

Outcome Scoring Systems in Spinal Surgery

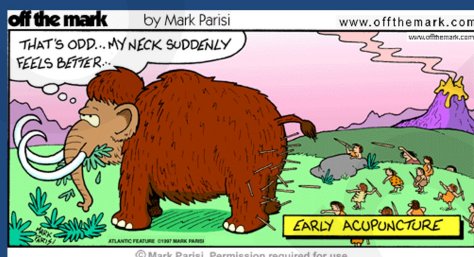
Dr M J.H. McCarthy
Spinal Fellow

Outline

- Introduction
- Types of outcomes and reasons for using them
- Description of commonly used scores
 - LBP only
- Which ones to use...

What is an Outcome?

- That which represents the goal of all treatments – to make the patient better



Outcome Scoring Systems

- Measurements of quality, satisfaction, efficacy, and effectiveness
- Assess the end results of care and its effect upon the health of the patient and society
- Serve as essential elements for health care decisions and matters of health policy

Types of Outcome Measure...

- ...in Clinical Use
 - Questionnaires
 - General health status
 - Pain
 - Functional status
 - Patient satisfaction
 - Physiological outcome
 - Utilization measures
 - Cost measures / Health economics

Factors Influencing Outcome

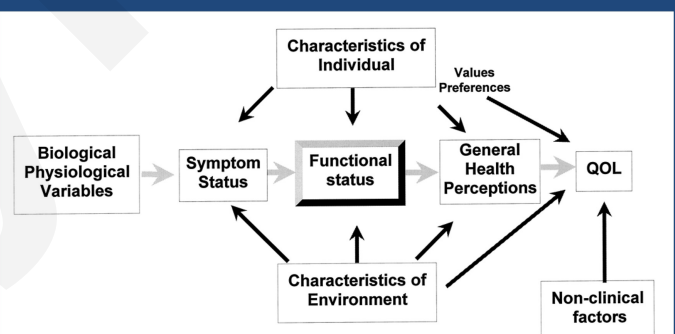


Figure 1. Measures of outcome in quality of life (QOL) model. (Adapted from Wilson IB, Cleary PD. JAMA 1995;273:59–65. Copyright © 1995 by American Medical Association.)

Spinal Surgery Outcomes

- Outcomes influenced by large variety factors
 - Pathomorphological
 - Functional
 - Psychosocial
- The main spinal surgery outcomes used measure postoperative improvement in
 - Pain
 - Disability
 - Psychological well being
 - Health related quality of life
 - Work measures

Types of Outcome Measure

- Subjective versus Objective
- Generic versus Specific
- Short Term versus Long Term
- Individual versus Population
- Unidimensional versus multidimensional
-

Subjective versus Objective

- | | |
|---|--|
| <ul style="list-style-type: none"> • Subjective
(Patient Driven) – General Health – Pain Perception – Condition or Disease Specific – Psychometric – Disability Prediction – Patient Satisfaction | <ul style="list-style-type: none"> • Objective
(HCP Driven) – Range of Motion – Strength - Endurance – Nonorganic – Proprioception – Cardiopulmonary – Developmental |
|---|--|

Subjective versus Objective

- It must be emphasized that although the term “subjective” carries negative connotations, the reliability/validity data published regarding these methods of collecting outcomes is exceptional, typically out-performing the test-retest reliability and validity of most “objective” physical performance tests.

Chapman-Smith 1992

- Patient centred reports reduce bias

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■ **Spine Focus Issue Introduction**
Outcome Assessments in the Evaluation of
Treatment of Spinal Disorders
Claire Bombardier, MD, FRCP

Table 1. Key Questions to Ask About an Outcome Measure

Content, Population/Setting, Purpose 1. Which outcomes do you want to measure? 2. Which population will you be studying and in what setting? 3. What is the purpose of your study—to describe, to predict, or to measure change? Content Validity 4. What domains and items are included? Are there important omissions or inappropriate inclusions? Face Validity 5. Is each question phrased in a suitable way? 6. Are the response categories appropriate? 7. Is there an overall score summarizing across questions? How is it calculated? Feasibility 8. Is it easy to understand? 9. Is it easy to use? (i.e., clear instruction manual) 10. Is it acceptable? 11. What format is it available in (self-administered, telephone, interviewer administered)? 12. How long does it take to administer?
--

Outcome Criteria

- Utility
 - Is it useful?
- Reliability
 - Is it dependable?
- Validity
 - Does it do what it is supposed to?
- Sensitivity
 - Can it identify patients with a condition?
- Specificity
 - Can it identify those that do not have the condition?
- Responsiveness
 - Can it measure differences over time?

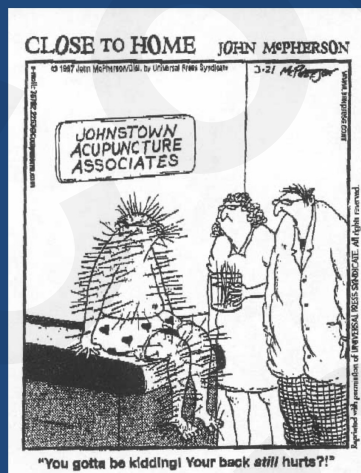
What comprises a good outcome in spinal surgery? A preliminary survey among spine surgeons of the SSE and European spine patients

M. Haefeli · A. Elfering · M. Aebi · B. J. C. Freeman ·
P. Fritzell · J. Guimaraes Consciencia · C. Lamartina ·
M. Mayer · T. Lund · N. Boos

- 30 spine surgeons 350 patients interviewed
- Agreement – a good outcome should include:
 - Achieving patients expectations / satisfaction
 - Pain relief
 - Improvement of disability
 - Social reintegration
- Outcome assessment has to be QUICK AND SIMPLE

Pitfalls of Outcome Qs

- Questionnaires must be filled in completely
 - Compliance issues
 - Need to be short and easy to understand
- Cross-cultures
- Standardization of research
 - Condition, surgery, follow up frequency etc.



