

Using Outcomes in Oral Health Quality Assessment

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Using Outcomes in Oral Health Quality Assessment

Premise:

Assessing oral health quality means assessing patient care quality

- provided by a single dental practice (solo or group)
- provided by a dental care plan (DHMO, closed panel)
- purchased under the aegis of a dental carrier

Corollaries:

assessing patient care quality means assessing patient outcomes

quality assessment is quantitative, and may be used in:

- comparing, ranking, benchmarking
- identifying targets for quality improvement efforts
- evaluating QI program results

Using Outcomes in Patient Care Quality Assessment

- A. What assessment measures are in general use?
- B. What patient care outcomes could be assessed?
- C. Two “off the shelf” measures for immediate use
- D. Development of effectiveness of care measures
- E. What else needs to be done?

A. What assessment measures are in general use?

(patient care quality in private dental practices)

- Technical excellence of individual restorations
- Patient satisfaction
- Service use measures
- Other structure and process measures

A. What assessment measures are in general use?

- Technical excellence of individual restorations
 - limited evidence for associations with longer-term patient outcomes of interest
caries, endodontics, fracture, replacement
 - resource intensive
money and time, evaluator and patients
 - subjective criteria, standardization difficult
money and time, evaluator variability
- external validity, cost, internal validity

A. What assessment measures are in general use?

- Patient satisfaction

- potential for useful information on several outcomes

 - aesthetics, function, comfort process of care

- non-comparability among instruments

 - extensive variation in wording, response categories, topics

- limited set of dimensions tapped

 - comparability, unhelpful for subsequent interventions

- psychometrically weak

 - ceiling effects, unvalidated scales

- biased sample selection

 - convenience samples, regular patients

useful, but comparability, internal validity, scope issues

A. What assessment measures are in general use?

- **Service use measures** (rates per year, or percent of patients)
(based on administrative (claims) data)
 - useful for some access questions
% patients with visit, with exam, # exams/year
 - can illuminate “style of practice”/ reflect plan benefits
preventive procedures, crown:restoration ratio
 - useful for evaluating adherence to some evidence-based practice guidelines
but few evidence-based guidelines exist,
fewer where patient criteria defined by receipt of service
 - can't address most appropriateness questions
no diagnostic data
 - can't address effectiveness
no outcomes data
- useful, but limited scope**

A. What assessment measures are in general use?

- Other structure and process measures

- **structure:**

- facilities, equipment, personnel, administrative systems

- little evidence-base
 - some regulatory basis
 - “generally assumed to reflect good practice”

- **process:**

- practice management, infection control, treatment planning, radiographic quality, diagnostic accuracy

- some evidence-base
 - some regulatory basis
 - “generally assumed to reflect good practice”

external validity issues

A. What assessment measures are in general use?

- To Sum Up:
- limited number of assessments
- some usefulness
- problematic
 - internal validity (subjectivity, sampling, reliability)
 - external validity (lack of association with patient outcomes)
 - scope (proportion of practice/patients assessed)
 - cost (time and money)
- limited coverage of appropriateness of care
- no coverage of effectiveness of care

B. What patient care outcomes could be assessed?

Rationale for focusing on patient care outcomes:

We need additional valid measures of patient care quality

Patient care maintains or improves oral health

- The better the oral health, the better the patient care quality

Patient care outcomes are assessments of oral health

- Patient care outcomes are assessments of patient care quality

B. What patient care outcomes could be assessed?

Five patient care outcome dimensions

What are the types of outcomes in each dimension?

Are there measures for these outcomes?

Are these measures practical for use in private practices?

1. Biological Dimension Outcomes

- physiological status
salivary flow and consistency, crevicular flow, demineralization
- anatomical status
attachment level, probing depth, arch length
- microbiological status
oral microflora composition, presence of specific pathogens
- sensory status
pain, parathesia

1. Biological Dimension Outcomes

- physiological status
salivary flow and consistency, crevicular flow, gingivalization
- Measures exist for most outcomes
- anatomical status
attachment level, probing depth, root length
- Outcomes may or may not be routinely assessed in dental practice
- microbiological status
oral microflora composition, presence of specific
- Assessments are seldom recorded
- sensory status
pain, parathesia

2. Clinical Dimension Outcomes

- survival status
tooth, pulp, tooth surface, restoration
- mechanical status
margins, contours, color match, occlusion
- diagnostic status
caries, caries stage, periodontal disease activity, soft tissue lesions
- functional status
chewing, speaking, swallowing

