Quality of life in cancer patients: concepts and measurement

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Outline

- Conceptual issues

  - Theoretical models undertlying QoL measurement

  - Components of QoL

  - Response shift phenomena

- Methodological issues

  - Development of QoL questionnaires

  - The EORTC QLG experience

Introduction

- Cancer and its treatments are often associated to short-term side-effects and invalidating long term sequelae

- … affect the individual non only physically but also at the psychological, socio-professional, familial, existential… levels

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Origin – Cancer clinical trials

- Overall survival

- Survival without recurrence

- Response to treatment

    * Biomedical outcomes

- Safety, tolerability (adverse events , toxicity criteria, performance status)

    * Clinician's observed

QoL introduction to assess clinical effectiveness

- *Health Related Quality of Life (HRQOL)*

➢ *Patient-reported outcomes (PROs) (< FDA, EMA)*

  ➢ *Patient-reported outcome measures (PROMs) (questionnaires)*

  = any data that are <u>reported directly by the patient</u> without an intermediary such as a family member or a healthcare professional (Willke, 2004), including symptoms, functions, well-being, pain, fatigue, overall HRQoL…

For which purposes?

- Increasing interest in QoL assessment in research and clinical practice in oncology
  - Medline: from *561* citations in 1981 to 85 to *10 717 in* 2002 to 06 and *15 562 in* 2007 to 2011
  - However lower increase than biomedical publications (Sanson-Fisher, 2009)
- Applications of QoL assessment
  - Clinical trials (mainly comparative)
  - Cost-effectiveness studies
  - Epidemiological studies
  - Clinical practice
  - Quality of care indicator

Priorities (votes) in quality of care measures development in oncology (Hassett, JOP, 2013)

Patient assessment and supportive care		
Comprehensive symptom assessment*†	8	Evaluating panel of symptoms before, during, or after therapy
Assessment of distress and psychosocial needs	3	Assessing and addressing social and psychosocial needs of patients and their caregivers
Management of distress and depression	3	Timely and effective evaluation and management of distress/depression
Assessment of pain, nausea, fatigue, and sexual dissatisfaction†	0	Tools evaluating individual symptoms were suggested before summit; during discussion, there was more interest in comprehensive assessment tools
Assessment of performance and functional status*†	7	Assessment and documentation of performance (eg, Zubrod or Karnofsky) and functional status
Assessment and support of patients and caregivers at end of life*	6	Evaluating needs of and support provided to patients and caregivers at end of life
Patient experience of care*†	8	Cancer CAHPS was main instrument discussed; development is under way

Compliance with treatment guidelines -   6

For which reasons?

- Patients and clinicians provide discrepant data on symptoms (Fromme, 2004; Basch, 2009)

  - Clinicians under-estimate symptom severity
  - Clinicians' assessment are less reliable and sensitive to change
  - Patients report symptoms earlier than clinicians
  - Patients capture side-effects that clinicians miss

  => Skin toxicity (Neben-Wittich, 2011), severe diarrhea (Basch, 2011), neuropathy (Bennett, 2012), taste alteration (Kano, 2013)…

Benefits of QoL systematic reporting

- Predict meaningful clinical outcomes including survival
- Increase satisfaction with care
- Helpful in (shared) decision-making in clinical practice
- Improve symptom management and overall health status

(Detmar, 2002; Velikova, 2004; Abernethy, 2009 Snyder, 2010; Basch, 2010)

What are QoL instruments measuring?

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What is the meaning of « *quality of life* »?

- Different definitions depending on the disciplines
  - Notion of *happiness* (philosophy)
  - Subjective and material *well-being* (sociology and psychology)
  - *Mental and physical health* (medicine et psychiatry)

- Very individual and subjective

Purpose of QoL measures

Standardized QoL measures are meant to quantify components of quality of life as defined by operational definitions (Leplège, 1999)

