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Toronto Health Economics and
Technology Assessment Collaborative

Patients' Preferences in Prostate Cancer Screening

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SCREENING FOR PROSTATE CANCER

CLINICAL SUMMARY OF U.S. PREVENTIVE SERVICES TASK FORCE RECOMMENDATION

Population	Adult Males
Recommendation	Do not use prostate-specific antigen (PSA)-based screening for prostate cancer.
	Grade: D
Screening Tests	<p>Contemporary recommendations for prostate cancer screening all incorporate the measurement of serum PSA levels; other methods of detection, such as digital rectal examination or ultrasonography, may be included.</p> <p>There is convincing evidence that PSA-based screening programs result in the detection of many cases of asymptomatic prostate cancer, and that a substantial percentage of men who have asymptomatic cancer detected by PSA screening have a tumor that either will not progress or will progress so slowly that it would have remained asymptomatic for the man's lifetime (i.e., PSA-based screening results in considerable overdiagnosis).</p>
Interventions	Management strategies for localized prostate cancer include watchful waiting, active surveillance, surgery, and radiation therapy. There is no consensus regarding optimal treatment.
Balance of Harms and Benefits	<p>The reduction in prostate cancer mortality 10 to 14 years after PSA-based screening is, at most, very small, even for men in the optimal age range of 55 to 69 years.</p> <p>The harms of screening include pain, fever, bleeding, infection, and transient urinary difficulties associated with prostate biopsy, psychological harm of false-positive test results, and overdiagnosis.</p> <p>Harms of treatment include erectile dysfunction, urinary incontinence, bowel dysfunction, and a small risk for premature death. Because of the current inability to reliably distinguish tumors that will remain indolent from those destined to be lethal, many men are being subjected to the harms of treatment for prostate cancer that will never become symptomatic.</p> <p>The benefits of PSA-based screening for prostate cancer do not outweigh the harms.</p>
Other Relevant USPSTF Recommendations	Recommendations on screening for other types of cancer can be found at www.uspreventiveservicestaskforce.org .

AUA Guidelines

Guideline Statement 1: The Panel recommends against PSA screening in men under age 40 years. (Recommendation; Evidence Strength Grade C)

Guideline Statement 2: The Panel does not recommend routine screening in men between ages 40 to 54 years at average risk. (Recommendation; Evidence Strength Grade C)

Guideline Statement 3: For men ages 55 to 69 years the Panel strongly recommends shared decision-making for men age 55 to 69 years that are considering PSA screening, and proceeding based on a man's values and preferences. (Standard; Evidence Strength Grade B)

Guideline Statement 4: To reduce the harms of screening, a routine screening interval of two years or more may be preferred over annual screening

Guideline Statement 5: The Panel does not recommend routine PSA screening in men over age 70 years or any man with less than a 10 to 15 year life expectancy. (Recommendation; Evidence Strength Grade C)

Why do guidelines for prostate cancer screening differ ?

The Evidence is the Same (isn't it?)

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Screening and Prostate-Cancer Mortality in a Randomized European Study