1. Pain

- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage
- Pain perception may differ with time
- Usually over estimated during painful episode
- But, pain assessment retrospectively can be unreliable (poor accurate recall)

Visual Analogue Scale Pain Intensity

- Freyd (1923) – “The graphic rating scale”



- Need good instructions
- Problems with zero values
- Non categorical
- Good responsiveness to change
- NRS – good for telephone
- If offered 1-20 - Preference for numbers 10 and 15

Table 1. The Strengths and Weaknesses of Alternative Measures of Pain Intensity

Scale	Strengths	Weaknesses
Verbal Rating Scale	– easy to administer – easy to score – good evidence for construct validity	– can be difficult for persons with limited vocabulary – relatively few response categories compared to the VAS or NRS-101
Visual Analogue Scale	– compliance with measurement task is high – may approximate ratio scaling if CMM methods (or scores developed from CMM methods) are used	– if scored using the ranking method, the scores do not necessarily have ratio qualities – people forced to choose one word, even if no word on the scale adequately describes their pain intensity – extra step in scoring the paper-and-pencil version can take more time
Numerical Rating Scale	– easy to administer – many response categories if NRS-101 chosen – easy to score – compliance with measurement task is high – good evidence for construct validity – suitable for telephone administration	– some people, especially older people, have difficulty using VASs, adding an additional source of error – scores cannot necessarily be treated as ratio data

CMM = cross-modality matching.

McGill Pain Q

Pain Affect

- Allows quantification of pain by specifying the subjective pain experience and classifying it
- 3 components of pain
 - Sensory, affective, evaluative
- More detailed than VAS
- Other scores validated based on this one!
 - ODI, MSPQ, Waddell...

On the language of pain. By Ronald Melzack, Warren S. Torgerson. *Anesthesiology* 1971; 34:50-9. Reprinted with permission.

The McGill Pain Questionnaire
From Description to Measurement
Ronald Melzack, Ph.D.*

The form includes sections for Patient's Name, Date, Time, and Pain Rating (PRI, PPI, etc.). It lists 28 pain descriptors in two columns, each with a corresponding box for rating. A body diagram is provided for marking pain location (E for External, I for Internal). A comments section is at the bottom.

- Tick single box in each category, omit if n/a
- Score 0-78

ORIGINAL ARTICLE

Medication Quantification Scale Version III: Internal Validation of Detriment Weights Using a Chronic Pain Population

Michael Gallizi, MS¹; Christine Gagnon, PhD¹; R. Norman Harden, MD¹;
Steven Stanos, DO²; Anjum Khan, MD²

¹Center for Pain Studies, Rehabilitation Institute of Chicago, Northwestern University,
Chicago, Illinois; ²Chronic Pain Care Center, Chicago, Illinois, U.S.A.

- Tool used to objectively quantify pain
- Validated in chronic pain population
- Not been used in spinal outcomes (yet)
- Works on assumption of analgesic requirements for pain management

Medication Quantification Scale Version III: Update in Medication Classes and Revised Detriment Weights by Survey of American Pain Society Physicians

R. Norman Harden,* Stephan R. Weinland,* Thomas A. Remble,* Timothy T. Houle,*
Sean Colio,* Susan Steedman,* and William G. Kee[†]

Table 1. Pain Medication Class Detriment Weights

Medication Class	Mean (SD)	Median	2003 Weight	1998 Weight	1992 Weight
Topical/transdermal anesthetics, capsaicin	1.1 (0.8)	1	1.1	1*	—
Antidepressants — serotonin reuptake inhibitors	1.7 (0.9)	2	1.7	2*	2*
Antidepressants — other	1.9 (0.9)	2	1.9	2*	2*
Anticonvulsants — GABAergic	1.9 (1.0)	2	1.9	3*	—
Antihypertensives	2.0 (1.0)	2	2.0	—	—
Anti-anxiety — miscellaneous	2.1 (1.2)	2	2.1	2*	—
Muscle relaxants — non-dependency producing	2.2 (1.1)	2	2.2	3*	3*
Acetaminophen	2.2 (1.4)	2	2.2	1	1
Cyclooxygenase-2 inhibitors	2.3 (1.1)	2	2.3	—	—
Antidepressants — tricyclic/tetracyclic	2.3 (1.1)	2	2.3	2*	2*
Analgic — miscellaneous (ie, tramadol)	2.3 (1.1)	2	2.3	2	—
Anticonvulsants — sodium channel blockers	2.8 (1.1)	3	2.8	3*	—
Sedative hypnotics	3.1 (1.3)	3	3.1	4*	—
Opioids — Schedule II	3.4 (1.4)	3	3.4	5	6
Nonsteroidal anti-inflammatories	3.4 (1.2)	3	3.4	2	2
Antipsychotics	3.6 (1.2)	4	3.6	—	—
Opioids — Schedule IV	3.7 (1.3)	4	3.7	4	4
Opioids — Schedule III	3.7 (1.2)	4	3.7	4	4
Muscle relaxants — dependency producing	3.8 (1.3)	4	3.8	3*	3*
Benzodiazepines	3.9 (1.2)	4	3.9	5	4
Steroids	4.4 (1.3)	5	4.4	—	—
Barbiturates	4.5 (1.2)	5	4.5	5*	5*

Abbreviation: SD, standard deviation.

*Indicates medication classes combined in previous rankings.

