFICATION

- American Board of Medical Specialties
- The Joint Commission
- National Committee for Quality Assurance
- Certification Commission for Healthcare Information Technology

OTHERS

- America's Health Insurance Plans
- Institute for Healthcare Improvement
- Institute of Medicine

Content » NQF » NPP Framework

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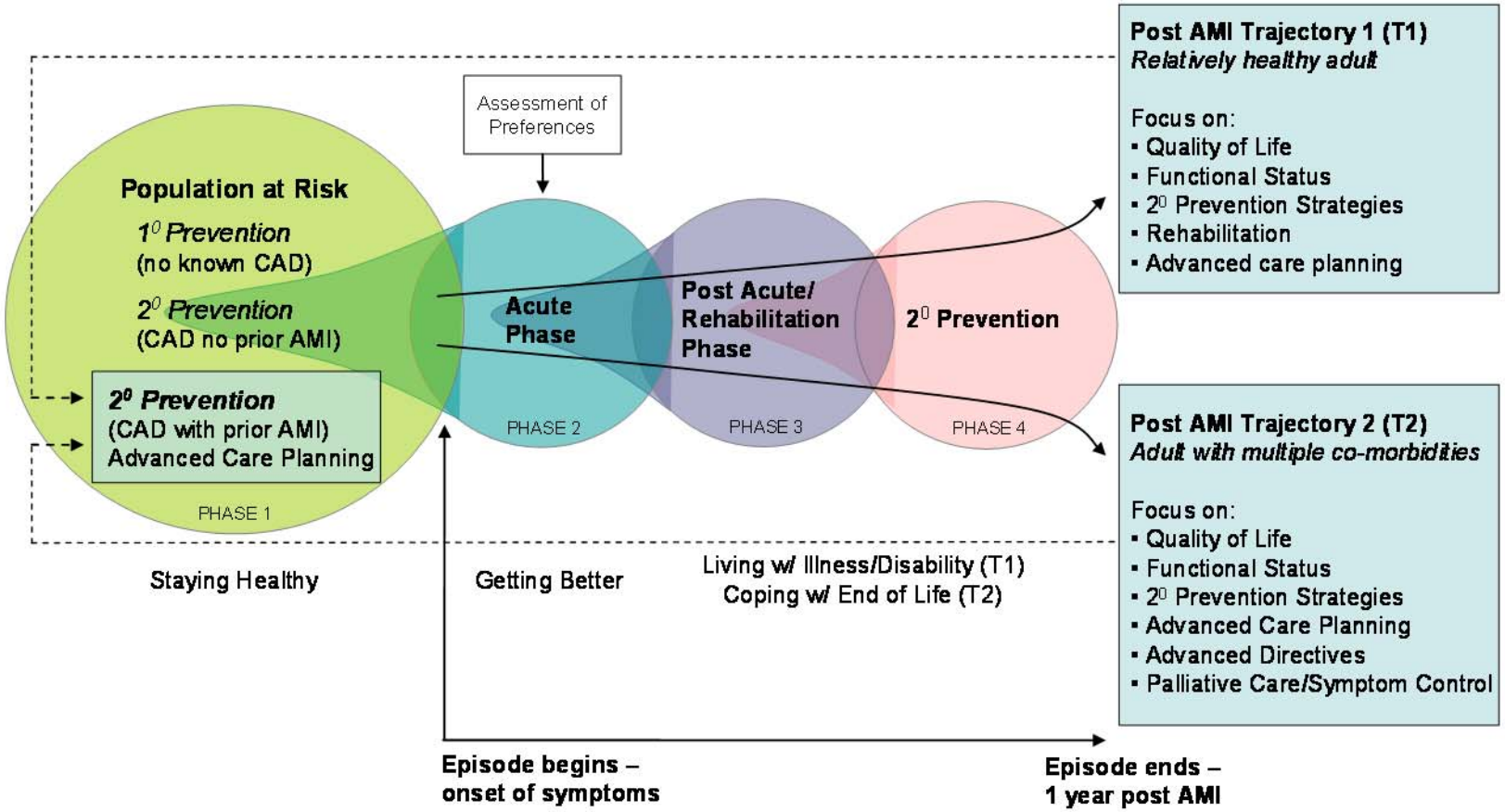

Measure Specifications

Structure » HITEP » Common Data Types

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inclusion	dx(DM)
exclusion	(dx(PCOS) ^ ~dx(DM)) v dx(SIDM) v dx(GDM)
outcome	lab(LDL, value<130)

Example 1. Diabetic Lipid Control

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Structure » HITEP » Common Data Types

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inclusion	dx(pna)
exclusion	dx(immunocomprimised) v dx(other_infection_req_abx) v dx(HAP) v admin(admit, src=acute_care_hosp) v admin(admit, src=critical_care_hosp) v admin(admit, src=outside_ED) v dx(pna, not_in_ED_or_admit) v admin(CMO) v (admin(hosp_arrival) - rx(abx, outpt))<=24 v admin(pt_in_trial) v proc(CXR_w/o_PNA) v proc(CT_w/o_PNA) v dx(CF) v ((admin(dc) - admin(hosp_arrival))<=24h ^ (admin(dc, type=AMA) v admin(dc, target=acute_care_hospital) v admin(dc, target=federal_hospital))) v (admin(dc) - admin(hosp_admit))<=24h v (dx(death) - admin(hosp_admit))<=24h
outcome	rx(abx) - admin(hosp_arrival))<=24h ^ ((admin(admit, type=non-icu) ^ ~dx(pseudo_risk) ^ ((rx(b-lactam) ^ rx(macrolide)) v rx(fq) v (rx(b-lactam) ^ rx(doxy)) v (rx(macrolide) ^ admin(age, value<65y) ^ ~dx(pseudo_risk)))) v (admin(admit, type=icu) ^ ~dx(pseudo_risk) ^ ((rx(b-lactam) ^ rx(macrolide)) v (rx(b-lactam) ^ rx(fq)) v (rx(b-lactam, allergy) ^ rx(fq)))) v (dx(pseudo_risk) ^ ((rx(antipseudo_b-lactam) ^ rx(antipseudo_fq)) v (rx(antipseudo_b-lactam) ^ rx(aminoglycoside) ^ (rx(antipseudo_fq) v rx(macrolide))) v (rx(b-lactam, allergy) ^ rx(aztr) ^ rx(antipseudo_fq) ^ rx(aminoglycoside)))))

Example 2. Appropriate Initial Antibiotic

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Structure » Interoperable Measure

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A "well-defined quality measure" is composed of a set of common data elements, encoded using standard taxonomies, structured logically into a standardized expression that can be shared and applied to patient data and reported

QDS

HITSP

HQMF/e-measure

QRDA

Structure » HITEP » Measure Scores

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D = data type in measure **denominator**
N = data type in measure **numerator**
X = data type in measure **exclusions**

	IOM Priority Area- Measure Name	AQA, HQA	Avg Data Quality Score	Min Data Quality Score	# Types	Data Types								
						history-birth	history-death	procedure-inpatient	procedure-inpatient_end	procedure-inpatient_start	procedure-outpatien	physical_exa	history	
					Frequency in Measures, %	100	100	100	100	96	96	95	93	9
					Data Type Quality Score	94	11	30	6	7	2	1	2	13
1	**Cancer**-Cervical CA screen	A	97	93	4	D		X			N		D	
2	**AMI**-30d mortality	H	95	86	3	X	N							
3	**Heart Failure**-HF, 30d mortality	H	95	86	3	D	N							
4	**Med Manage**-Surgery pre-op BB	A	95	82	4	D		D		N				
5	**CAD**-lipids, checked	A	92	86	3	D								N
6	**Med Manage**-Surgery abx, CT duration	A	91	72	8	D		D	XN	X				
7	**Med Manage**-pharyngitis, test + abx	A	90	82	4	D								N