2. Clinical Dimension Outcomes

- Measures available, some are subjective
tooth, pulp, tooth surface, restoration
- Routine assessment of most outcomes in dental practices
margin, contours, color match, occlusion
 - diagnostic status
- Routine recording of some outcomes in dental practices
soft tissue lesions
 - functional status
chewing, speaking, swallowing

3. Psychosocial Dimension Outcomes

- satisfaction

satisfaction with treatment, dentist, plan

- perceptions

perception of aesthetics, oral health self-rating

- preferences

values for health states and health events

- oral health-related quality of life

self-assessment of how oral health affects life

3. Psychosocial Dimension Outcomes

- Satisfaction routinely collected by plans and some practices, but instruments are often poor
- Perceptions and preferences measures available only in research literature
- OHQoL instruments available, little used in dental practices and plans

4. Economic Dimension Outcomes

- direct costs
out of pocket expenses, insurance premiums
- indirect costs
time away from work, transportation expenses, child care expenses

4. Economic Dimension Outcomes

- direct costs
 - out of pocket expenses, insurance premiums*
- Direct costs usually calculable, and MEPS data available
- indirect costs
 - time away from work, transportation expenses, child care expenses*
- Indirect costs always estimates

5. Adverse Outcomes Dimension

incidents “to be avoided”

- serious adverse events
 - hospitalization*
 - death*
- adverse events
 - iatrogenic injury / misadventure*
 - misdiagnosis*
 - post-operative infection, pain*
 - treatment failure*

5. Adverse Outcomes Dimension

incidents “to be avoided”

- Incidents may be recorded in record
may be difficult to identify as *adverse event*
- Legal system / dental board records
incomplete, sometimes inaccessible
- Consumer report forums
incomplete, subject to bias

B. What patient care outcomes could be assessed?

- What's practical?

Biological dimension:

*physiological, anatomical,
microbiological, sensory*

probing depth
attachment loss
pain prevalence

Clinical dimension:

*survival, mechanical, diagnostic,
functional*

caries incidence
tooth loss
restoration survival

Psychosocial dimension:

*satisfaction, perceptions,
preferences, QoL*

satisfaction
quality of life

Economic dimension:

direct costs, indirect costs

direct costs

Adverse Outcomes:

*SAEs, post-op events
misadventure, tx failure*

SAE frequency
post-op events

C. Two “off the shelf” measures for immediate use

- Patient experience measures
- Oral health-related quality of life measures

C. Two “off the shelf” measures for immediate use

- Patient experience measures

- CAHPS

(Consumer Assessment of HealthCare Providers and Systems)

- AHRQ sponsored
- ambulatory and institutional care
- standard questionnaires for specific age groups and populations
- input from all affected parties
- extensive testing with consumers
- protocols for sampling, administration, analysis, reporting
- “meaningful information,” useful for benchmarks
- in public domain

C. Two “off the shelf” measures for immediate use

CAHPS Dental Plan Survey

- regular dentist – last 12 months

explanations easy to understand

(never, sometimes usually always)

listened carefully to you

treat you with courtesy and respect

spend enough time with you

overall rating

(0-10)

C. Two “off the shelf” measures for immediate use

CAHPS Dental Plan Survey

- regular dentist – last 12 months

- dental care – last 12 months

dental staff did all they could for your comfort (never, sometimes usually always)

dental staff explain what they were doing

appointments as soon as you wanted

emergency access as soon as you wanted

specialist access as soon as you wanted

waiting room time more than 15 minutes

overall rating

(0-10)

C. Two “off the shelf” measures for immediate use

CAHPS Dental Plan Survey

- regular dentist – last 12 months

- dental care – last 12 months

- dental plan – last 12 months

 - how often did plan cover all services you thought were covered*

 - did plan cover what needed to be done*

 - did customer service provide accurate information*

 - customer service courtesy and respect*

 - did you find a dentist you were happy with*

 - is the plan worth the cost*

 - would you recommend the plan*

 - overall rating*

C. Two “off the shelf” measures for immediate use

CAHPS Dental Plan Survey

<https://www.cahps.ahrq.gov/default.asp>

Keller S, et al, The development and testing of a survey instrument for benchmarking dental plan performance: using insured patients' experiences as a gauge of dental care quality. J Am Dent Assoc. 2009;140:229-37.