One conceptual framework (*Wilson & Cleary, 1995; Ferrans et coll, 2005*)
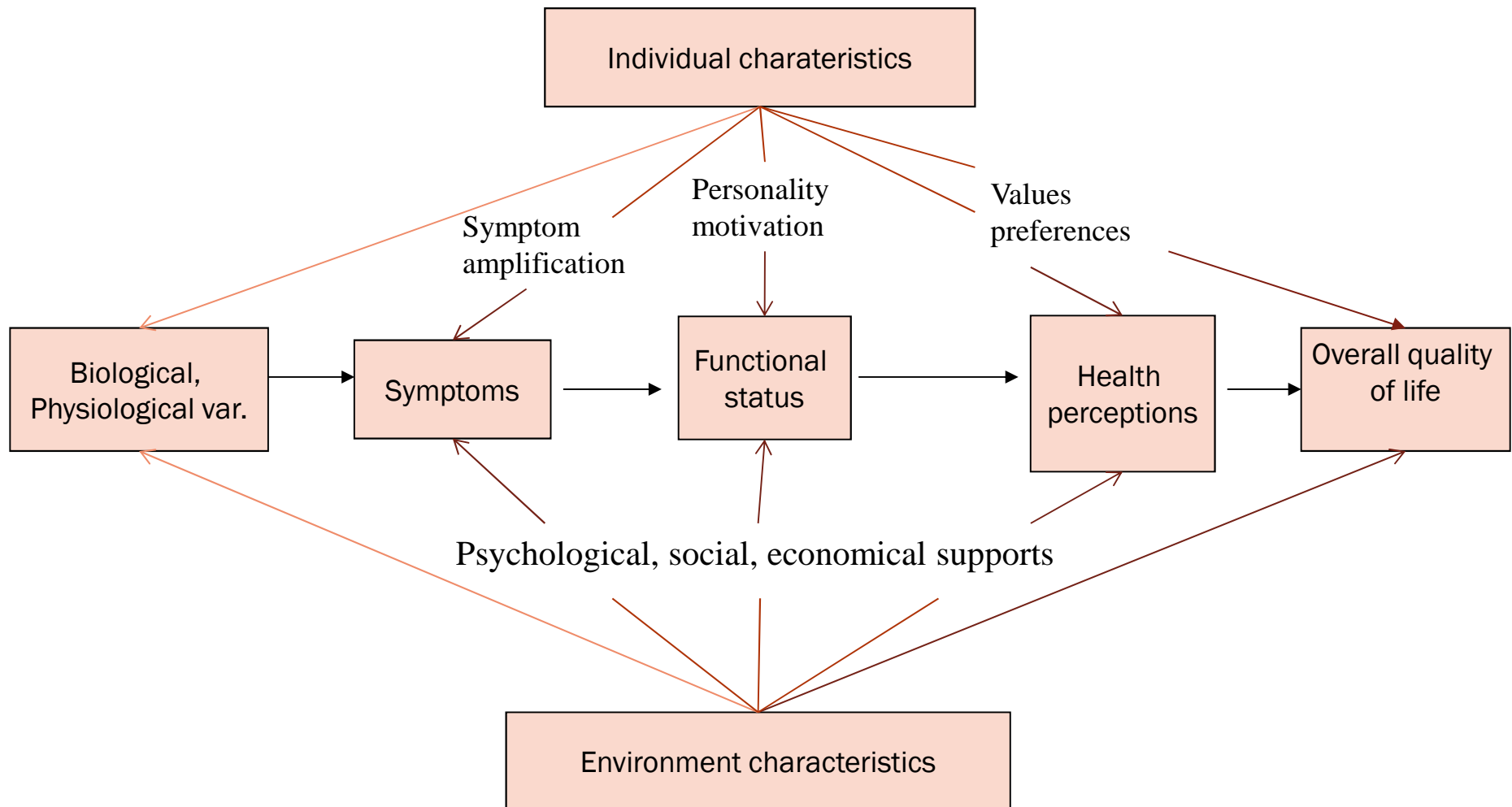
WHICH components? – Functioning/Well-being

- Dysfunctions
  - « *Functional effects* of illness and its treatments on patients as perceived by the patient » (Schipper, 1996)

- Overall impact of illness
  - « Degree to which the *present or expected physical, emotional, social well-being* is affected by the medical condition or treatments » (Cella, 1995)

E.g.: the disease impact on sexuality, not just sexual functioning but also marital relationship