**Table 3. Relative Dosage Scores, Based on
Physicians' Desk Reference (Current Year)
Recommendations**

Score	Recommendation
1	Subtherapeutic dose or occasional use, PRN
2	Lower 50% of the therapeutic dose range
3	Upper 50% of the therapeutic dose range
4	Supratherapeutic dose

Appendix 1. Medication Classes and Their Representative Examples

Medication Classes	Representative Examples
Topical/transdermal anesthetics/agents, capsaicin	Lidocaine (Zylocaine, Lidoderm), benzocaine (various), capsaicin (Zostrix)
Antidepressants — serotonin reuptake inhibitors	Fluoxetine hydrochloride (Prozac), paroxetine hydrochloride (Paxil)
Antidepressants — other	Venlafaxine hydrochloride (Effexor), mirtazapine (Remeron)
Anticonvulsants — GABAergic	Gabapentin (Neurontin), topiramate (Topamax)
Antihypertensives	Clonidine hydrochloride (Catapres), nifedipine (Procardia)
Anti-anxiety — miscellaneous	Bupropion hydrochloride (Wellbutrin)
Muscle relaxants — non-dependency producing	Cyclobenzaprine hydrochloride (Flexaril), baclofen (Lioresal)
Acetaminophen	(Tylenol)
Cyclooxygenase-2 inhibitors	Celecoxib (Celebrex), valdecoxib (Bextra)
Antidepressants — tricyclic/tetracyclic	Amitriptyline (Elavil), nortriptyline (Pamelor)
Analgic — miscellaneous	Tramadol hydrochloride (Ultram)
Anticonvulsants — sodium channel blockers	Phenytoin sodium (Dilantin), carbamazepine (Tegretol), oxcarbazepine (Trileptal)
Sedative hypnotics	Chloral hydrate (Noctec), zolpidem tartrate (Ambien)
Opioids — Schedule II	Morphine (various), fentanyl (Actiq, Duragesic) add oxycodone (Oxycontin)
Nonsteroidal anti-inflammatories	Aspirin (ASA), ibuprofen (Motrin), diclofenac sodium (Voltaren)
Antipsychotics	Haloperidol (Haldol), olanzapine (Zyprexa)
Opioids — Schedule IV	Propoxyphene napsylate + acetaminophen (Darvocet), butorphanol (Stadol)

Name: Jane Doe Date: July 2, 2004

MQS III

MEDICATION QUANTIFICATION SCALE

Drug	Dosage Mg/day	Detriment Weight (Table 1)	(X)	Dosage Level (Table 2)	(=)	MQS Score
Morphine Sulfate (IR)	5 mg PRN	3.4	X	1	=	3.4
Tramadol HCl	50 mg QID	2.3	X	2	=	6.9
Nortriptyline HCl	50 mg qHS	2.3	X	3	=	4.6
Aspirin (325 mg)	15 tabs/day	3.4	X	4	=	13.6
TOTAL SCORE						28.5

Figure 2. Sample MQS III computation sheet.



JOA Back Pain Evaluation

- Validated
- 25 items / questions
- 5 factors
 - Social function, mental health, lumbar function, walking ability and low back pain
- 6 to 28

J Orthop Sci (2009) 14:348–365
DOI 10.1007/s00770-008-1370-8

Journal of
ORTHOPAEDIC SCIENCE
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From the Japanese Orthopaedic Association

**JOA Back Pain Evaluation Questionnaire (JOABPEQ)/
JOA Cervical Myelopathy Evaluation Questionnaire (JOACMEQ)
The report on the development of revised versions
April 16, 2007**

The Subcommittee of the Clinical Outcome Committee
of the Japanese Orthopaedic Association
on Low Back Pain and Cervical Myelopathy Evaluation

MITSUHI FUKUI¹, KAZUHIRO CHIBA², MASAHITO KAWAKAMI³, SHINICHI KIKUCHI⁴, SHINICHI KOSUGA⁵,
MASAHITO MITSUNAGA⁶, AKIHIRO SUGITA⁷, TOSIYUKI SUGIMARU⁸, OSAKI SUGIYAMA⁹, YOSHIMASA TAKAGI¹⁰,
KAZUHIRO TAKAHASHI¹¹, KATSUHIKI TAKEHITAT¹², TORIYASU TANI¹³, YOSHIAKI TORIYAMA¹⁴, KAZUO YOSHINOBU¹⁵,
EIN WADA¹⁶, TAKASATO TANAKA¹⁷, and YOSHIO HASEGAWA¹⁸

JOA vs ODI, RMDQ and SF36

- Crossing the cultures
- JOA developed independently in Japan
- SF36 already validated in Japanese
- ODI and RMDQ translated and validated then comparison to JOA made
- JOA reliable and valid
- Studies on responsiveness required

SPINE Volume 28, Number 14, pp 1601–1607
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Association of the Japanese Orthopaedic Association Score With the Oswestry Disability Index, Roland- Morris Disability Questionnaire, and Short-Form 36

Atsushi Fujiwara, MD, Naoki Kobayashi, MD, Kazuhiko Saiki, MD, Tomoaki Kitagawa, MD,
Kazuya Tamai, MD, and Koichi Saitome, MD

Anterior Interbody Lumbar Spine Fusion: ANALYSIS OF MAYO CLINIC SERIES

RICHARD N. STAUFFER and MARK B. COVENTRY
J Bone Joint Surg Am. 1972;54:756-768.

Posterolateral Lumbar-Spine Fusion: ANALYSIS OF MAYO CLINIC SERIES

RICHARD N. STAUFFER and MARK B. COVENTRY
J Bone Joint Surg Am. 1972;54:1195-1204.