C. Two “off the shelf” measures for immediate use

- Oral health-related quality of life measures

- **GOHAI** Atchinson KA, Dolan TA. Development of the Geriatric Oral Health Assessment Index. J Dent Educ 1990;54:680-7.
- **OHIP** Slade GD, Spencer AJ. Development and evaluation of the Oral Health Impact Profile. Community Dent Health 1994;11:3–11.
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- **COHIP** Broder HL, Jokovic A, Locker D, Allison P], Pahl-Andersen B, Bakker C, et al. Developing the child oral health impact profile: An international study. J Dent Res 2002;(special issue)81:433.
- **OIDP** Adulyanon S, Sheiham A. Oral impacts on daily performance . In Slade G, ed. Measuring oral health and quality of life. Chapel Hill ,Univ. of North Carolina, 1977. pp151-60.
- **OHQoL-UK** McGrath C, Bedi R. An evaluation of a new measure of oral health related quality of life—OHQoL—UK(W). Community Dent Health. 2001;18:138-43.
- **ECOHIS** Pahl BT, Rozier RG, Slade GD. Parental perceptions of children's oral health: the Early Childhood Oral Health Impact Scale (ECOHIS). Health Qual Life Outcomes. 2007 ;5:6.

C. Two “off the shelf” measures for immediate use

- To sum up:

Psychosocial outcome measures

- ready to go
CAHPS measure needs conversion for practices
- relatively inexpensive
cost for administration will vary
- standardized
comparisons facilitated

D. Development of effectiveness of care measures

Clinical Performance Measures for Dental Care Plans

AHCPR, U18-HS09453

Goal

Develop measures for assessing aspects of the clinical performance of dental care delivery organizations

1. effectiveness of care (EoC)
2. use of services (UoS)
3. access/availability of care (AoC)

Process

Year 1-- measure development

preliminary measures

delphi process



final measures

delphi process



specifications

Process

Steering Committee

- senior managers of managed care dental plans
- four meetings
- Delphi process
 - 3 rounds for final measures
 - 2 rounds for specifications

Advisory Committee

- purchasers, providers, public health program executives
- one meeting
- Delphi process
 - 3 rounds for final measures

Process

Delphi criteria – all measures

Issue measured should be a concern to a dental plan

data for the measure would be valid & reliable

values of the measure would change in response to changes in provider behavior

measure's implications understood by purchasers

likelihood that plan will begin to collect necessary data

Process

Year 1-- measure development

preliminary measures

consensus development-modified delphi process

final measures

specifications

administrative data

3 group-model DHMOs

Year 2 -- measure evaluation

minimum of 40,000 enrollees

chart audits

administrative data

2 DHMOs *n=504*

chart audits

2 PPO practices *n=252*

3 public clinics *n=382*

Effectiveness of Care Measures

Design Criteria for the EoC Measures

- outcomes / evidence-based procedures
- important / substantial beneficial effect
- population-based
- risk adjustable
- practical, based on administrative data*

*with reasonable assumptions about development

Effectiveness of Care Measures

all patients

% with disease
assessment

assessment

Effectiveness of Care Measures

Disease Assessment

Caries classification

Periodontal disease classification

Effectiveness of Care Measures

Caries Classification

Caries activity (active / inactive)

current lesions
recent lesions

Caries risk (high / low)

current lesions
past lesions
fluoride hx. and status
dietary habits
oral hygiene
s mutans conc.
etc.

Effectiveness of Care Measures

Periodontal Disease Classification

Periodontal disease status (present / not present)