Negative impacts

Fear of death

Pain

Handicap

Cancer

Dependancy

Isolation

Loss of role and identity

Alteration of body image

Positive impacts

Positive responses to the stressful event

« Post-traumatic growth »

- Self-esteem
- Life appreciation
- Meaning in life
- Spiritual well-being
- Benefit finding
- Peace feeling

WHO? – Different perspectives

PS (or Toxicity)

- Functional status (physical activity)
- Reported by observer

QoL

- Multidimensional (psychological, physical,…)
- Reported by the patient

HOW? Definition

- Evaluation

  - «Health related quality of life is the *value assigned to duration of life* as modified by the impairments, functional states, perceptions and social opportunities that are influenced by disease, injury, treatment or policy.» (Patrick & Ericson, 1993)

- Perception and evaluation

  - « Quality of life is defined *as individuals' perceptions 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*.» (OMS, 1994)

HOW? - Perception/Evaluation

- *Vous sentez-vous fatigué?* (*Perception*)

- *Votre état de fatigue perturbe-t-il…?* (*Evaluation*)

- Both types of question may be influenced by different psychological factors

  - Perception < individual characteristics like pessimism, amplification/minimization

  - Evaluation < values, expectations, needs, comparisons with others

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HOW? - types of questionnaires

Preference-based

- Value attributed to life duration
- *Questionnaires*
  - Health states
  - Preferences / utility (QALYs)
  - Index : 0 (death, or worse) à 1(perfect health)

Psychometrically-based (OMS, 1994)

- Amount, severity, frequency, burden, quality (perception, value)
- *Questionnaires (scales)*
  - HRQOL
  - Multidimensional
  - Profile of scores/dimensions

QoL, dynamic concept
(Allison, 1997)

- Relativity *theory* (Einstein) *« an observer of an apparently moving body cannot be sure if the body really has moved, if he/she has moved or if both events have occurred. »*

- To assess QoL, we suppose that the reference point does not move

- However attitudes change over time according to experiences encountered

Little difference between QoL in healthy persons vs cancer survivors – « *satisfaction paradoxe* »

- *Response shift* phenomena (Sprangers & Schwartz, 1999)
  - Internal standards
  - Value attributed to QoL domains
  - Domain conceptualization

➢ Comparison of interventions?