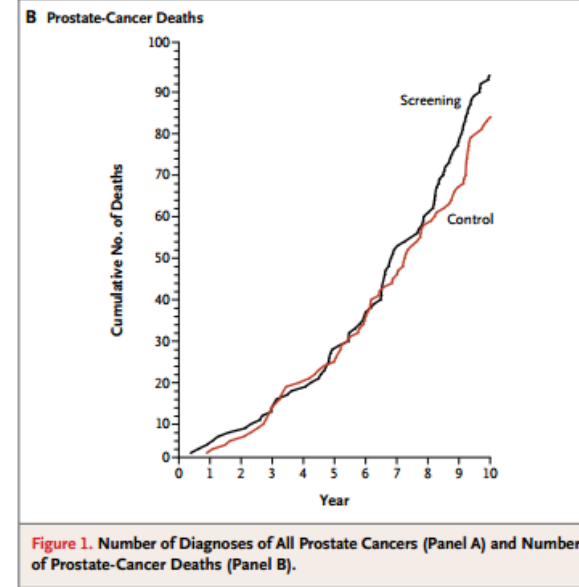
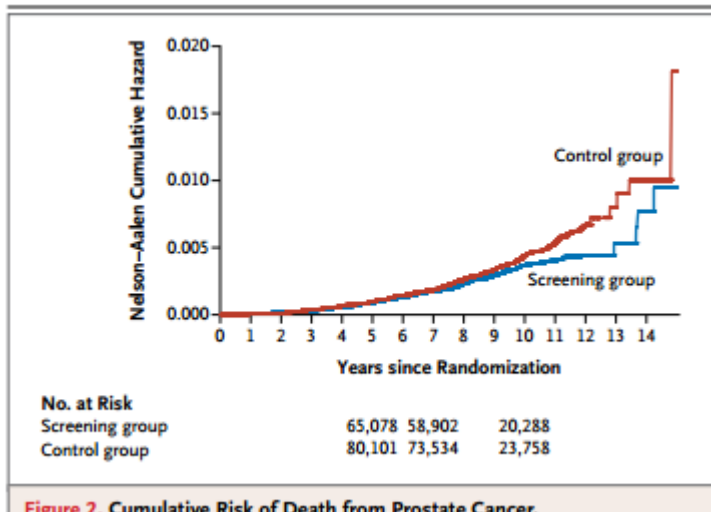
Fritz H. Schröder, M.D., Jonas Hugosson, M.D., Monique J. Roobol, Ph.D., Teuvo L.J. Tammela, M.D., Stefano Ciatto, M.D., Vera Nelen, M.D., Maciej Kwiatkowski, M.D., Marcos Lujan, M.D., Hans Lilja, M.D., Marco Zappa, Ph.D., Louis J. Denis, M.D., Franz Recker, M.D., Antonio Berenguer, M.D., Liisa Määtänen, Ph.D., Chris H. Bangma, M.D., Gunnar Aus, M.D., Arnaud Villers, M.D., Xavier Rebillard, M.D., Theodorus van der Kwast, M.D., Bert G. Blijenberg, Ph.D., Sue M. Moss, Ph.D., Harry J. de Koning, M.D., and Anssi Auvinen, M.D., for the ERSPC Investigators*

THE NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

Mortality Results from a Randomized Prostate-Cancer Screening Trial

Gerald L. Andriole, M.D., E. David Crawford, M.D., Robert L. Grubb III, M.D., Sandra S. Buys, M.D., David Chia, Ph.D., Timothy R. Church, Ph.D., Mona N. Fouad, M.D., Edward P. Gelmann, M.D., Paul A. Kvale, M.D., Douglas J. Reding, M.D., Joel L. Weissfeld, M.D., Lance A. Yokochi, M.D., Barbara O'Brien, M.P.H., Jonathan D. Clapp, B.S., Joshua M. Rathmell, M.S., Thomas L. Riley, B.S., Richard B. Hayes, Ph.D., Barnett S. Kramer, M.D., Grant Izmirlian, Ph.D., Anthony B. Miller, M.B., Paul F. Pinsky, Ph.D., Philip C. Prorok, Ph.D., John K. Gohagan, Ph.D., and Christine D. Berg, M.D., for the PLCO Project Team*



Outline....

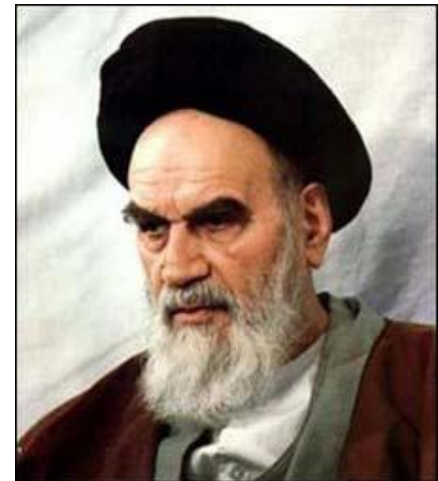
- A sad story....
- Some thoughts on the way we see evidence....(paradigms)
- Bringing preferences into guidelines

Screening for Prostate Cancer

A Decision Analytic View

Murray D. Krahn, MD, MSc; John E. Mahoney, MD; Mark H. Eckman, MD; John Trachtenberg, MD;
Stephen G. Pauker, MD; Allan S. Detsky, MD, PhD

(JAMA. 1994;272:773-780)