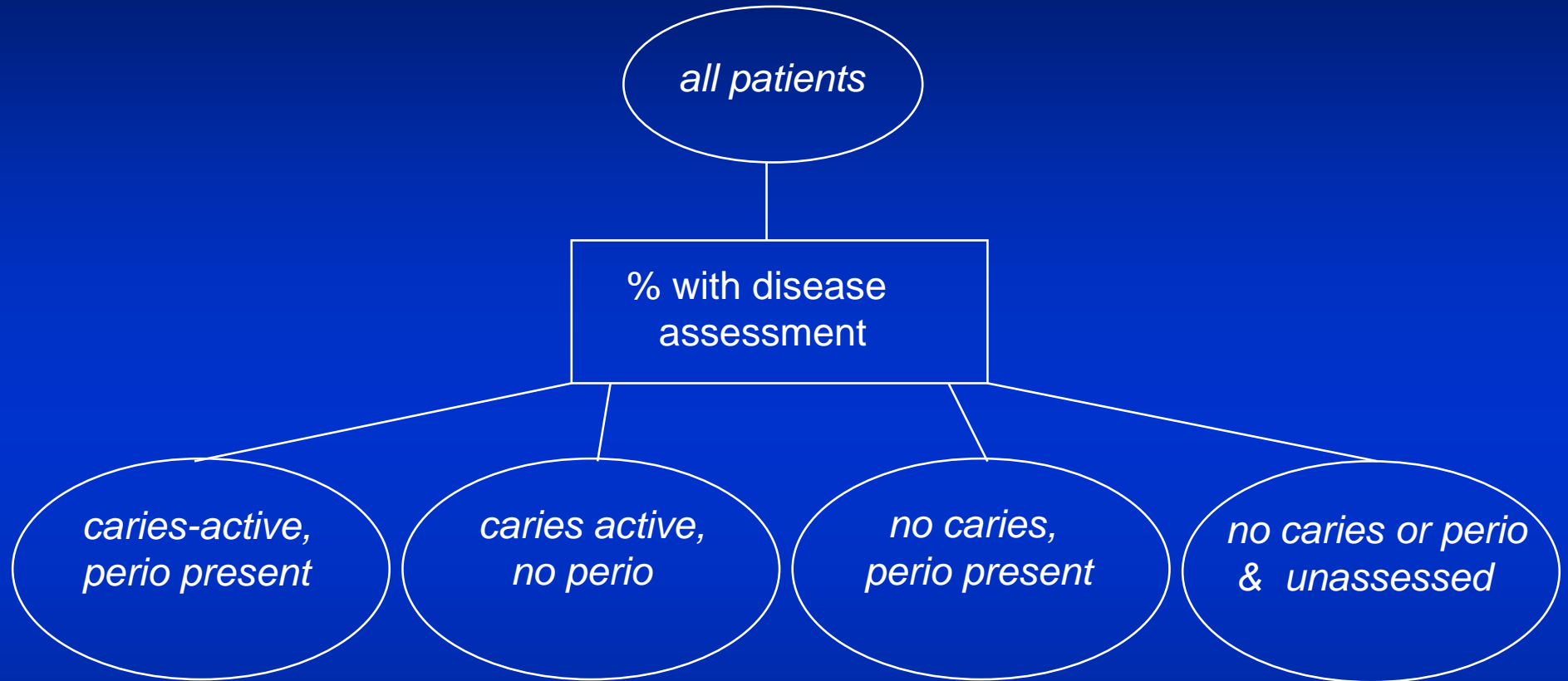
probing depth(s) 5+ mm

Dx of periodontal disease

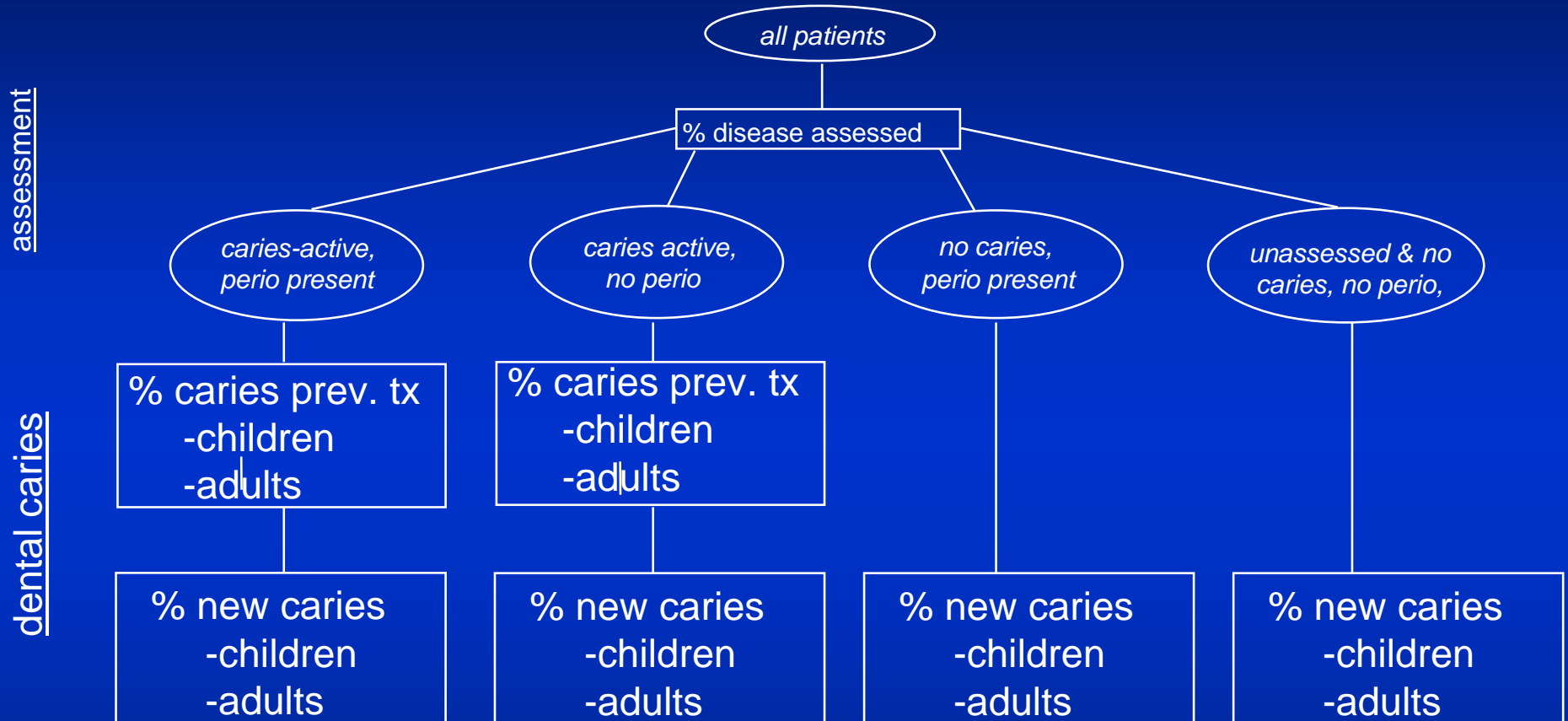
receipt of periodontal treatment

Effectiveness of Care Measures