Theory of the «*response shift*»
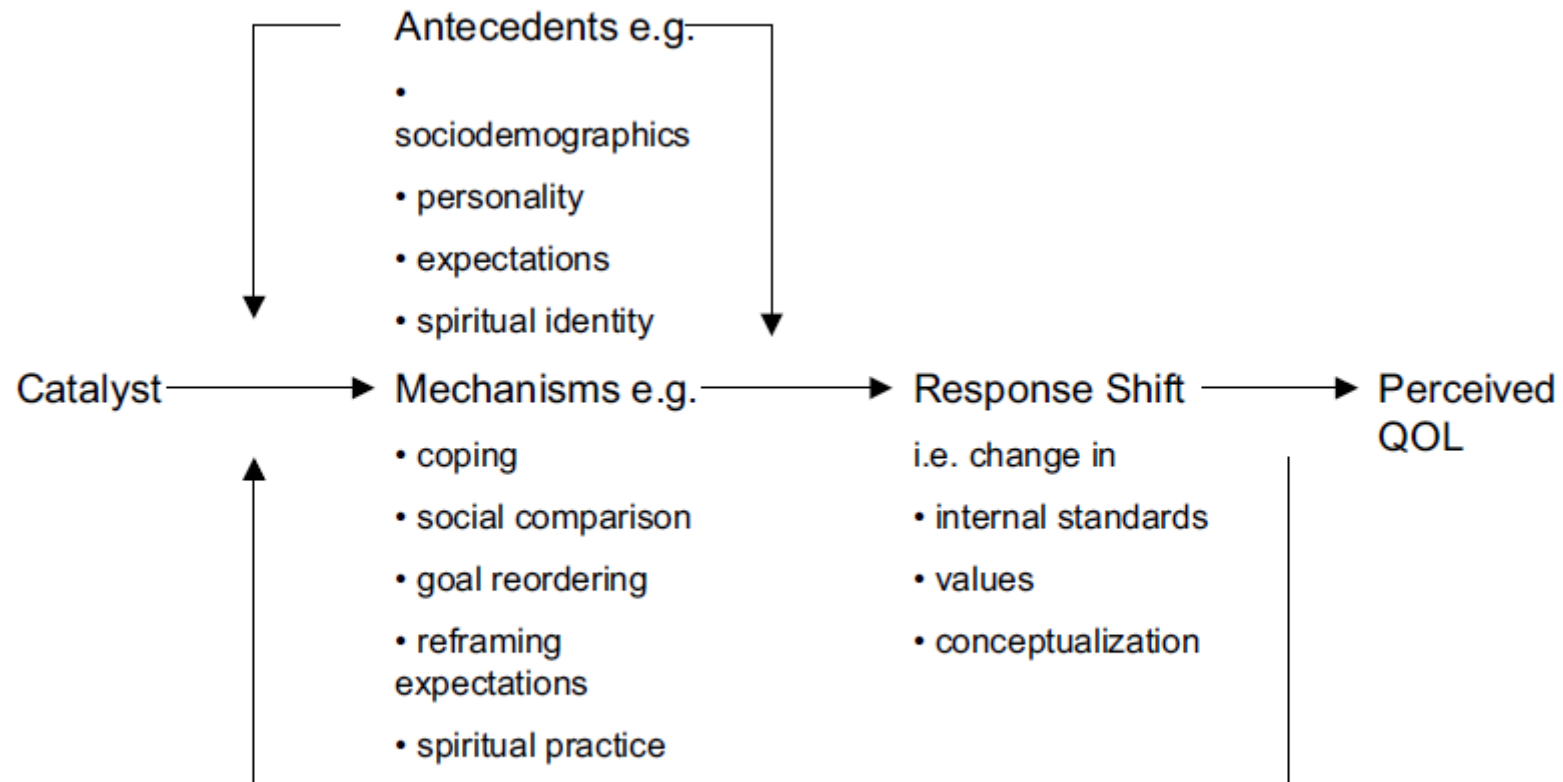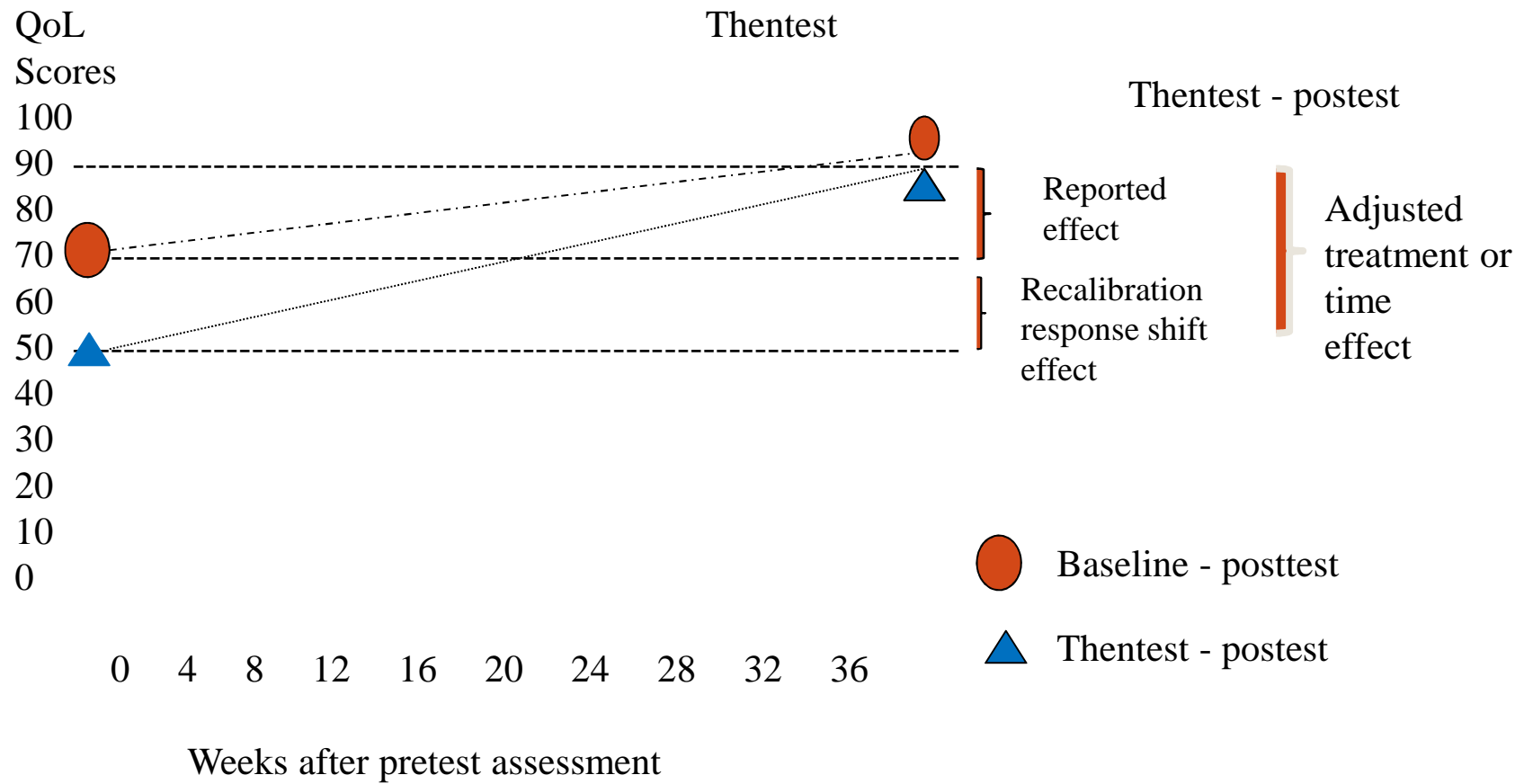(Sprangers & Schwartz, 1999)