Structure » Interoperable Measure

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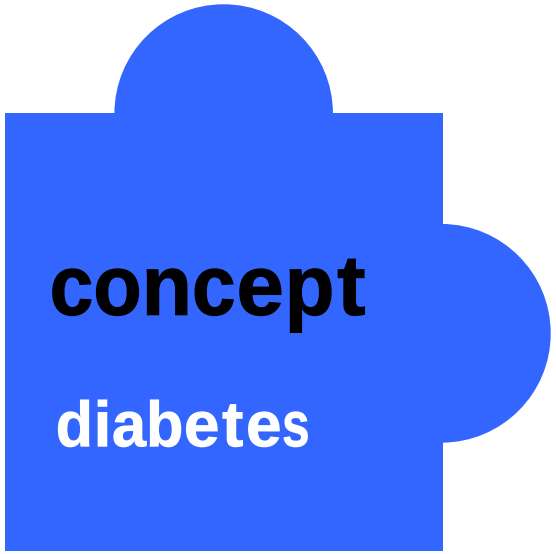
	Task	Example
QDS	quality data elements	active diagnosis of diabetes, laboratory result for HbA1c
HITSP	code set / taxonomy	ICD-9, ICD-10, SNOMED-CT, LOINC
HQMF / e-measure	measure logic representation	IF (active diagnosis A) AND NOT (past history diagnosis B) THEN (laboratory result C)
PQA QRDA	patient data representation	Pt Jones: DM, HTN, HgA1c

Primary content experts

study designers

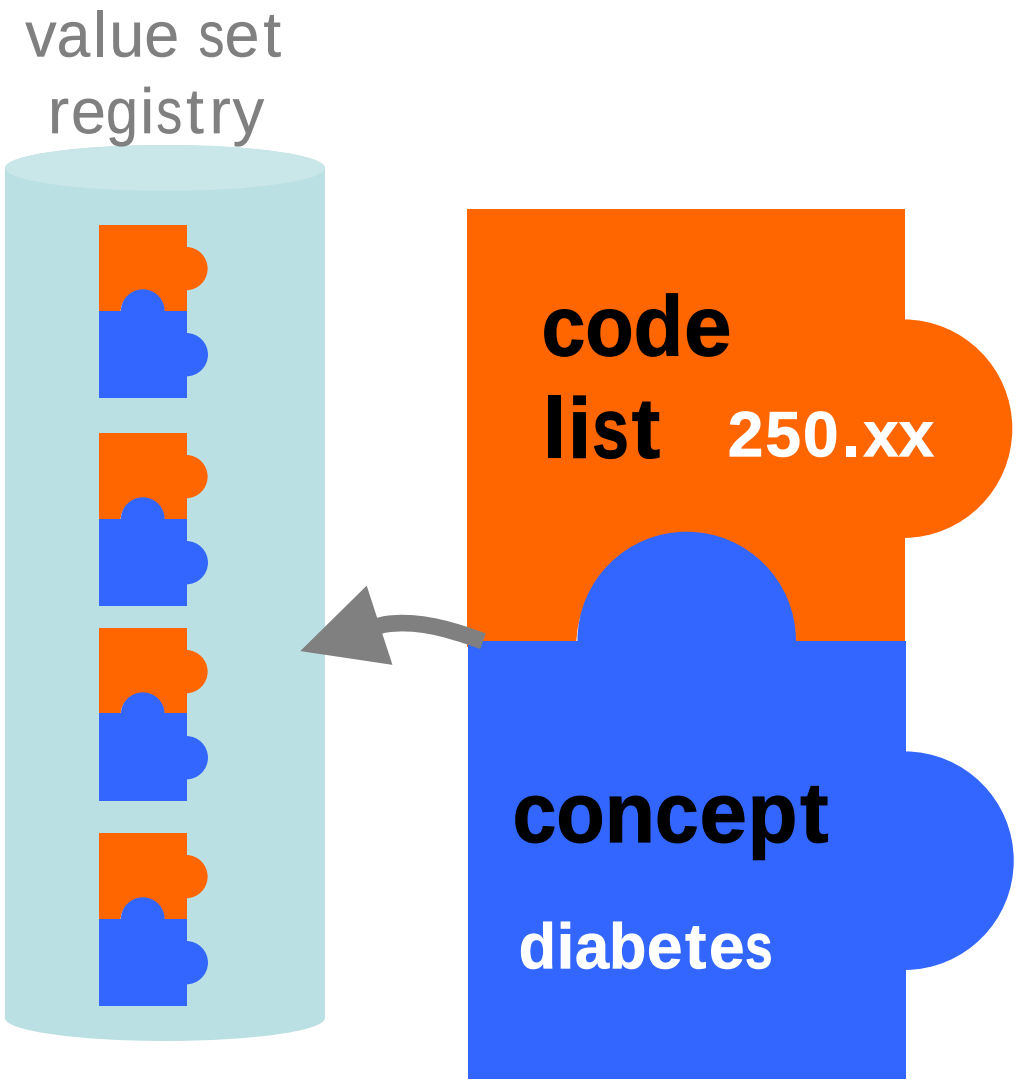
guideline developers



Primary content experts → **Measure Developers**

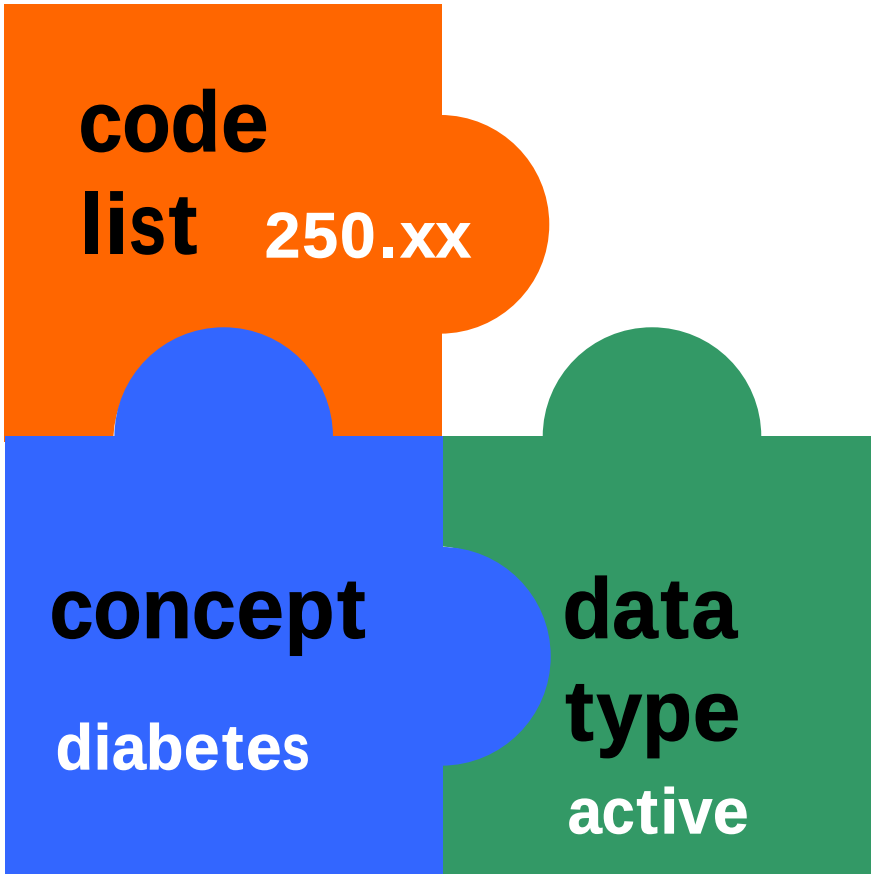
can be reused with multiple quality datatypes