LE gains, QALY losses

Marginal Gain Relative to No Screening and Incremental CE Ratio

	Age 50 y				Age 60 y				Age 70 y			
	Δ LE, d†	Δ QALY†	Δ Cost, \$†	CE Ratio, \$1000s/ Life-Year‡	Δ LE, d†	Δ QALY†	Δ Cost, \$†	CE Ratio, \$1000s/ Life-Year‡	Δ LE, d†	Δ QALY†	Δ Cost, \$†	CE Ratio, \$1000s/ Life-Year‡
DRE	0.6	-1.6	64	\$	0.1	-4.1	149	\$	0.2	-7.1	371	\$
PSA	0.6	-1.5	77	113	1.1	-3.7	179	127	1.6	-7.2	448	189
PSA, DRE	0.8	-2.1	104	\$	1.1	-5.2	233	\$	1.7	-9.5	572	\$
PSA, DRE, TRUS	0.8	-2.9	253	729	1.5	-7.1	423	475	2.2	-12.8	874	466

ScHARR

SCHOOL OF HEALTH AND

RELATED RESEARCH

Option appraisal: screening for prostate cancer

Report to the UK National Screening Committee May 2010

QALYs (Quality adjusted life years)

QALYs allow differences in quality of life to be taken into consideration as well as differences in survival. All screening policies result in loss in QALYs: for repeat screening the loss ranges from 1.1 to 1.4 QALYs undiscounted, or 0.3 to 0.8 discounted QALYs, per man with prostate cancer (detected or not). The more

Prostate cancer screening: a decision analysis.

Cantor SB, Spann SJ, Volk RJ, Cardenas MP, Warren MM

Department of Family Medicine, University of Texas Medical Branch at Galveston, USA.

The Journal of Family Practice [1995, 41(1):33-41]

RESULTS: The model indicated that no screening was preferred to screening when patients' utilities were considered (24.14 vs 23.47 quality-adjusted life years expected). The optimal decision was sensitive to the utilities of impotence and urethral stricture, the most common adverse outcomes for patients under the age of 65 years. When adverse outcomes of treatment were ignored, screening was favored (24.86 vs 24.22 years of life expectancy).

What are preferences ?

- Patient centered care
- Values
- Preferences
- Decision utility
- Experienced utility
- Satisfaction
- Needs/desires/expectations
- Subjective well being

What is a “preference sensitive”
decision?

Geography And The Debate Over Medicare Reform

A reform proposal that addresses some underlying causes of Medicare funding woes: geographic variation and lack of incentive for efficient medical practices.

by John E. Wennberg, Elliott S. Fisher, and Jonathan S. Skinner


■ **Preference-sensitive care.** Preference-sensitive care is clinical services where for many patients at least two valid alternative treatment strategies are available. Since the risks and benefits of the options differ, the choice of treatment involves trade-offs. In theory, these treatment choices should depend on informed patients' making decisions based on the best clinical evidence. In practice, however, treatment choices appear to be determined largely by local medical opinion concerning the value of surgery or its alternatives.

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Toward The ‘Tipping Point’: Decision Expand Aids And Informed Patient Choice

Annette M. O’Connor, John E. Wennberg, France Legare,
Hilary A. Llewellyn–Thomas, Benjamin W. Moulton, Karen R. Sepucha,
Andrea G. Sodano and Jaime S. King