Figure 1
Sprangers and Schwartz (1999) theoretical model of response shift and quality of life

How to take into account the response shift in QoL assessment?

- Then-test (Schwartz & Sprangers, 2010)

- Direct measure of psychological process underlying QoL assessment (Rapkin, 2004)

  - Which frame of reference (implicit meaning attributed to items)?
  - What selection of autobiographical experiences?
  - Which comparisons (with other patients, previous experiences, communications with HCPs)?
  - What synthesis (subjective algorithm used to prioritize and combine appraisals to arrive at a QOL rating)?

QoL Scores

Thentest

Thentest - postest

100
90
80
70
60
50
40
30
20
10
0

Reported effect

Recalibration response shift effect

Adjusted treatment or time effect

0   4   8   12   16   20   24   28   32   36

Weeks after pretest assessment

● Baseline - posttest

▲ Thentest - postest

Methodological issues

Development and validation of questionnaires

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QoL assessment methods

- Open interview
  - « *How are you?* »

- Individual evaluations (eg: SEIQoL, PGI)
  - Invite the patient to choose aspects of life to assess and to weight their importance

- Standardized evaluations
  - Questionnaires/scales

- « Computer Adapted System »
  - Items selected (from an item bank) according to patients' responses

Open interview

- « How are you? »

  - Intuitive (non explicit)
  - Particular (non standard)
  - Interpretation bias (non objective)
  - Non quantifiable

Type of standardized measures

- *Generic* measures: assess QoL whatever the disease, common denominator, few details, <u>comparison</u>

  eg: SF 36

- *Specific* measures: is specific to a certain type of disease bear on QoL aspects specifically affected by the concerned disease, <u>sensitivity</u>

  eg: QLQ-C30 and modules

Examples

- Generic measures

  - SF 36 (36 items)

- Cancer specific measures spécifiques

  - FACT (44)

  - EORTC QLQ-C30 (30)

- Type of cancer specific measurres

  - EORTC Modules (breast, lung, H&N cancer,…)

- Specific measure to a certain QoL imension

  - Emotional distress (HADS-14, POMS-65, MAC-66,…)

  - Sexuality (FSAQ-10), body image (BIS)

  - Fatigue (MFI-20)

  - Spiritual well-being (SBI-15)