Primary content experts → **Measure Developers**

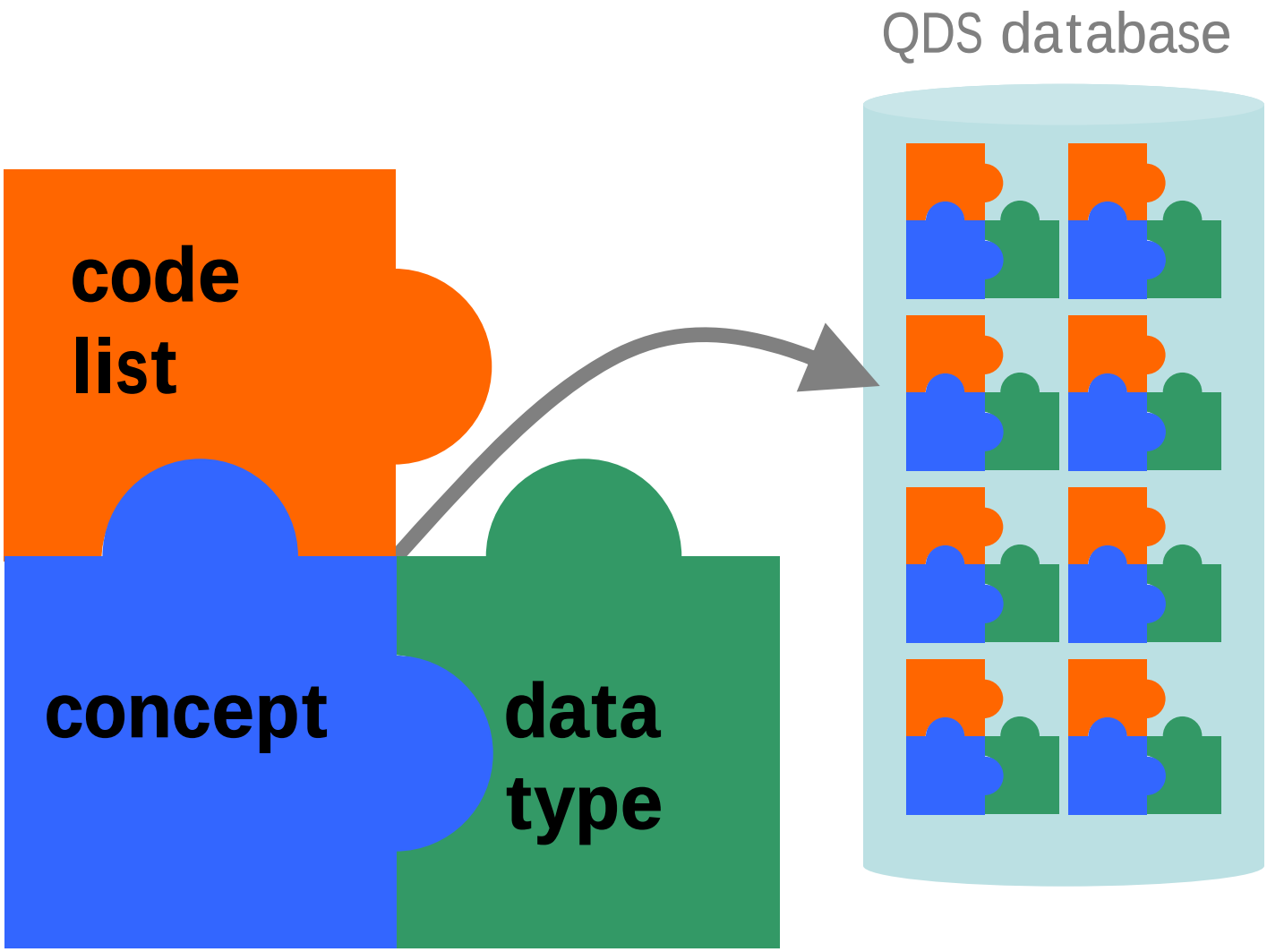


Primary content experts → **Measure Developers**

QDS element

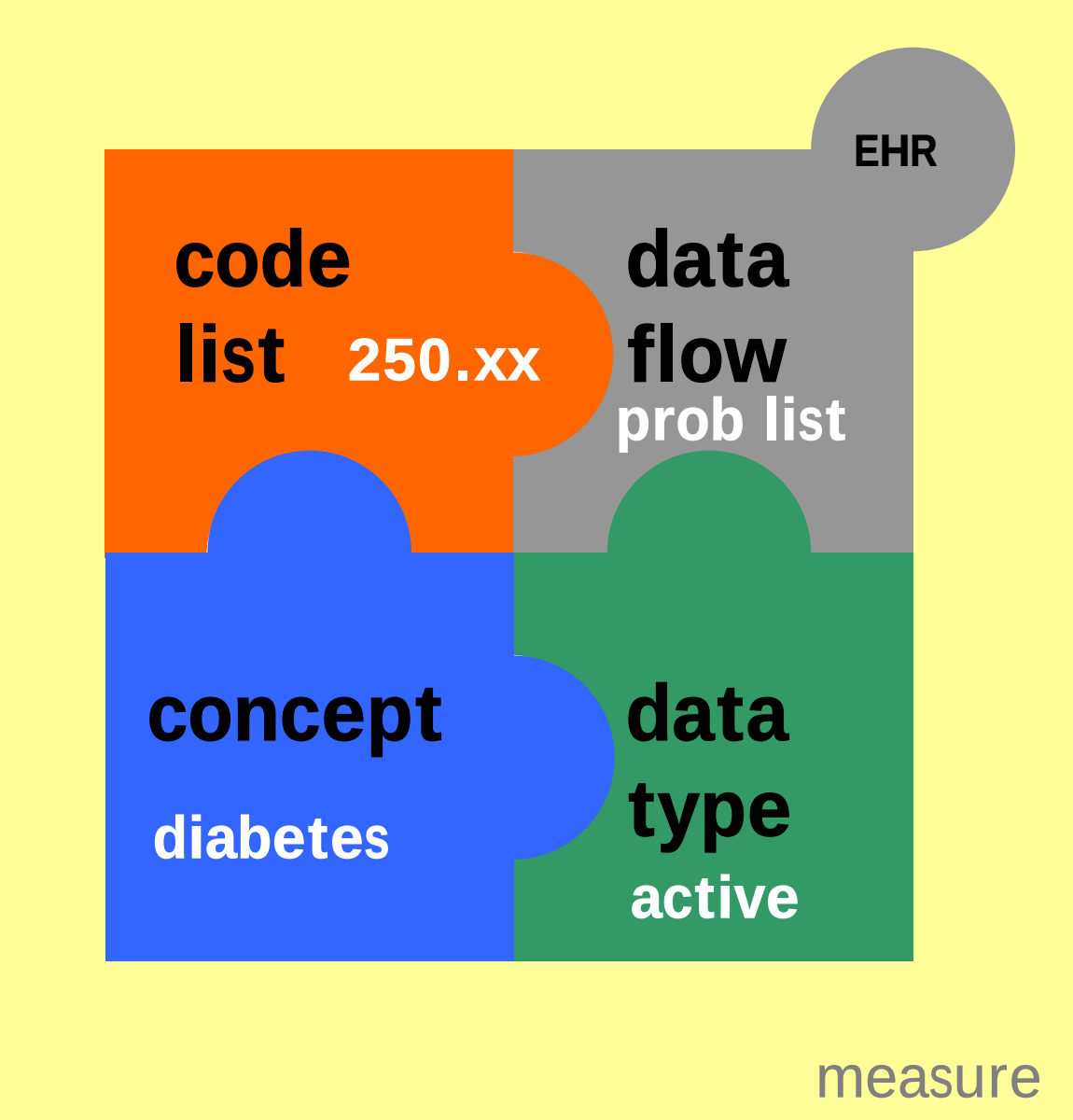


Primary content experts → **Measure Developers**