- “Stauffer and Coventry” Score 1972
- Quantify clinical result from surgery
- Can be used in retrospective studies
- Generic – can be applied to most studies
- Not validated
- But cited in >200 spinal studies

CRITERIA FOR ESTIMATE OF CLINICAL RESULT IN POSTEROLATERAL LUMBAR-SPINE FUSION

Result	Relief of Back and Leg Pain (Per cent)	Criterion Return to Employment	Restriction of Physical Activities	Use of Analgesic
Good	76–100	Yes	No or slight	No or infrequent
Fair	26–75	Yes, with limitations or less strenuous work	Yes (limited activities)	Frequent (mild)
Poor	<25 (or worse than before operation)	No, disabled	Yes (greatly limited activities)	Regular (strong or narcotic)

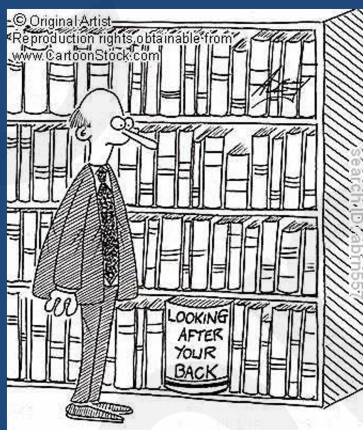
TABLE E-1 Modified Stauffer-Coventry Score

Parameter	Grade 0	Grade 1	Grade 2	Grade 3	Grade 4	Total
Postoperative	Postoperative	Frequent	Moderate	None		3
Radicular pain	Postoperative	Frequent	Effort	None		3
Neurologic deficit	Mild	Moderate		None		4
Moderation	Mild	Moderate		None		2
Daily living activities	Impossible	Normal				2
Postoperative work status	No work	Frequently stopped	Change	Same work <6 months, change <3 months	Normal	4
Psychiatric status	Prooperative	Secondary to pathology	None			2
Total						20

TABLE E-2 Scoring of Low-Back Pain, Lower-Limb Pain, and Disability

	0 Points	1 Point	2 Points	3 Points
Low-back pain	None	Mild	Moderate	Severe
Lower-limb pain	None	Mild	Moderate	Severe
Disability	None	Slight	Substantial	Severe

3. Psychological Well Being



SPINE Volume 27, Number 4, pp E109–E120
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A Systematic Review of Psychological Factors as Predictors of Chronicity/Disability in Prospective Cohorts of Low Back Pain

Tamar Pincus, PhD,* A. Kim Burton, PhD,† Steve Vogel, DO,‡ Andy P. Field, PhD§

Somatization

ORIGINAL ARTICLE

**Anxiety
Depression
Distress**

**Predict
Poor
Outcome**

O. Haeghe,
P. L. J. M.
L. A. Nordwall

**Predictors of outcome in fusion
for chronic low back pain.
A report from the
Swedish Lumbar Spine Study**

SPINE Volume 25, Number 20, pp 2616–2621
©2000, Lippincott Williams & Wilkins, Inc.

A Prospective Study of Psychological Predictors of Lumbar Surgery Outcome

Paula M. Trief, PhD,* William Grant, EdD,† and Bruce Fredrickson, MD†

MZDI

- Developed in 1965
- Reliable and valid
- There are ten positively worded and ten negatively worded questions
- Scores 25-100
 - 25-49 Normal Range
 - 50-59 Mildly Depressed
 - 60-69 Moderately Depressed
 - 70 + Severely Depressed

MZDI

Please indicate for each of these questions which answer best describes how you have been feeling recently.

	Rarely or none of the time (less than 1 day per week)	Sometimes or a little of the time (1-2 days per week)	A moderate amount of time (3-4 days per week)	Most of the time (5-7 days per week)
1. I feel downhearted and sad				
2. Morning is when I feel best				
3. I have crying spells or feel like it				
4. I have trouble getting to sleep at night				
5. I feel that nobody cares				
6. I feel as much as I used to				
7. I still enjoy sex				
8. I notice I am losing weight				
9. I have trouble with constipation				
10. My heart beats faster than usual				
11. I get tired for no reason				
12. My mind is as clear as it used to be				
13. I tend to wake up too early				
14. I find it easy to do the things I used to				
15. I am restless and can't keep still				
16. I feel hopeful about the future				
17. I am more irritable than usual				
18. I find it easy to make a decision				
19. I feel quite guilty				
20. I feel that I am useful and needed				
21. My life is pretty full				
22. I feel that others would be better off I were dead				
23. I am still able to enjoy the things I used to				

Source: Main C, Wood P, Hollis S, Spanwick C, Waddell G (1992) The Distress and Risk Assessment Method. A simple patient classification to identify distress and evaluate the risk of poor outcome. Spine 17: 42-52.

MSPQ

Journal of Psychosomatic Research, Vol. 27, No. 6, pp. 503-514, 1983.
Printed in Great Britain. 0022-3999/83 \$3.00+00
© 1983 Pergamon Press Ltd.

THE MODIFIED SOMATIC PERCEPTION QUESTIONNAIRE (MSPQ)

CHRIS J. MAIN*

- Designed specifically for chronic back pain patients
- Measures psychological distress
- Not validated for surgical outcome

MSPQ

Please describe how you have felt during the PAST WEEK by marking a check mark (✓) in the appropriate box. Please answer all questions. Do not think too long before answering.