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« Modular » approach

- FACIT measurement system FACIT -> FACT-G (Cella, 1993)
  - Sequential cross-cultural validation
- EORTC QLG approach (Aaronson, 1990)
  - Simultaneous cross-cultural development/validation
- ➤ « Core »
- ➤ Cancer site (symptom, QoL domain) modules

Item banks
NIH PROMIS initiative – EORTC QLG

- Elaboration of a reportory of items

- To avoid duplication or modification of existing items

- To allow ad-hoc questionnaires design

- Development of CAT measures based on IRT psychometric approach

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Questionnaire development
« EORTC QLG Guidelines V4, 2011 »

- Phase 1 : Eliciting relevant & important issues
  - Clarification of objectives and context of questionnaire application
  - Delineation of the concept to assess and identification of issues (qualitative study)

- Phase 2 : Operationalization of items
  - Formulation into item stem and response scale
  - Translation (forward-backward procedure)

- Phase 3 : Pre-testing
  - Pilot-testing (cognitive debriefing)
  - Psychometric pre-testing

- Phase 4 : Psychometric validation

Phase 1

- At least 3 languages and 3 countries from
  - Anglo-Saxon
  - Northern Europe
  - Southern Europe
- Literature and existing questionnaire review
  - Systematic, inclusion/exclusion criteria
- Open or semi-structured interviews with HCPs and patients from the target population
- Relevance of issues
  - To what extent patients have experienced (problems, limitations or positive experiences) on the proposed list
- Coverage
  - Is the list of issues complete?
- Relative importance
  - Which aspects are the most important?

Phase 2

- Formulation of issues into items (QLQ-C30 format)
  - Time frame : past week
  - 4 point Likert scale
- Consultation of item bank (EORTC QLG, PROQOLID)
- Hypothesized scales
  - Conformity with other EORTC QoL modules
- Facilitate scoring
- Translation
  - Specific guidelines

Phase 3

- Goals
  - Identify and resolve problems in the administration of questionnaire (formulation of questions, sequence of questions)
  - Identify missing items
- Procedure
  - Sample from target population
  - Stratification matrix
  - Administration of module + debriefing questions
  - Evaluation of importance/relevance of items
- Analyses
  - Rules for keeping or excluding items
    - Examples:
      - Mean scores < 5; prevalence of score 3 or 4 > 50%
 - Preliminary test of hypothetical structure

Phase 4

- Goals
  - To assess the scale on a large international sample and to determine its acceptability, reliability, validity, responsiveness to change and applicability across cultures

- Procedure
  - Administration of module + debriefing questions
  - Sample size
    - 10 patients per item

- Scale structure
  - Multi-trait scaling analyses, EFA, CFA

- Reliability
  - Internal consistency, test-retest

- IRT model

- Validity
  - Comparison with scales measuring similar concepts; comparison between patient groups expected to differ on the measure

Linguistic/cultural adaptation

- Simultaneous development (Groupe QdV de l'EORTC) versus sequential (FACIT)

- At least 3 European languages

- Translation guidelines (Koller, 2007; Kulis, 2011)

- Comparison of response category interpretation across languages (Scott, 2012)

- Analyse of cultural differences between QLQ-C30 item responses - DIF (Scott, 2007)