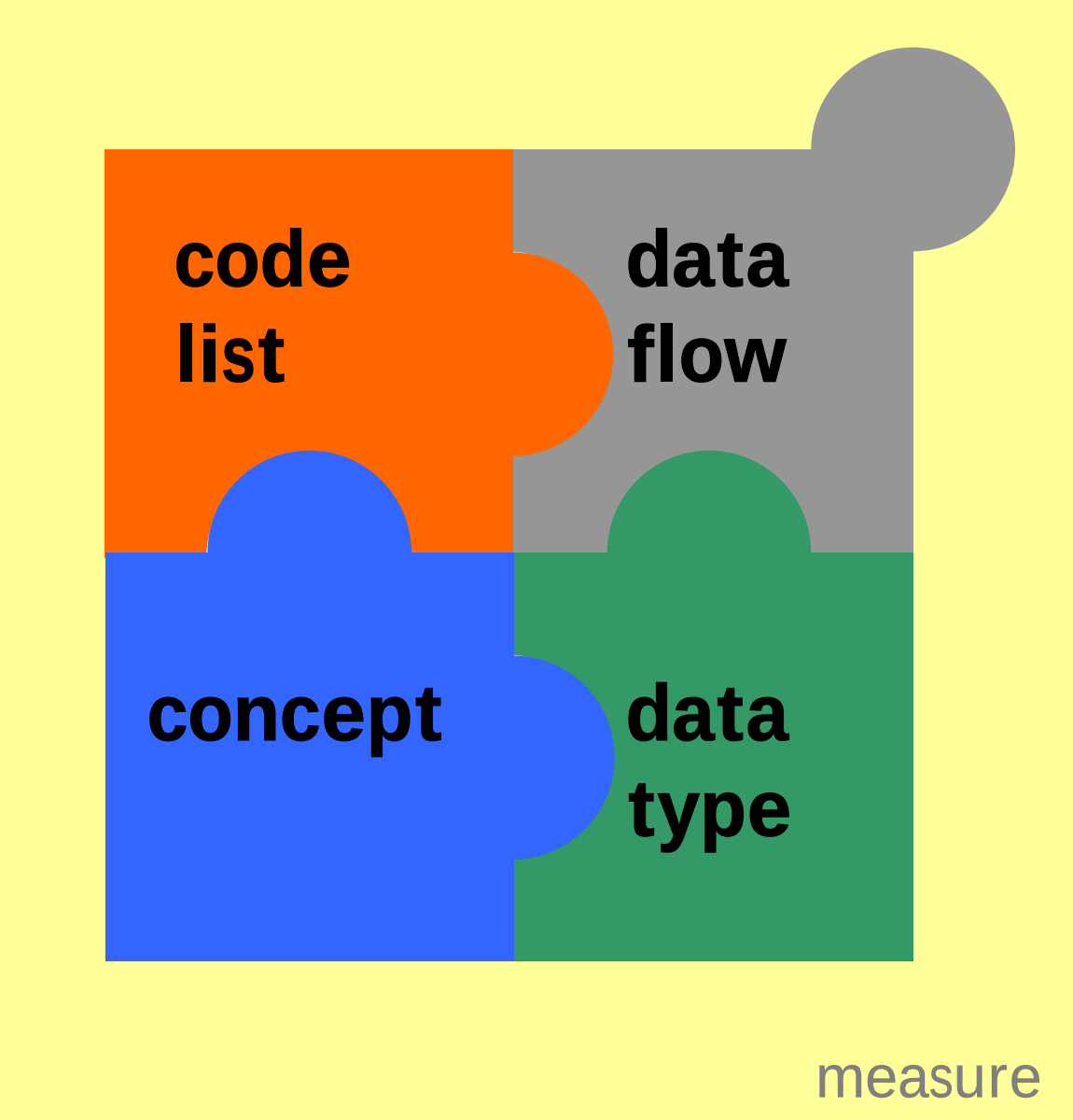


stored in database for reuse across measures and decision support

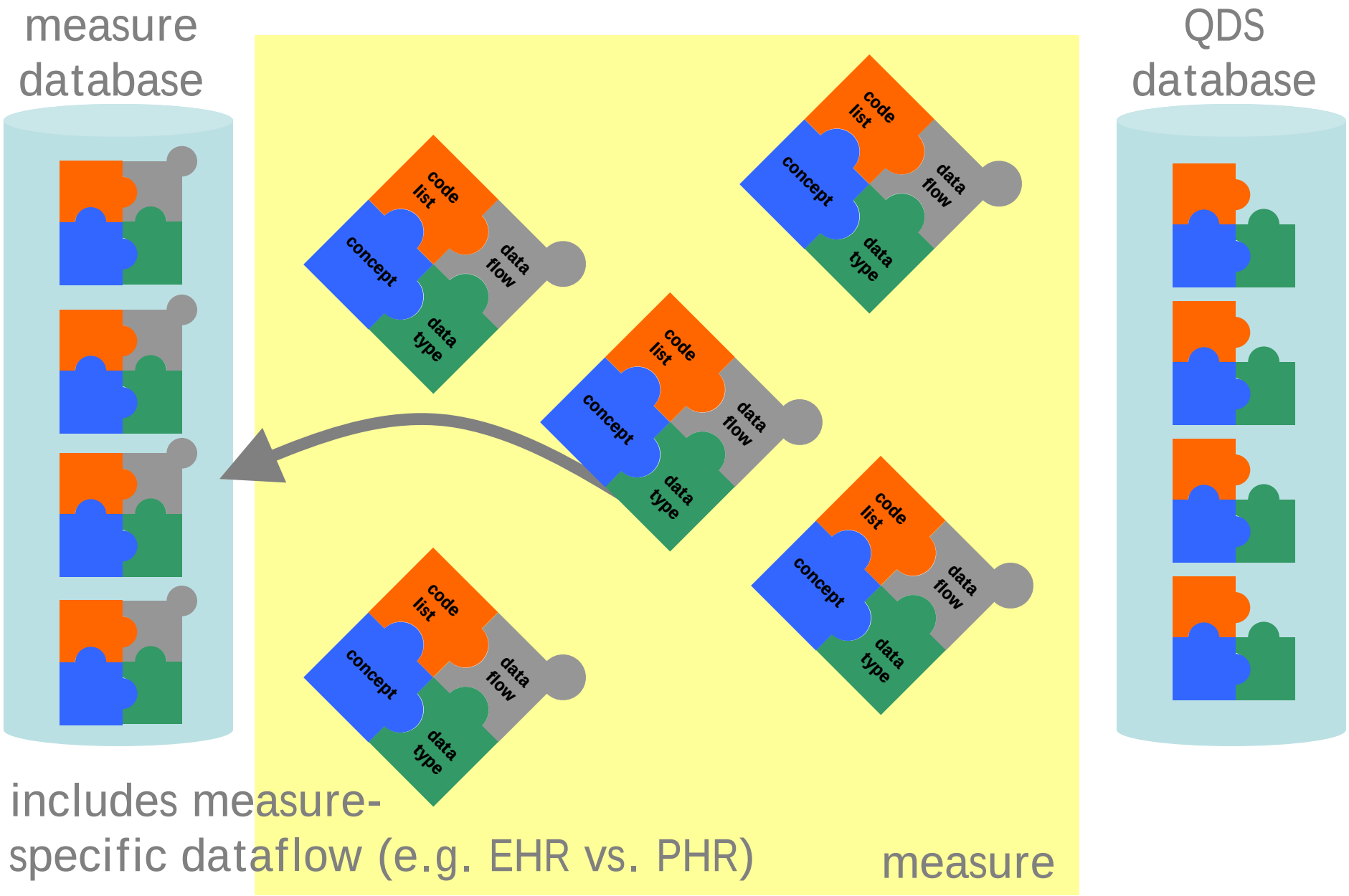
Primary content experts → **Measure Developers**