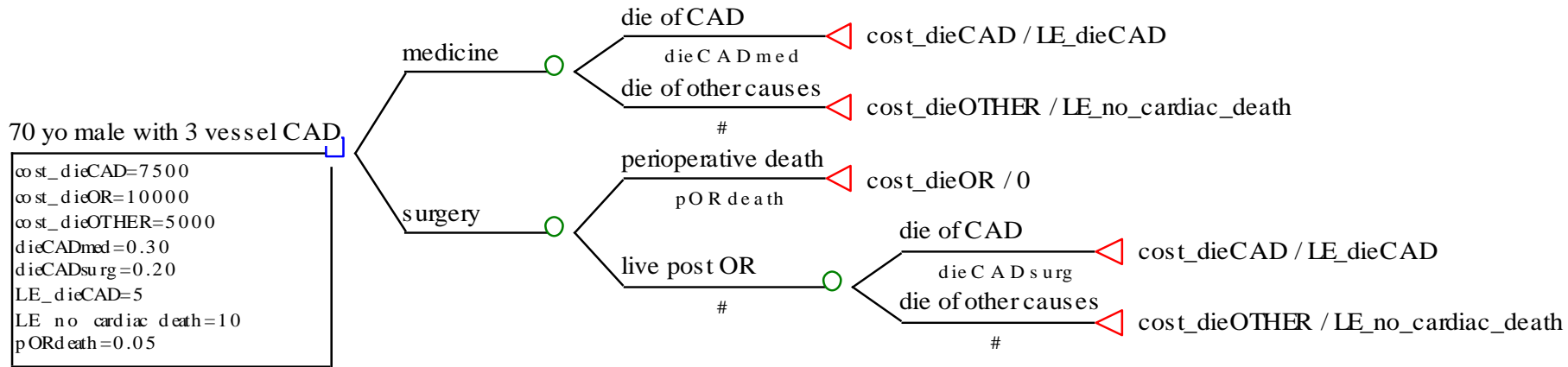
 Author Affiliations

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Abstract

Preference-sensitive treatment decisions involve making value trade-offs between benefits and harms that should depend on informed patient choice. There is

Preference sensitivity: a more formal definition



Preference sensitivity

- Reasonable alternatives exist...
 - Competing risks and benefits
 - Evidence is weak
 - Preferences (for outcomes/treatments) vary

Table 2. Health Effects in Cancer Screening Programs

	Fahs	Eddy	Shimbo	Krahn	de Koning	Carter	
Effects of screen itself							
(physical discomfort, pain) -	-	-	-	-	X	-	
Early labeling, cancer anxiety in cancer patients	-	-	-	-	X	-	
Labeling, cancer anxiety in false positives or indeterminate tests	-	-	-	-	-	-	-
Reassurance that no cancer is present	-	-	-	-	-	-	-
Discomfort, pain of confirmatory tests	-	-	-	-	-	X	-
Effects of cancer treatment	-	-	-	-	X	X	-
Effects of treatment complications	-	-	-	-	X	-	-
Effects of disease recurrence/ progression	-	-	-	X	-	-	-
Effects of treatment for disease progression	-	-	-	X	X	-	-
Advanced or metastatic disease	-	-	-	-	X	X	-
Treatment of advanced or metastatic disease	-	-	-	-	X	X	-

Preferences of Husbands and Wives for Outcomes of Prostate Cancer Screening and Treatment

Robert J. Volk, PhD, Scott B. Cantor, PhD, Alvah R. Cass, MD, SM, Stephen J. Spann, MD, Susan C. Weller, PhD, Murray D. Krahn, MD, MSc

J GEN INTERN MED 2004;19:339-348.

Table 3. Comparison of Time Trade-off Utilities for Husband and Wife Pairs*

Health States	Percentage of Husband-Wife Pairs*		
	Wife's Utility Less Than Husband's (%)	Husband's Utility Equals Wife's (%)	Husband's Utility Less Than Wife's (%)
Partial impotence	18.5	33.3	48.2
Complete impotence	19.0	25.6	55.4
Mild-to-moderate incontinence	20.8	29.2	50.0
Severe incontinence	20.4	13.2	66.5
Urethral stricture	31.1	20.4	48.5
Rectal injury	25.1	15.0	59.9
Hormonally responsive prostate cancer	24.6	15.0	60.5
Hormonally refractory prostate cancer	31.1	13.2	55.7
All states combined	23.8	20.6	55.6

Concordance of Couples' Prostate Cancer Screening Recommendations from a Decision Analysis

Scott B. Cantor,¹ Robert J. Volk,² Murray D. Krahn,³ Alvah R. Cass,⁴ Jawaria Gilani,¹ Susan C. Weller⁵ and Stephen J. Spann²

Table II. Prostate cancer screening recommendations based on individualized decision-analytic models incorporating the perspectives of husbands, wives, and couples (n = 168)

Perspective	Screening preferred [n (%)]	No screening preferred [n (%)]
Husbands	48 (28.6)	120 (71.4) ^a
Wives	89 (53.0) ^a	79 (47.0)
Couples	58 (34.5)	110 (65.5) ^a

a Indicates preferred strategy based on models using group-level utilities.