	Not at all	A little, slightly	A great deal, quite a bit	Extremely, could not have been worse
Heart rate increase				
Feeling hot all over				
Sweating all over				
Sweating in a particular part of the body				
Pulse in neck				
Pounding in head				
Dizziness				
Blurring of vision				
Feeling faint				
Everything appearing unreal				
Nausea				
Butterflies in stomach				
Pain or ache in stomach				
Stomach churning				
Desire to pass water				
Mouth becoming dry				
Difficulty swallowing				
Muscles in neck aching				
Legs feeling weak				
Muscles twitching or jumping				
Tense feeling across forehead				
Tense feeling in jaw muscles				

Source: Main C, Wood P, Hollis S, Spanwick C, Waddell G (1992) The Distress and Risk Assessment Method. A simple patient classification to identify distress and evaluate the risk of poor outcome. Spine 17: 42-52.

DRAM – MSPQ and MZDI

- Distress and Risk Assessment Method

	MZDI	MSPQ
– Normal	<17	NA
– At Risk	17-33	<12
– Distressed/Depressive	>33	NA
– Distressed/Somatic	17-33	>12

- Validated for surgical outcome

Fear-Avoidance Beliefs Q

- Based on patients beliefs on how physical activity and work affected LBP
- Highlights the fact that fear avoidance beliefs should be considered in LBP management

Pain, 52 (1993) 157-168
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PAIN 02198

A Fear-Avoidance Beliefs Questionnaire (FABQ) and the role of fear-avoidance beliefs in chronic low back pain and disability

Gordon Waddell^a, Mary Newton^a, Iain Henderson^a, Douglas Somerville^a and Chris J. Main^b

^a Orthopaedic Department, Western Infirmary, Glasgow G11 6NT, Scotland (UK)
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(Received 13 December 1991; revision received 26 August 1992; accepted 26 August 1992)

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"I'M THE ONE WITH THE MEDICAL DEGREE, I'LL DETERMINE
IF YOUR BACK IS BOTHERING YOU, OR NOT..."

search ID: dc0574

MMPI - 2

- Minnesota Multiphasic Personality Inventory v2
- 338 T/F Qs, approx 1 hour (poor compliance)
- Requires specialist administration and scoring
- Hs + Hy predict poor outcome for back surgery

Number	Abbreviation	Description	What is Measured	No. of Items
1	Hs	Hypochondriasis	Concern with bodily symptoms	32
2	D	Depression	Depressive Symptoms	57
3	Hy	Hysteria	Awareness of problems and vulnerabilities	60
4	Pd	Psychopathic Deviate	Conflict, struggle, anger, respect for society's rules	50
5	MF	Masculinity/Femininity	Stereotypical masculine or feminine interests/behaviors	56
6	Pa	Paranoia	Level of trust, suspiciousness, sensitivity	40
7	Pt	Psychasthenia	Worry, Anxiety, tension, doubts, obsessiveness	48
8	Sc	Schizophrenia	Odd thinking and social alienation	78
9	Ma	Hypomania	Level of excitability	46
0	Si	Social Introversion	People orientation	69

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"Don't swing and heave, lift and tilt.
That's much easier on the back,
and, I might add, proper etiquette."

search ID: dc0574

4. Quality of Life

- WHO definition:
 - Individuals perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.
- It is subjective
- Mainly used in combination with disease specific and disability questionnaires
- Can be applied to virtually any complaint
- Many different ways to measure...

QALYs

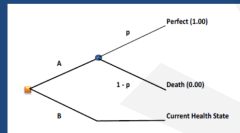
- Outcome measure for cost utility analysis
- Combine quality and quantity of life
- Combine M+M into a single measure
- Permits comparison of interventions with much different effects

QALYs

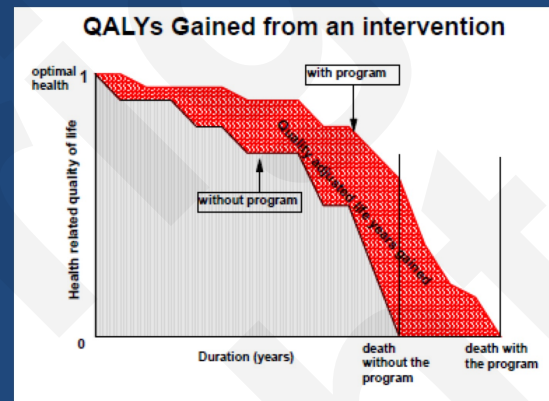
- Complicated
 - Data required:
 - Utility values for the health states
 - Health states over time
 - Method of summing health state values over time and population
- Pricing life and quality of life is difficult
- QALY Instruments – HRQOL tools
 - WHOQOL, SF36, EuroQol, PGWBI etc.

QALY Calculation (commonest method)

- Standard Gamble Method – Decision Theory
- Individual asked to choose between less desirable (but certain) chronic health state and a gamble offering a certain probability of death or improved health state (healthy)
- Utility death = 0
- Utility perfect health = 1
- Back pain = $1-x$
- Patient decides x
- x = probability of dying
- Individuals versus population means



QALY



WHOQOL-100 / BREF

- 100 questions / 6 Domains
 - Physical, psychological, level of independence, social relationships, environment, spirituality / religion
 - 5 points for each question, converted to score / 100
- Shorter version – BREF
 - 24 items
- Extensively validated but only in a few musculoskeletal disorders

Short form 36 (SF 36) health survey questionnaire: normative data for adults of working age

Crispin Jenkinson, Angela Coulter, Lucie Wright

- 36 questions / 8 scales
 - Physical functioning, role physical (problems work / ADLs), bodily pain, general health, vitality, social functioning, role emotional (problems work / ADLs), mental health
 - 1st 4 grouped as physical health
 - 2nd 4 grouped as mental health
- 10-15mins to do but complex to score
- Copyright
 - Have to pay to use it!