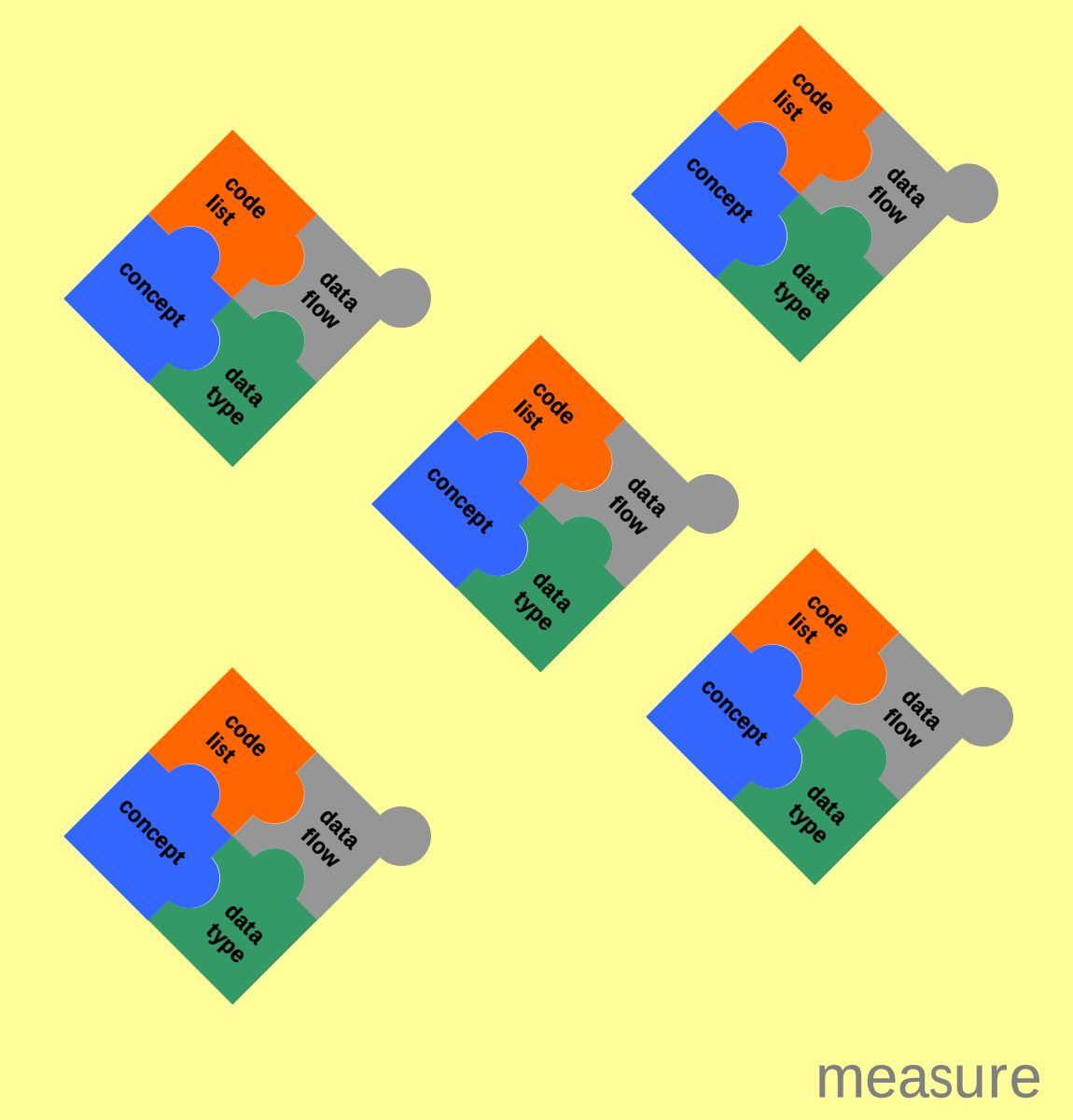
Primary content experts → **Measure Developers**



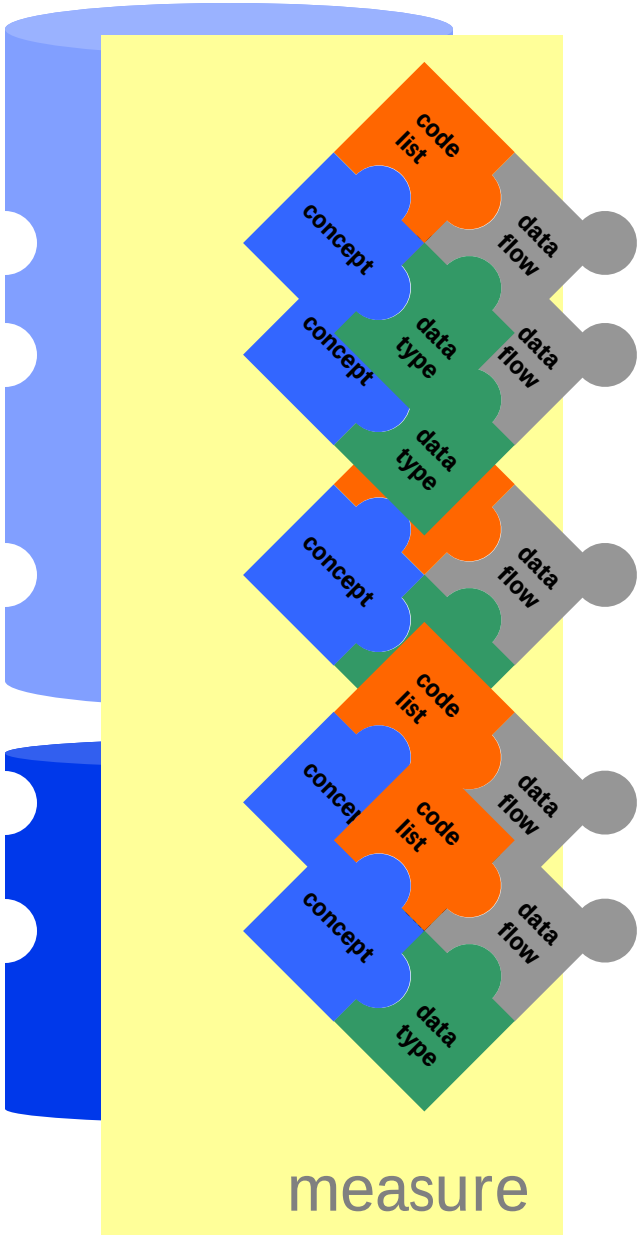
Primary content experts → **Measure Developers**