Construction of the Patient-Oriented Prostate Utility Scale (PORPUS): a multiattribute health state classification system for prostate cancer

Murray Krahn^{a,b,h,*}, Paul Ritvo^{c,d,e,f,g,i,j}, Jane Irvine^{c,d,e}, George Tomlinson^c, Andrea Bezjak^{g,h},
John Trachtenberg^f, Gary Naglie^{a,h}

*Departments of ^aMedicine, ^bLaboratory Medicine and Pathobiology, ^cPublic Health Sciences, ^dFamily and Community Medicine, ^ePsychiatry, ^fSurgery,
^gRadiation Oncology, and ^hProgram in Clinical Epidemiology and Health Care Research, University of Toronto, Toronto, Ontario, Canada,*

ⁱDivision of Epidemiology, Biostatistics and Behavioral Science and ^jDivision of Preventive Oncology, Cancer Care Ontario, Toronto, Ontario, Canada
Received 23 July 1999; received in revised form 15 December 1999; accepted 26 January 2000



Journal of Clinical Epidemiology 58 (2005) 466–474

**Journal of
Clinical
Epidemiology**

Development and Validation of a Utility Weighting Function for the Patient-Oriented Prostate Utility Scale (PORPUS)

*George Tomlinson, PhD, Karen E. Bremner, BSc, Paul Ritvo, PhD, Gary Naglie, MD,
Murray D. Krahn, MD, MSc*

Reliability and validity of the PORPUS, a combined psychometric
and utility-based quality-of-life instrument for prostate cancer

il Ritvo^{a,b,c,d,e,f,*}, Jane Irvine^{a,d,e}, Gary Naglie^{d,e}, George Tomlinson^e, Andrea Bezjak^{b,c,d,e},
Andrew Matthew^{c,e}, John Trachtenberg^{b,c,d,e}, Murray Krahn^{c,d,e}

Quality of Life Research (2007) 16:509–522
DOI 10.1007/s11136-006-9132-x

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**Responsiveness of disease-specific and generic utility instruments in prostate
cancer patients**



www.porpus.org

porpus
patient-oriented
prostate utility scale

[Home](#) | [About the PORPUS](#) | [How to Use the PORPUS](#) | [Research Team](#) | [References](#) | [PORPUS Questionnaire](#)

AA

Patient ORiented Prostate Utility Scale

The [PORPUS](#) is a tool that measures [Quality of Life](#) and [Utility](#).

What the PORPUS can do for:

Patients

Allow you to measure and track your Quality of Life.

Clinicians

Compare patient's' Quality of Life to norms for similar patients, and track Quality of Life over time.

Researchers

Measure Quality of Life and Utility in prostate cancer patients using a highly sensitive and

The sad story....

CCO Clinical Practice Guideline Committee
on Prostate Cancer Screening

- Literature review
 - 0 decision analyses...
 - 0 cost effectiveness analyses...
 - 0 quality of life studies...
 - 0 preference studies...

Scientific Paradigm

- “an entire constellation of beliefs, values and techniques.....shared by the members of a given community”

[Kuhn, T S; The Structure of Scientific Revolutions, 2nd Ed., Univ. of Chicago Press, Chicago & London, 1970, p.175]

Scientific Paradigm

- what is to be observed and scrutinized,
- the kind of questions that are supposed to be asked...
- how these questions are to be structured,
- how the results of scientific investigations should be interpreted.

[Kuhn, T S; The Structure of Scientific Revolutions, 2nd Ed., Univ. of Chicago Press, Chicago & London, 1970, p.175]

Evidence Based Medicine

Clinimetrics (Feinstein)
Clinical Epidemiology (Sackett)
Rational diagnosis and treatment (Wulff)
Outcomes /Health Services Research
Knowledge Translation

Paradigm 1

Decision Analysis/ Economic Evaluation

Cost effectiveness analysis
Pharmacoeconomics
Health Economics
Clinical Decision Analysis
Preference/utility measurement
Consumer decision support

Paradigm 2

Bioethics / Social Science

Accountability for Reasonableness
Ethics of Resource Allocation
Resource Allocation Decision Making
Bioethics
Sociology of Science
Political Science

Paradigm 3

EBM...ideas about evidence...

