**The importance of a collaborative health-related quality of life measurement strategy for Adolescents and Young Adults with Cancer**

*Olga Husson1,2,3, Samantha C Sodergren4, Anne-Sophie Darlington4*

*1Department of Medical Oncology, Netherlands Cancer Institute, Amsterdam, The Netherlands*

*2Division of Psychosocial Research and Epidemiology, Netherlands Cancer Institute, Amsterdam, The Netherlands*

*3Division of Clinical Studies, Institute of Cancer Research, London, United Kingdom*

*4 School of Health Sciences, Faculty of Environmental and Life Sciences, University of Southampton*

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With great interest we read the commentary by Salsman et al., highlighting the need for psychometrically robust measures that capture meaningful health-related quality of life (HRQoL) constructs for Adolescents and Young Adults (AYAs) with cancer. The authors describe the potential benefit of applying standards and methodology from the National Institute of Health Patient-Reported Outcomes Measurement Information System (PROMIS) to the field of HRQoL measurement among AYAs.

For AYAs, the impact of a cancer diagnosis and treatment is often distinct from other age groups given the unique and complex physical and psychosocial challenges of this developmental phase1. As outlined by Salsman et al. the current research infrastructure for assessing AYA cancer-related HRQoL issues is inadequate as available instruments lack content validity (missing content: fertility, body image, financial educational and occupational issues2, 3). There is an urgent need to develop or modify existing AYA assessment tools2, 3.

Traditionally, inadequate content coverage by generic HRQoL measures has been addressed by developing disease-, site-, domain- or population-specific measures that capture all specific HRQoL issues, to be used in conjunction with a generic measure. For example, the core measure of the European Organisation for Research and Treatment of Cancer (EORTC) Quality of Life Group (QLG), the EORTC QLQ-C305, is one of the most widely used cancer-specific HRQoL questionnaires worldwide and is supplemented by disease (e.g. breast and lung cancer), domain (e.g. fatigue, information provision, communication) and population-specific (e.g. elderly) modules. Currently an AYA cancer specific measure is in development. The advantages of using a cancer-specific measure such as the EORTC QLQ-C30, in combination with specific modules, is that general population norm data across Europe and North America4 and minimal clinically important difference (MCID) data are available to facilitate interpretation and serve as a benchmark to assess effectiveness of an intervention5.

As stated by Salsman et al., the heterogeneity of AYAs with cancer regarding developmental and life stages, the high number of histological subtypes and hence, the broad (drug) treatment landscape with different modes of action and associated toxicities, make it challenging to develop a single AYA-specific measure that meets all the needs of clinical practice, academia, and industry. The development and validation of outcome measures is time-consuming and in the era of personalized medicine, and with rapid advances in medicines and treatments, a more flexible HRQoL measurement strategy is required6. The EORTC QLG, like PROMIS, has an Item Library of more than 900 individual items from over 60 EORTC questionnaires, some of which have been translated into over 100 languages (https://qol.eortc.org/item-library/). Using this strategy, missing symptoms or problems can be selected from the EORTC Item Library and added to the core EORTC QLQ-C30 and disease-specific modules as Item List7. Interestingly, both PROMIS (US-centered) and the EORTC QLG (European centered), use a common elaborative approach to measure HRQoL by applying modern test theory methods8, 9, easing the application of Computer Adaptive Testing (CAT) techniques, which tailor items to the individual, based on responses to previous items9. This more flexible measurement strategy optimizes measurement precision and allows patients to describe their experiences more fully, while retaining direct comparability of scores across patients and studies.

Given the growing relevance of patient-reported outcomes (PROs), it is not surprising that, worldwide, several efforts are undertaken to standardize HRQoL data with different approaches adopted4. Within AYA oncology research, HRQoL standardization is of great importance. In the last decade, numerous studies have shown that AYAs with cancer did not demonstrate the improved outcomes observed in children and older adults with cancer10. It is imperative for advances in the field of AYA oncology to pool data sources (including HRQoL data) across institutions and countries and create large cohorts that include the full range of AYA ages and diagnoses to be able to address the many pressing questions that remain unanswered in this vulnerable population. One approach to standardization, proposed by the International Consortium for Health Outcomes Measurement (ICHOM), is to define standard sets of existing HRQoL measures to enable comparison of outcomes across health-care providers and countries11, 12. Such an approach makes it extremely important to join forces (PROMIS, EORTC QLG and many others) into one state-of-the-art international expert network aiming to reach consensus on a core AYA HRQoL item set (e.g. a combination of multiple PRO measures) and develop guidelines on the flexibility of such a measurement strategy. A core item set combined with the advantages of a flexible measurement system will support future collaborative and comparative research efforts to improve AYA health outcomes.

If we really want to make a difference, truly provide personalized AYA care and run trials that are attractive to these young patients, we should join forces, harmonize efforts, not reinvent the wheel, and develop a standard but flexible, international, collaborative AYA HRQoL measurement strategy.

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