Primary content experts → Measure Developers → **EHR, HIE, registry**



Primary content experts → Measure Developers → **EHR, HIE, registry**



Primary content experts → Measure Developers → **EHR, HIE, registry**

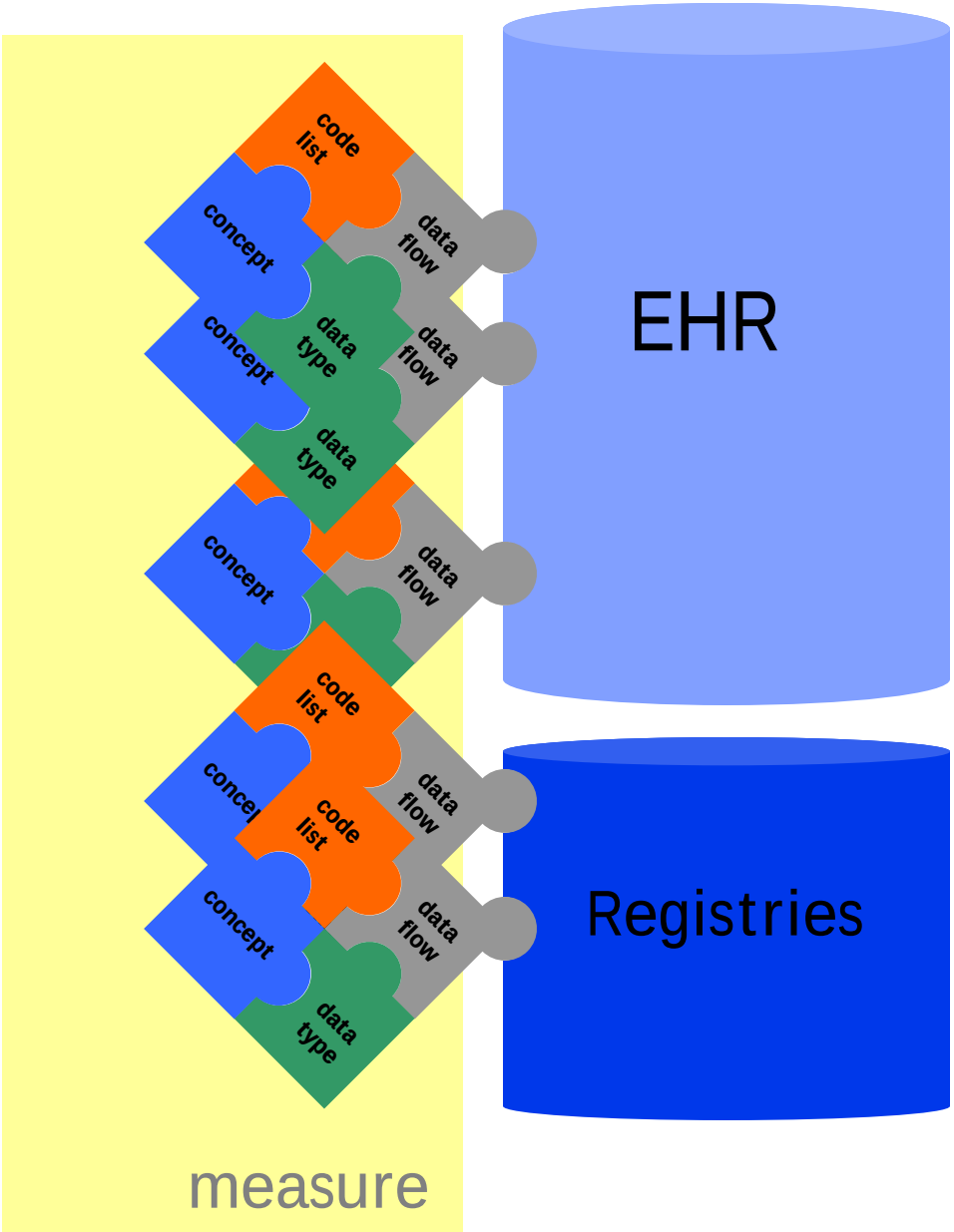
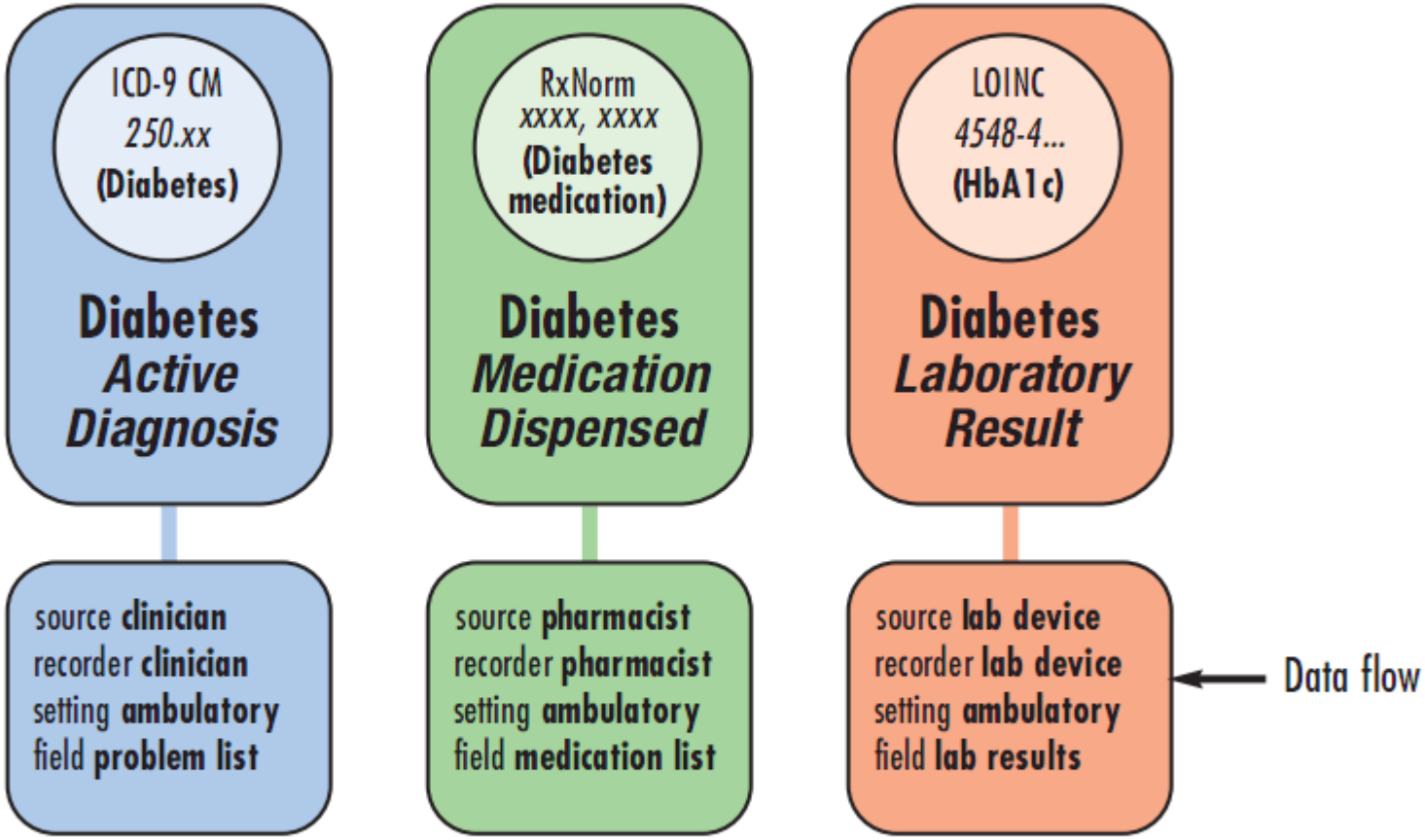