THE SHORT FORM-36 HEALTH SURVEY QUESTIONNAIRE IN SPINE SURGERY

MICHAEL GREVITT, RABI KHAZIM, JOHN WEBB, ROBERT MULHOLLAND, JOHN SHEPPERD

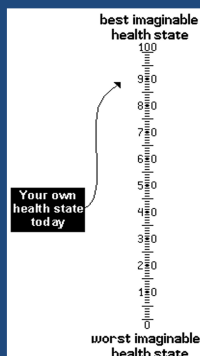
From Queen's Medical Centre, Nottingham, England

- Most commonly used self assessment generic quality of life instrument
- Excellent IC / V / R
- Most sensitive instrument at detecting changes over time
- 1 week (acute recall) and 4 week (standard) versions
- SF12 and 8 versions
- SF8 has a 24 hour recall version

EuroQol – 5D

- Standardised non-disease-specific health related quality of life instrument
- EQ5D
 - 1st part – 5 statements rated 1-3 in severity
 - Background information
 - Mobility, self care, usual activities, pain / discomfort, anxiety / depression
 - 2nd part – graphic rating scale 0-100
 - Actual state of health today
- Simplest instrument to use
- Less sensitive than SF36 and susceptible to ceiling effects

EuroQol – 5D



- MOBILITY
 - ✦ I have no problems in walking about
 - ✦ I have some problems in walking about
 - ✦ I am confined to bed
- SELF-CARE
 - ✦ I have no problems with self-care
 - ✦ I have some problems washing or dressing myself
 - ✦ I am unable to wash or dress myself
- USUAL ACTIVITIES (e.g. work, study, housework family or leisure activities)
 - ✦ I have no problems with performing my usual activities
 - ✦ I have some problems with performing my usual activities
 - ✦ I am unable to perform my usual activities
- PAIN/DISCOMFORT
 - ✦ I have no pain or discomfort
 - ✦ I have moderate pain or discomfort
 - ✦ I have extreme pain or discomfort
- ANXIETY/DEPRESSION
 - ✦ I am not anxious or depressed
 - ✦ I am moderately anxious or depressed
 - ✦ I am extremely anxious or depressed

PGWB Index

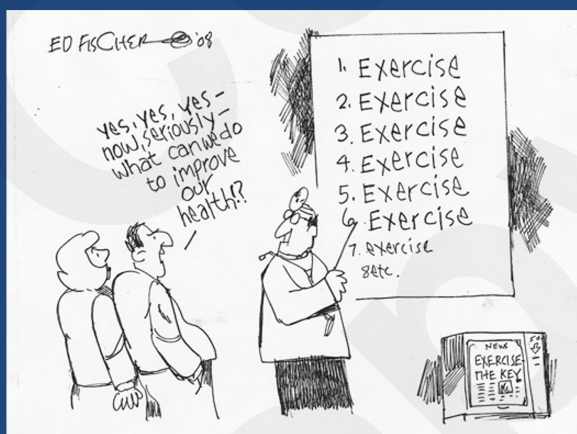
- Psychological general well being index
- 22 questions, 6 domains
 - Anxiety, depression, well-being, self-control, health, vitality
- Extensively validated esp chronic pain
- **Good for over the telephone**



5. A Review of Health-Related Work Outcome Measures and Their Uses, and Recommended Measures

Benjamin C. Amick III, PhD,*† Debra Lerner, MS, PhD,‡§ William H. Rogers, PhD,‡
Ted Rooney, BSRN, MPH,‡ and Jeffrey N. Katz, MD, MS¶#

- **Work outcomes**
 - **Socially and economically important endpoints**
- Classify
 - Usual job, light / restricted duties, unpaid leave, unemployed because of health, unemployed other reason, student, keeping house / homemaker, retired, on disability
- Outcome can be influenced by / things to think about
 - Job satisfaction, monotonous tasks, work relations, demands, stress, perceived ability to work
- **Minimum outcome dataset should include work status at first and last visit**



The Characteristics of Patient Satisfaction Measures

Pamela L. Hudak, MSc, BScPT,* and James G. Wright, MD, MPH, FRCSC†‡

- Patient satisfaction
 - Care
 - Scale
 - Treatment Outcome
 - Global
- **Unfortunately for the surgeon, patient satisfaction is an important outcome measure!**

Comparison of patient and surgeon ratings of outcome 12 months after spine surgery

Presented at the 2009 Joint Spine Section Meeting

Clinical article

FRANÇOIS PORCHET, M.D.,¹ FRIEDRIKE LATTIG, M.D.,² DIETER GROB, M.D.,²
FRANK S. KLEINSTUECK, M.D.,² DEZSŐ JESZENSZKY, M.D.,² CHRISTOPHE PAUS, M.D.,³
DAVID O'RIORDAN, B.Sc.,⁴ AND ANNE F. MANNION, Ph.D.⁵

- 404 patients and their surgeons (6)
- All types spinal surgery
- Core Outcome Measures Index
 - baseline pre op and 12 months post op
- **Global outcome /5 and satisfaction with surgeon /5**
- **Surgeon blinded and rated outcome as excellent, good, fair, poor (McNab 1973)**

Comparison of patient and surgeon ratings of outcome 12 months after spine surgery

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DAVID O'RIORDAN, B.Sc.,⁴ AND ANNE F. MANNION, Ph.D.⁵

- Significant correlation between surgeon and patients global outcome ratings
- **Senior surgeons**
 - Overrated outcome in 25%, Underrated in 18%
- **Junior surgeons**
 - Overrated outcome in 8%, Underrated in 44%
- For a balanced view of surgical result, outcomes should be assessed from the perspectives of both the surgeon and patient



Eur Spine J (2004) 13:301–313
DOI 10.1007/s00586-003-0665-1

REVIEW

U. Müller
M. S. Duetz
C. Roeder
C. G. Greenough

Condition-specific outcome measures for low back pain Part I: Validation

- ODI, RMDQ, LBOS, QBPDS, MVAS, ALBDS, NASS, LBPRS, Waddell
- General characteristics, reliability, internal consistency, responsiveness to change, external validation, floor and ceiling effect

But which one should I use?