Method

Context-free

Efficacy

Diagnosis

Effectiveness

Prognosis

Context-sensitive

ethics

economic

Colloquial

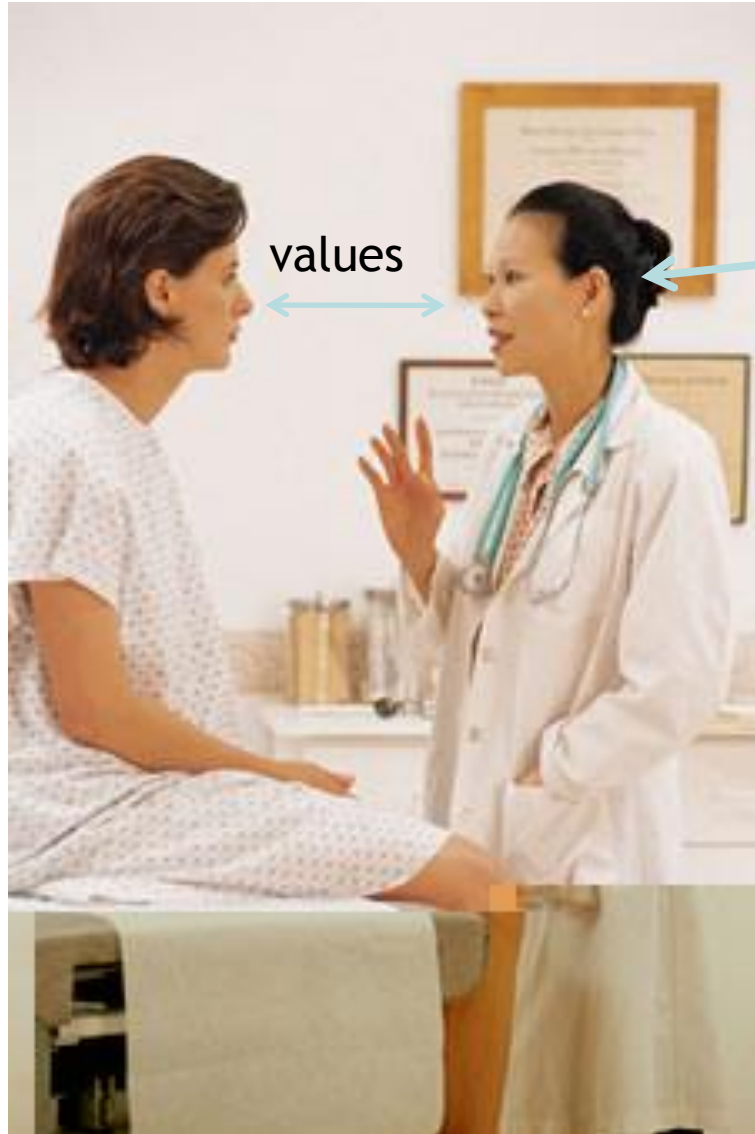
values

politics

Relevance

EBM...techniques





values



evidence



Decision Analysis/ Economic Evaluation

Cost effectiveness analysis
Pharmacoeconomics
Health Economics
Clinical Decision Analysis
Preference/utility measurement
Consumer decision support