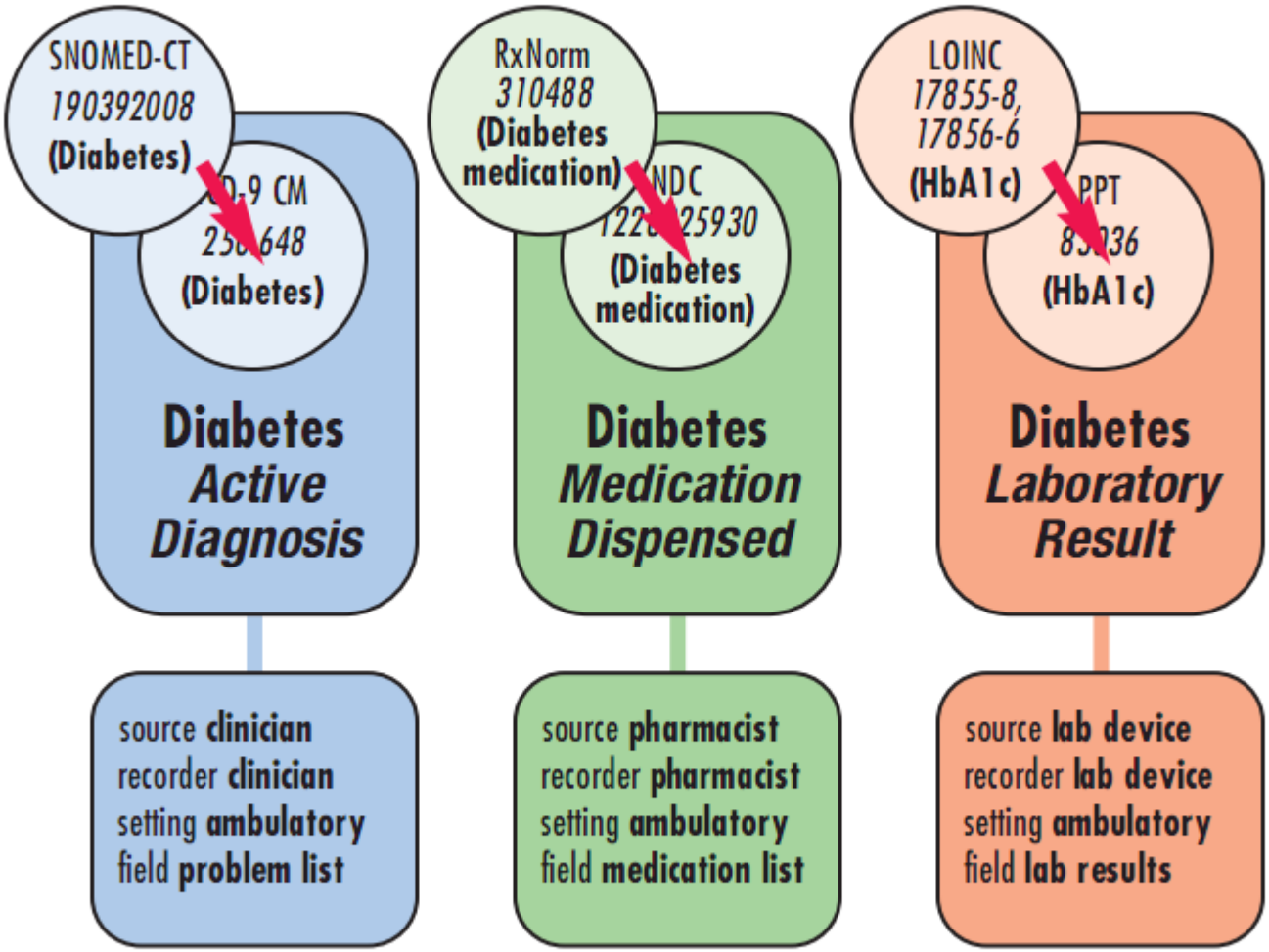
Figure 5: Example Measure Including Quality Data Elements and Data Flow



Each quality data element (rounded rectangle) has associated data flow information (bottom rounded rectangles). These data flow attributes describe where to find the quality data element electronically.

STANDARD CATEGORIES	QDS DATA TYPES
Care experience	**Patient** care experience **Provider** care experience
Care goal	Care goal Care plan
Communication	Communication provider to provider Communication to patient Communication from patient
Device	Device adverse event Device **applied** Device intolerance Device **ordered** Device **offered** Device **declined**
Diagnosis/condition/problem	Diagnosis active Diagnosis family history Diagnosis past history Diagnosis, risk of Diagnosis, factored risk
Diagnostic study	Diagnostic study adverse event Diagnostic study intolerance Diagnostic study **order** Diagnostic study **result** Diagnostic study **offered** Diagnostic study **declined**
Encounter	Encounter
Functional status	Functional status
Individual characteristic	**Patient** characteristic **Provider** characteristic

Figure 8: Transition to Preferred Code Sets



Utilizing the standard element framework of the QDS, code lists can be migrated to preferred code sets.