1. Reliable
 - all 9 are validated
2. Responsiveness – MCID
 - ODI, RMDQ, LBOS, QBPDS, WDI
3. Comparability with literature
 - ODI and RMDQ +/- LBOS
4. Language
 - ODI and RMDQ
5. Easy to complete and score
 - RMDQ, LBOS, QBPDS, VAS, WDI (ODI)



Do I need a generic score as well?

- Yes!
 - Broad assessment of health, disability and QoL
 - Allow comparison of relative impact that the different conditions of the disease have on the health of the patient
- = SF36**
- Condition specific questionnaires allow us to measure the impact of the intervention on the primary condition

Outcome Assessments in the Evaluation of Treatment of Spinal Disorders
Summary and General Recommendations
Claire Bombardier, MD, FRCP

Table 1. A Proposed Set of Patient-Based Outcome Measures for Use in Spinal Disorders

Domain	Instrument	# of Items (Response Options)	Score (Best to Worst)	Time to Complete	Dimensions
Back specific function	Roland-Morris	24 (yes/no)	0-24	5 minutes	Physical activities, household, mobility, dressing, getting help, appetite, emotional, pain
	or Oswestry	10 (6 levels)	0-100	5 minutes	Pain intensity, personal care, lifting, walking, sitting, standing, sleeping, sex life, social life, travelling
Generic health status	SF-36 version 2.0	36 (variable)	8 dimensions: 100-0 each or norm-based: Mean: 50; SD: 10	10 minutes	Eight Dimensions: physical function, role physical, bodily pain, general health, vitality, social function, role emotional, and mental health. Can be aggregated into two components: Physical and mental health
Pain	Bodily Pain Scale of SF-36	2 (variable)	100-0 or norm-based: mean: 50; SD: 10	2 minutes	Pain intensity, pain interference with work and household
	(optional) Chronic Pain Grade	7 (11 pt NRS) + number of days in pain		5 minutes	Current, worse, and average pain, disability days, interference with usual activities, recreational, social and family activities, and work (incl. household)
Work disability*	Work status	10 categories	Nominal scale	1 minute	Employed at usual job, on light duty, or some restricted work assignment, paid leave/back leave, unpaid leave, unemployed because of health problems, unemployed because of other reason, student, keeping house/ homemaker, retired, on disability
	Days off work and days of cut down work	# of days		2 minutes	
	Time to return to work	# of days		2 minutes	
	Satisfaction with care: Patient Satisfaction Scale	17 (6 levels)			Information, caring, effectiveness of treatment, and others
Satisfaction: back specific	Satisfaction with treatment outcome: Global question	1 (7 levels)	1-7	1 minute	Extremely very, somewhat satisfied, mixed, somewhat, very, extremely dissatisfied





SPINE Volume 31, Number 12, pp 1372-1379
©2006, Lippincott Williams & Wilkins, Inc.

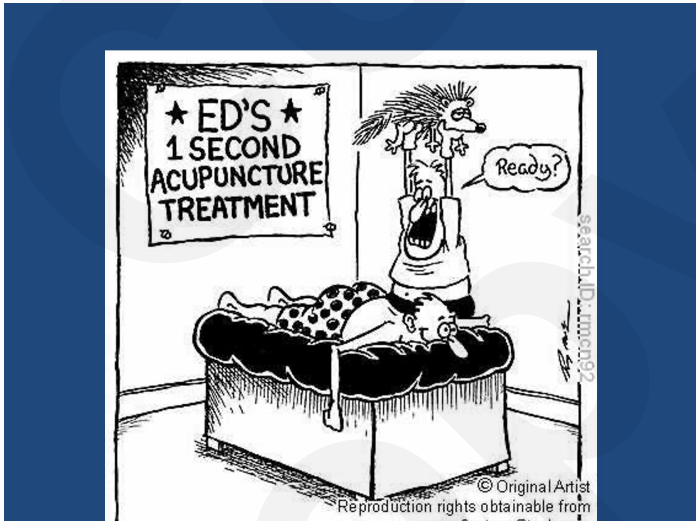
Validation of a Minimum Outcome Core Set in the Evaluation of Patients With Back Pain

2006

Montserrat Ferrer, MD, MPH, PhD,* Ferran Pellisé, MD,†† Oscar Escudero, MD,†
Luis Alvarez, MD,‡§ Angels Pont, DipStat,* Jordi Alonso, MD, PhD,*¶
and Richard Deyo, MD, MPH¶

- Comprises 7 questions
- 154 patients subacute osteoporotic fracture or chronic low back pain
- Compared to SF36 and ODI
- Good correlation, internal consistency, construct validity, test retest reliability, sensitivity to change
- Need more studies evaluating it...