Paradigm 2

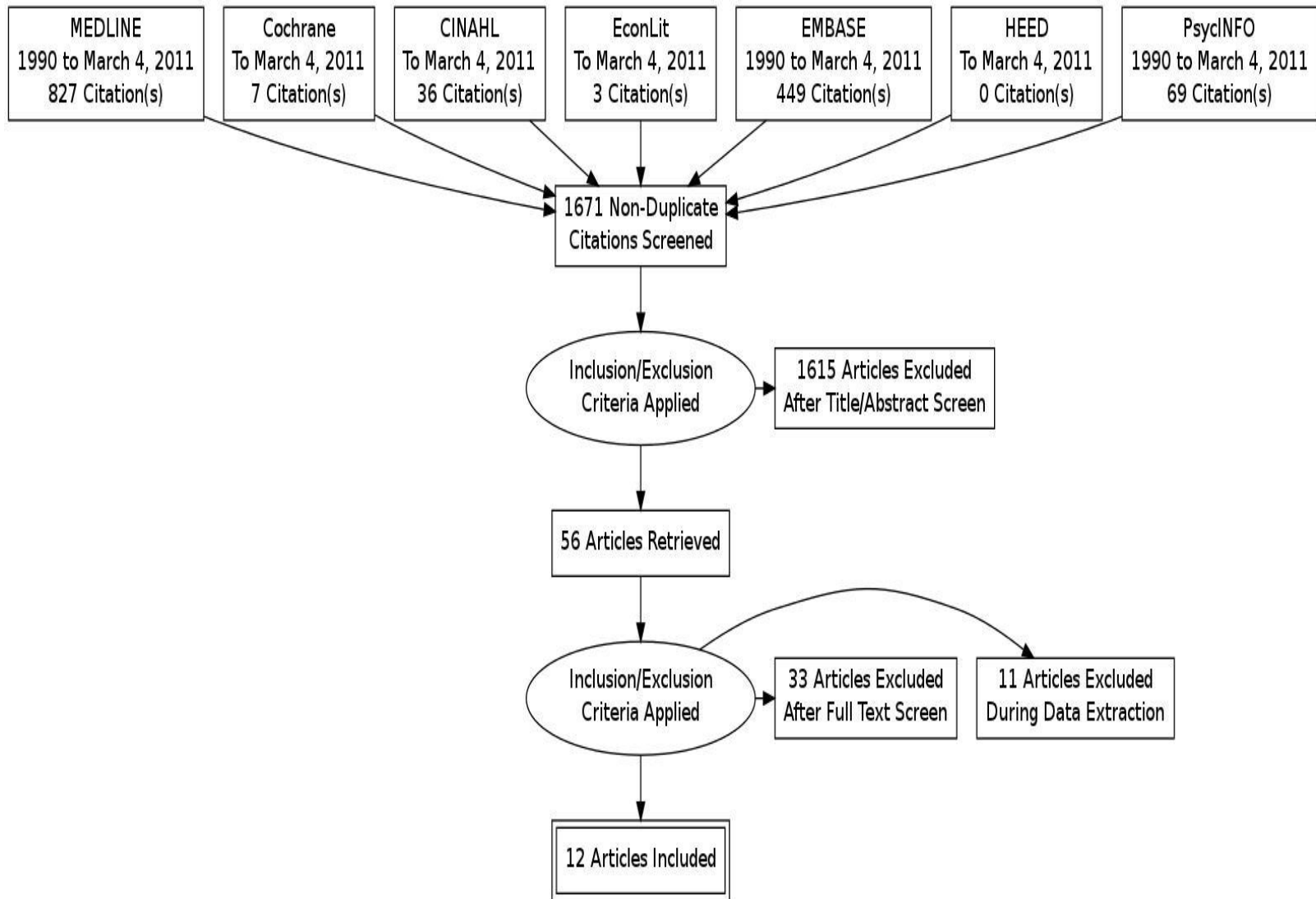
Bioethics / Social Science

Accountability for Reasonableness
Ethics of Resource Allocation
Resource Allocation Decision Making
Bioethics
Sociology of Science
Political Science

Paradigm 3

What can be done?

- Finding preference related evidence...
 - Search strategy for CPG should include information on preferences/values



Article	Frequency of Measurement	Setting	Sample Size of the COPD participants only	Preference-Related Outcome Measures	Preference Elicitation Methods	Sample Questions
1. Chakrabarti et al. (2009)	1	UK; hospital	50	Patient attitudes towards receiving IMV and NPPV.	Five-stage structured interview.	Willingness to receive NPPV in an acute setting after being provided with a: verbal description (stage 1); photograph (stage 2); demonstration (stage 3); willingness to receive IMV after detailed explanation (stage 4); after explanation of alternatives (stage 5).
2. Claessens et al. (2000)	1	USA; multi-center study in 5 teaching hospitals	445 = patient only; 730 = surrogate substitution	Preference for having IMV indefinitely was assessed by interview.	Interviews.	"Would you be very willing, somewhat willing, somewhat unwilling, very unwilling, or rather die than put up with (or continue to put up with) being attached to a ventilator or respirator all the time?" Response categories (Likert scale): very willing; somewhat willing; somewhat unwilling; very unwilling; would rather die.
3. Dales et al. (1999)	1	Canada; hospital	19	Preference for intubation and IMV.	Scenario-based decision aid. Patients were interviewed on two occasions, with a second interview taking place a year later.	<i>I. To be intubated and receive IMV:</i> "Medication will be used to reduce breathlessness and discomfort, and there will be a 50% chance of coming off of the machine and living for one 1 year in a state of health that is no better or worse than before the attack which brought them to hospital" <i>II. Not to be intubated:</i> "Medication will be used to

Integrating preference evidence into guidelines

- Indicate when guidelines are preference sensitive

Using guidelines in individual decision making

- CPG's should encourage discussion and should “specifically endorse the acceptability, rationality, and desirability of making decisions based on preferences”

Including patients in the guideline development process

- About 25% at present

Evaluating guidelines with preferences in mind

- E.g. AGREE has nothing about preferences (at all)

Challenges

- Evidence review is a nightmare
- Advocacy vs. Science...
- Should public funds be used to support “preference sensitive” care?

Summary

- PC screening guidelines differ
- One reason is varying weights placed on patient values/experiences
- PC screening is a preference sensitive decision
- Bringing preferences into “evidence based decision making” has risks but is probably overdue....