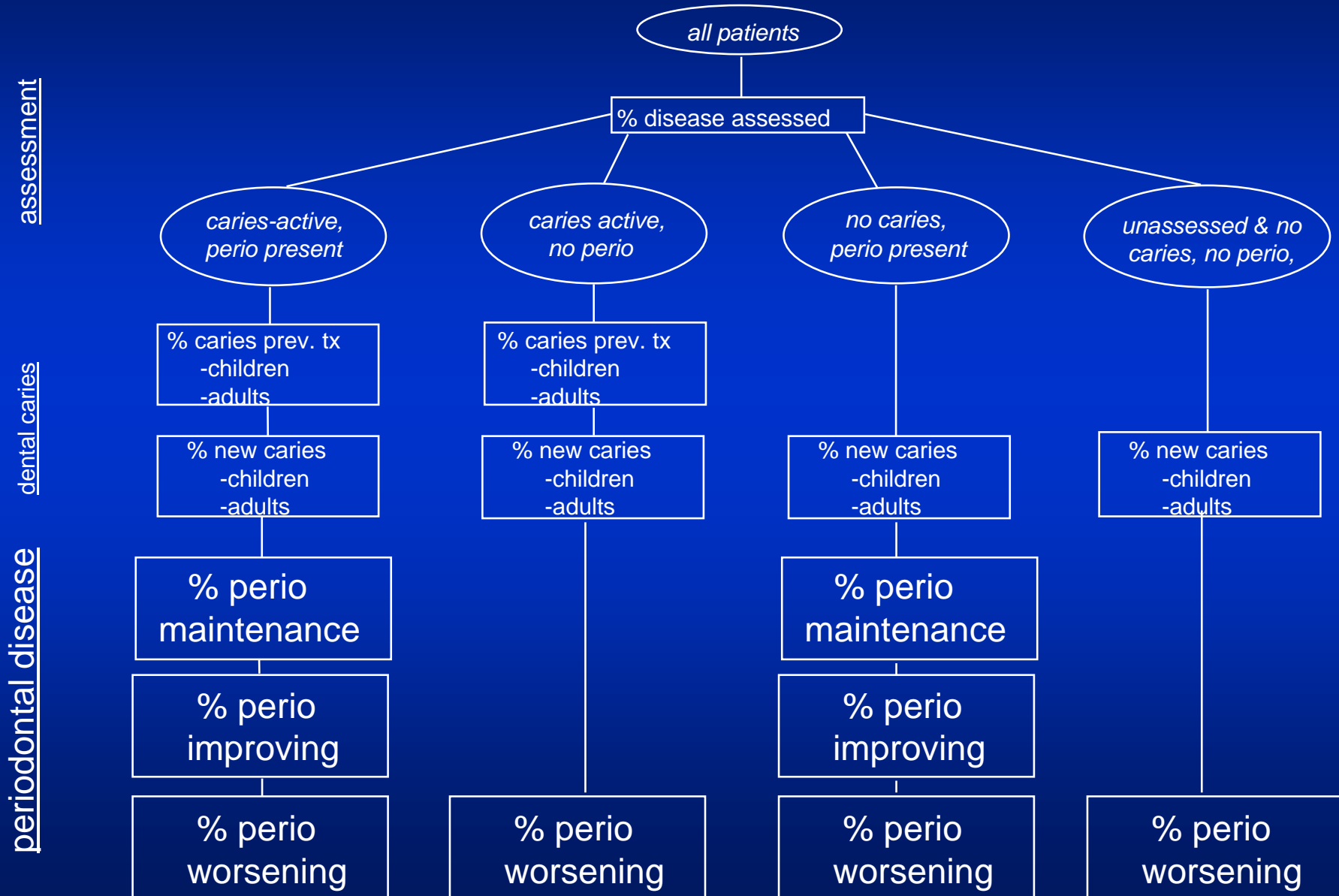
assessment



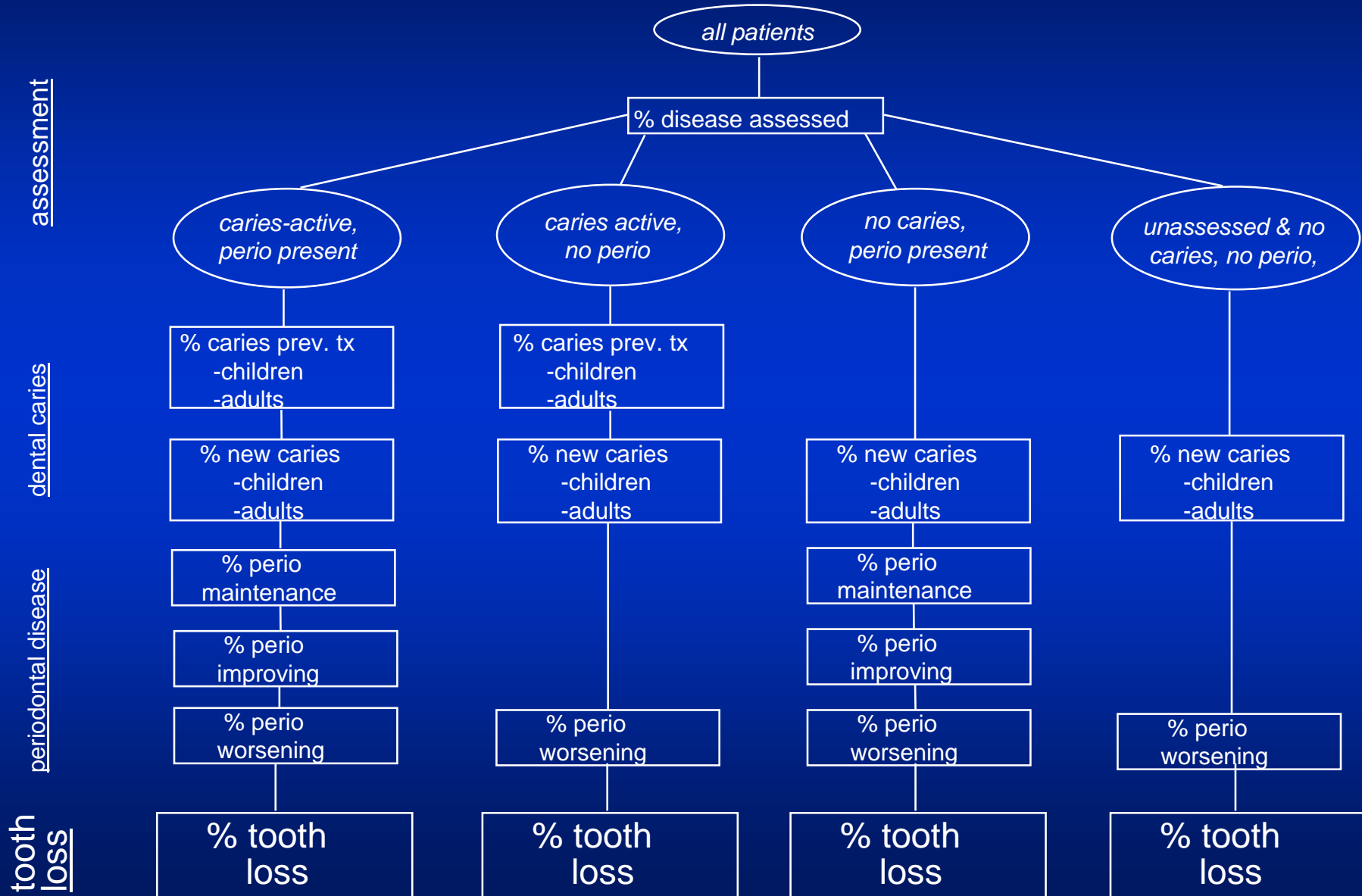
Effectiveness of Care Measures



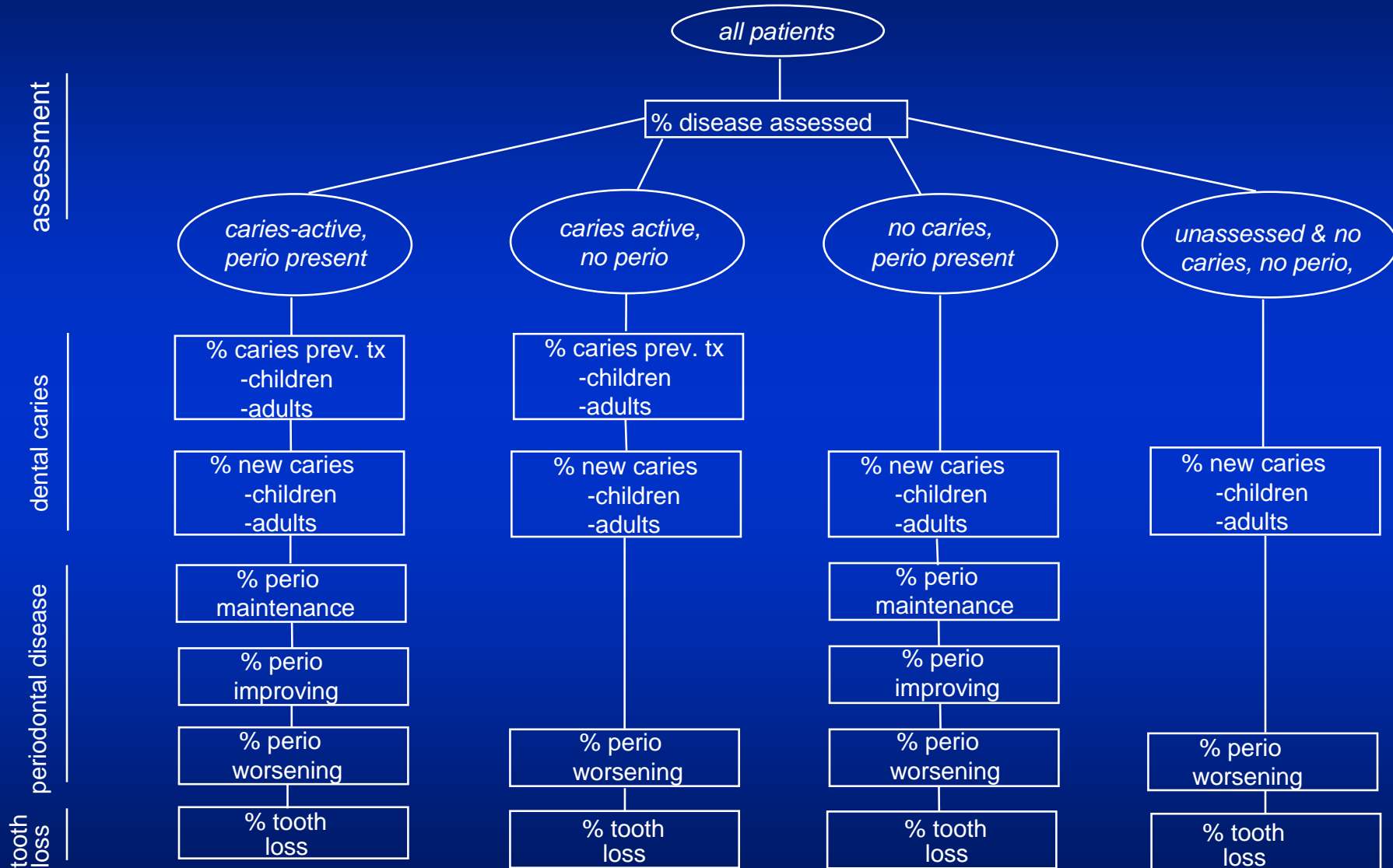
Effectiveness of Care Measures



Effectiveness of Care Measures



Effectiveness of Care Measures



Effectiveness of Care Measures

Additional Information Needed for Measures

- *caries diagnostic information*
 - diagnostic codes
 - reasons for treatment
 - restorative procedures
 - (caries risk/status classification)
- *periodontal diagnostic information*
 - periodontal probing data
 - (periodontal status classification)