Table 3 Technical data of the nine condition-specific questionnaires in comparison										
	ODI	RMDQ	LBOS	QBPD	MVAS	ALBIS	NASS LSO	LBPRS	WDI	
Floor effect	Yes [49]	Unknown	0% [27]	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	16.1% [27]
Ceiling effect	Unknown	Present [59]	4.6% [27]	Unknown	Unknown	Unknown	Unknown	Unknown	Unknown	1.0% [27]
Retest Pearson correlation	0.83 [29]	0.91 [55]	0.92 [32]	0.67 [26]	0.92 [46]	0.94 [56]	0.85-0.99 [15]	—	—	0.73-0.9
Kappa values	0.91 [38]	0.83 [17]	—	—	—	—	—	—	—	—
Bland-Altman plot	—	—	0.51-0.86 [32]	—	—	—	—	—	—	0.27-1.0
ICC	0.91/0.9 [26]	0.53 [16]	—	0.92/0.55 [26]	—	—	26.6 [56]	—	—	0.74 [16]
Cronbach's alpha	0.84 [16]	0.86 [59]	—	0.84 [16]	—	—	—	—	—	—
Spearman rank analysis	0.89 [11]	0.91 [38]	—	0.92 [38]	—	—	—	—	—	—
ROC with an AUC value of	0.76 [25]	0.89/0.92 [33]	0.85 [32]	0.96 [38]	0.93 [46]	0.8 [56]	0.88 [15]	0.98 [44]	—	—
Norman-Steiner sensitivity analysis	0.81 [38]	0.91 [61]	—	—	—	—	—	—	—	—
Standardized response mean	0.77/0.53 [31]	—	—	—	—	—	—	—	—	—
MCID	0.59 [60]	0.6 [60]	—	—	—	—	—	—	—	—
Compared with	0.76 [4]	0.78/0.74	—	0.87/0.74	—	—	—	—	—	0.76 [16]
	15 [16]	8.6-9.5 [16]	—	0.74 [16]	—	—	—	—	—	0.87 [26]
	6 [29]	4 [59]	—	0.93 [38]	—	—	—	—	—	—
	RMDQ	ODI	ODI [27, 63]	RMDQ [16, 38]	ODI [46, 70]	SF36 [56]	SF36 [15]	ODI [11]	RMDQ [16]	—
	[23, 25, 45]	[16, 33, 42]	WDI [27]	WDI [27]	RMDQ [16]	—	—	—	QVPS [16]	—
	QBPD [16, 26, 38]	[16, 38]	SF36 [63]	SF36 [16, 38]	WDI [16]	—	—	—	ODI [16]	—
	WDI [16, 63]	WDI [16]	—	—	—	—	—	—	LBOS [27]	—
	LBOS [27]	SF36 [16]	—	—	—	—	—	—	SF36 [16]	—
	SF36 [16]	—	—	—	—	—	—	—	MVAS [70]	—
	MVAS [70]	—	—	—	—	—	—	—	LBPRS [11]	—



Red Flags
Physical Risk Factors
Yellow Flags
Psychosocial Risk Factors
Blue Flags
Occupational Risk Factors

RED FLAGS OF SERIOUS SPINAL PATHOLOGY

Prompt referral (Less Than 4 Weeks)

- Presentation under age 20 or onset over 55
- Unwell, weight loss
- Widespread neurology
- Non-mechanical pain, thoracic pain
- Structural deformity
- Past history carcinoma, steroids, HIV

YELLOW FLAGS

- COMPENSATION ISSUES
- ATTITUDES AND BELIEFS
- EMOTIONS
- DIAGNOSIS AND TREATMENT
- FEAR AND BELIEFS
- WORK
- FAMILY AND CARERS

BLUE FLAGS

OCCUPATIONAL HEALTH GUIDELINES

- Pre placement assessment
- Prevention
- Assessment of the worker with back pain
- Management principles for the worker
- Management of the worker having difficulty returning to normal occupational duties at 4-12 weeks

BLUE FLAGS Prevention

- Manual handling regulations
- joint employer-worker initiatives to identify and control risks
- Monitor back problems and sickness absence from LBP
- develop safety 'culture'

BLUE FLAGS

Management of the worker having difficulty returning to occupational duties at 4-12 weeks

- Address misconception of need to be pain free to return to work
- Advise on job adjustment
- Communicate with primary care to emphasise rehab and self management

Waddell

- Tenderness
 - Superficial
 - Nonanatomic
- Simulation
 - Axial loading
 - Trunk rotation
- Distraction
 - Straight Leg Raising
- Regional
 - Nonanatomic weakness
 - Nonanatomic sensation
- Over-reaction

1979 Volvo Award in Clinical Science

Nonorganic Physical Signs in Low-Back Pain

GORDON WADDELL, BSc, MD, FRCS(Ed), * JOHN A. McCULLOCH, MD, FRCS(C), * ED KUMMEL, MD, FRCS(C), FACS,* and ROBERT M. VENNER, MB, ChB, FRCS(Ed)*

3+ = non organic

ORIGINAL INVESTIGATION

A Brief Measure for Assessing Generalized Anxiety Disorder

The GAD-7

Robert L. Spitzer, MD; Kurt Kroenke, MD; Janet B. W. Williams, DSW; Bernd Löwe, MD, PhD

- Valid and efficient screening tool for anxiety

GAD-7

Over the last 2 weeks, how often have you been bothered by the following problems?	Not at all	Several days	More than half the days	Nearly every day
1. Feeling nervous, anxious or on edge	0	1	2	3
2. Not being able to stop or control worrying	0	1	2	3
3. Worrying too much about different things	0	1	2	3
4. Trouble relaxing	0	1	2	3
5. Being so restless that it is hard to sit still	0	1	2	3
6. Becoming easily annoyed or irritable	0	1	2	3
7. Feeling afraid as if something awful might happen	0	1	2	3

Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

The PHQ-9

Validity of a Brief Depression Severity Measure

Kurt Kroenke, MD, Robert L. Spitzer, MD, Janet B. W. Williams, DSW

- GAD7 and PHQ9 used as screening tools in General Practice in UK

Name _____ Date _____

Over the last 2 weeks, how often have you been bothered by any of the following problems?

	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself—or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite—being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

(For office coding: Total Score _____ = _____ + _____ + _____ + _____)

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