Criteria for psychometric performance (COSMIN Checklist, Mokkink, 2010)
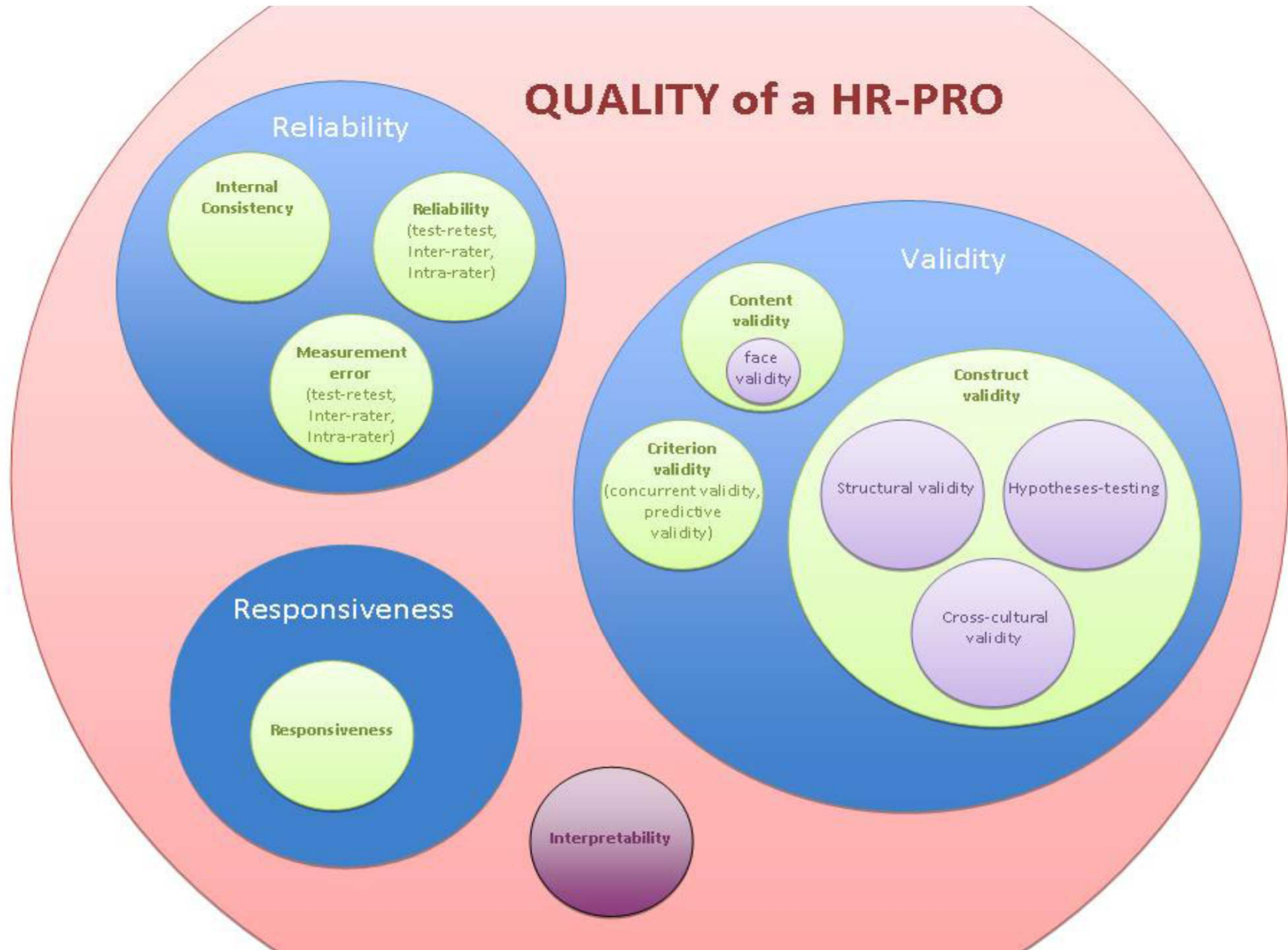
How to ensure content validity of a QoL?

➢ "*The extent to which a scale represents the most relevant and important aspects of a concept in the context of a given measurement application*"

- Phase 1
  - Delineation of the concept to assess is performed through the triangulation of perspectives (patients, experts, literature)
  - Selection of items from qualitative research (IPA, grounded theory)
- Phase 3/4
  - QoL/PROs are more than the addition of single items
  - Scales construction (FA, IRT)
- Decision rules (opinion weighting, importance threshold -> when to delete or add an item)
- Iterative process

Magasi, 2012

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Coordination and quality assurance

- Assessment of the development/validation process by the EORTC QLG
  - Module development committee (MDC)
- Protocoles
- Reports (Phase I-II, Phase III, Phase IV)

  - Peer reviews

Conclusions

- The benefit of QoL assessment is increasingly recognised in oncology -> development of research and application in clinical practice

- The science of psychometrics in health assessment has evolved importantly since the past 25 years

  ➢ From 'questionnaire scratch' ('questionnaire-coin de table') to relevant and rigorous measures allowing to evidence (or not) true impact of interventions on the patients' health state

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Merci pour votre attention!

Thanks for your attention!

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