NQF: List of Measures - Mozilla Firefox

http://measures.qualityforum.org/qds/edit/267

File Edit View History Delicious Bookmarks Tools Help

NQF Measure Database ⇒ Colorectal Cancer Screening

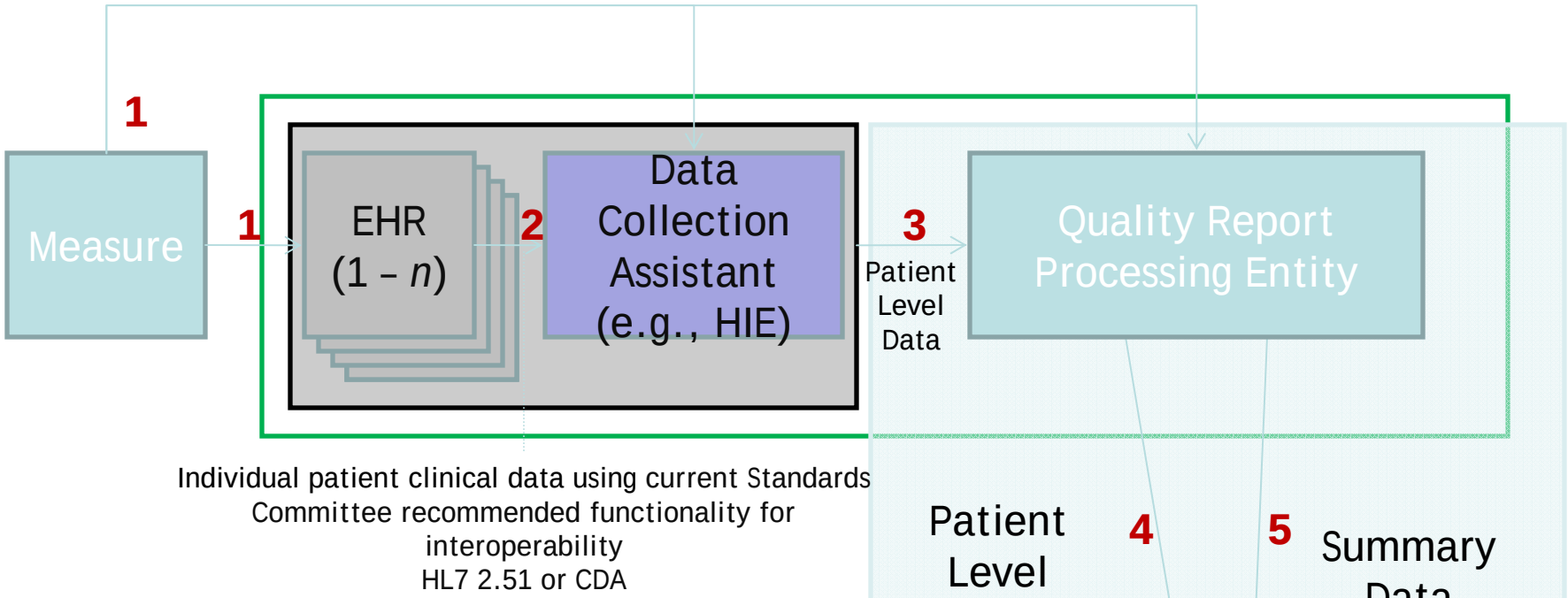
Measures QDS Enroll Logout

Specifications | Basics

Percentage of adults 50-80 years of age who had appropriate screening for colorectal cancer (CRC) including fecal occult blood test during the measurement year or, flexible sigmoidoscopy during the measurement year or the four years prior to the measurement year or, double contrast barium enema during the measurement year or the four years prior to the measurement year or, colonoscopy during the measurement year or the nine years prior to the measurement year

Denominator	Exclusions	Numerator	Adjustments
Patients 51–80 years of age during the measurement year. Note: Given the measurement look back period, adults 50-80 will be captured in this measure.	Patients with a diagnosis of colorectal cancer or total colectomy. Look for evidence of colorectal cancer or total colectomy as far back as possible in the patient's history, through either administrative data or medical record review. Exclusionary evidence in	One or more screenings for colorectal cancer. Appropriate screenings are defined by any one of the four criteria below: •fecal occult blood test (FOBT) during the measurement year •flexible sigmoidoscopy during the	
Denominator Coding	**Exclusions Coding**	**Numerator Coding**	**Coefficients**

Measure Process Workflow

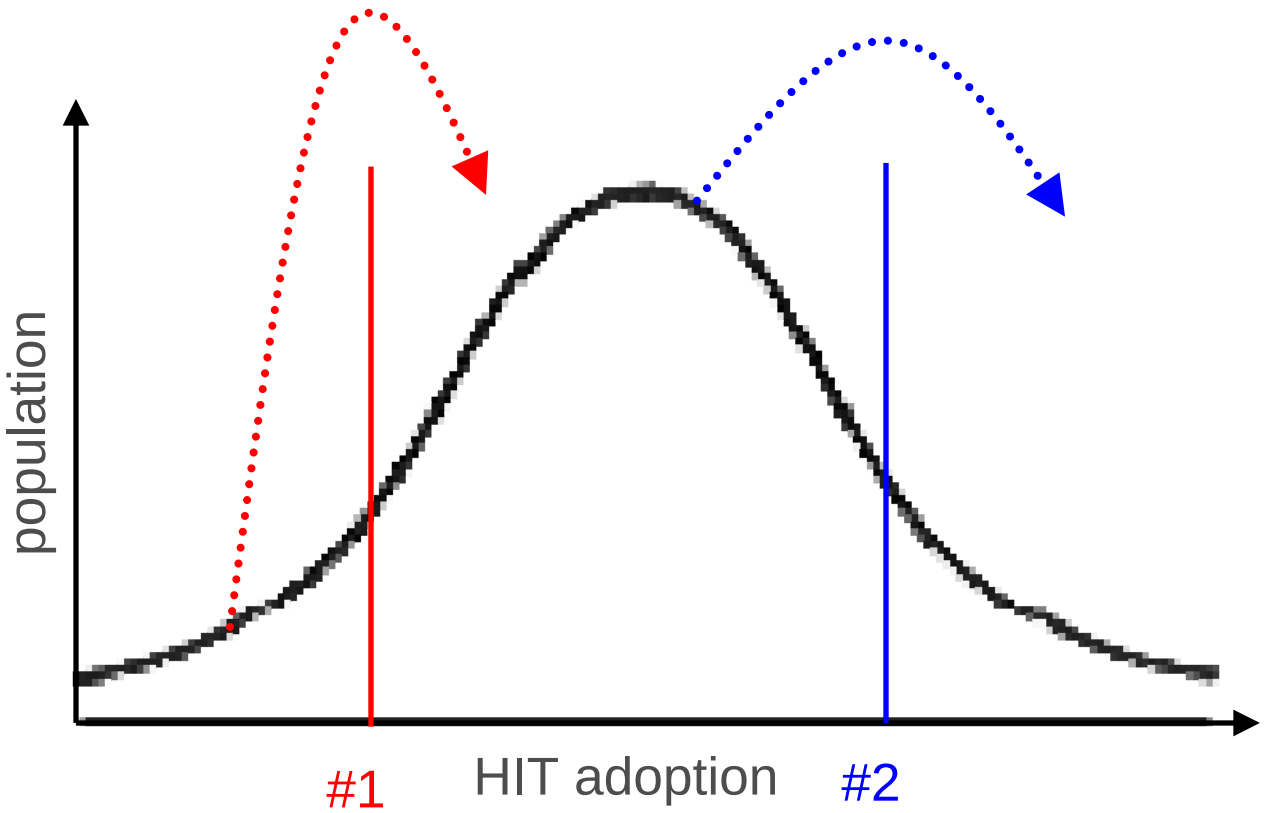


Transactions (arrows):

1. Transport of measure to EHR, Data Collection Assistant or Quality Report Processing Entity
2. Transport of any patient information from the EHR(s) to the Data Collection Assistant
3. Transport of the set of data required for a specific quality report to the Quality Report Processing Entity
4. Transport of the quality report to the Receiver including all patient level data.
5. Transport of the quality report to the Receiver of the performance summary.

HIT Structural Measures

Promotion » Adoption



Promotion » Measures

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e-prescribing

1. decision support (including stand-alone/non-EHR applications)
2. in EHR

EHR interoperability

3. adoption of CCHIT or core-functional EHR
4. receive labs electronically

care management

5. @ point of care
6. between visits

quality reporting registry

7. local
8. national

9. medical home

Promotion » CCHIT

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a. CCHIT certified EHR at the time of measurement, or

b. if CCHIT certification is available (in primary care or a specialty) on or before
August 1, 2008, but the system in use is not CCHIT certified, the EHR must meet the following criteria:

1. Ability to manage a medication list AND
2. Ability to manage a problem list AND
3. Ability to manually enter or electronically receive, store and display laboratory results as discrete searchable data elements AND
4. Ability to meet basic privacy and security elements AND
5. the EHR must be CCHIT certified on or before August 1st 2011 or another CCHIT certified product must be in use for compliance after August 1, 2011 or

c. if CCHIT certification is not available for a specialty on August 1, 2008 the EHR must have capabilities 1, 2, 3, AND 4 in section b above.

(Content + Structure) x Promotion

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"promote the development and use of electronic health records that contain functions for automated collection, aggregation, and transmission of performance measures"

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