Effectiveness of Care Measures

Pilot Test--Administrative Data-Based Measures

Effectiveness of Care Measures

Disease Status Assessment

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
	<i>n=115,867</i>	<i>n=48,698</i>	<i>n=43,045</i>
enrollees	64%	54%	26%

Effectiveness of Care Measures

Caries Preventive Treatment *(among caries active enrollees)*

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
children	81%	73%	69%
adults	13%	11%	18%

Effectiveness of Care Measures

New Caries

		<i>Plan</i>	
	<i>A*</i>	<i>B</i>	<i>C</i>
<i>children</i>			
caries active	--	29%	17%
non-caries active	--	11%	3%
<i>adults</i>			
caries active	--	27%	28%
non-caries active	--	13%	7%

*complete reason-for treatment data not available for Plan A

Effectiveness of Care Measures

Periodontal Maintenance Treatment *(among perio-present adult enrollees)*

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
	81%	79%	86%

Effectiveness of Care Measures

Periodontal Improvement

	<i>Plan</i>		
	<i>A*</i>	<i>B*</i>	<i>C</i>
	50%	29%	--%

*values determined through chart audit

Effectiveness of Care Measures

Periodontal Deterioration

	<i>Plan</i>		
	<i>A*</i>	<i>B*</i>	<i>C</i>
	41%	25%	--%

*values determined through chart audit

Effectiveness of Care Measures

Tooth Loss (adults)

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
<i>perio present</i>			
caries active	8%	6%	5%
non-caries active	3%	3%	2%
<i>perio not present</i>			
caries active	3%	5%	4%
non-caries active	4%	4%	1%

Use of Services Measures

Design Criteria for the UoS Measures

- reflect plan benefits and associated “style of practice”
- substantial beneficial effect
- population-based
- based on currently available administrative data

Use of Services Measures

- % of enrollees receiving a prophylaxis
- ratio of preventive services to restorative services
- ratio of castings to large direct restorations
- ratio of endodontic treatments to extractions
- % of 16-24 year-old enrollees with third molar surgery
- mean number of third molars extracted

Use of Services Measures

Receipt of Prophylaxis

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
children	66%	63%	26%
adults	55%	61%	39%

Use of Services Measures

Preventive / Restorative Services Ratio

		<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>	
children	4.0	7.8	11.6	
adults	1.3	2.0	2.3	

Use of Services Measures

Casting / Large Direct Restoration Ratio

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
adults	0.1	0.9	0.6

Use of Services Measures

Endodontic Treatment / Extraction Ratio

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
adults	0.5	0.7	0.5

Use of Services Measures

Third Molar Extractions

(among 16-24 year-old enrollees)

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
adults	2%	3%	<1%

Mean Number of Third Molars Extracted

(among enrollees 16-24 with any third molar extractions)

	<i>Plan</i>		
	<i>A</i>	<i>B</i>	<i>C</i>
adults	2.1	3.6	3.7

Access/Availability of Care Measures (AoC)

- % of enrollees receiving any treatment in a year
- % of enrollees receiving an examination in a year
- mean days for a non-urgent recall examination
- % plan providers accepting new plan enrollees
- % plan providers still active one year later

E. What else can be done?

Biological dimension:

*physiological, anatomical,
microbiological, sensory*

probing depth
attachment loss
pain prevalence

Clinical dimension:

*survival, mechanical, diagnostic,
functional*

caries incidence
tooth loss
restoration survival

Psychosocial dimension:

*satisfaction, perceptions,
preferences, QoL*

satisfaction / experience
quality of life

Economic dimension:

direct costs, indirect costs

direct costs

Adverse Outcomes:

*SAEs, post-op events
misadventure, tx failure*

SAE frequency
post-op visits

E. What else can be done?

- strengthen dental school curricula in QA applications
*evaluate patient care as well as technical quality,
use diagnostic codes*
- engage professional organizations to promote adoption and use of diagnostic codes
*urge ADA to develop and release practical code set,
urge other groups to support adoption*
- improve methods for practitioner behavioral change
same boat as medicine, need to develop effective levers
- engage purchasers of care plans
*urge purchasers to demand proof of “value” and expect
use of guidelines, diagnostic codes*
- more outcomes research
without evidence, can't establish treatment guidelines

Thank You

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Effectiveness of Care Measures

Reliability of Administrative Data

n=1170 patient visits

procedures and date identical	95.3%
procedures identical, dates different	0.9%
procedure in database, not in chart	3.9%
procedure in chart, not in database	0.0%