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A multi-criterial support tool for the multimorbidity decision in general practice

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Abstract. The magnitude and seriousness of the challenge posed by heterogeneous multimorbidity in most health services is now unquestioned. Equally well-acknowledged is the fact that existing guidelines essentially set out the principles of best practice in an idealised setting, concentrating on information gathering and not providing any personalisable decision support for the general practitioner aiming to share decision making with a person with multiple morbidities in the reality of routine practice. Existing decision aids have been developed largely within the single condition context and can draw on a body of robust research largely absent in the multimorbidity context. The need for a more flexible and generic approach which draws more on the clinician's expertise-based judgments has been called for, and we introduce a Decision Support Tool, GREST CLIN, in response to this call. Based on Multi-Criteria Decision Analysis it reflects the quantitative calculation approach to decision support rather than the deliberative reasoning of mainstream decision aids. It is emphasised that any evaluation should use the current decision making process as empirical comparator, rather than idealised normative standards, and that the primary outcome measure should be decision quality at the point of care, not downstream outcomes. A demonstration version of the tool is available online as proof of method.

Keywords: multi-morbidity**,** multimorbidity**,** general practice, patient-centred, Multi-Criteria Decision Analysis, decision aid

Introduction

There is little need to rehearse the size and seriousness of the challenge posed by heterogeneous multimorbidity in most health services. Nor much need to point out that the lack of relevant research and development of decision support is partly a consequence of the requirements of scientific research being most easily met in the single condition / many similar patients case. Multimorbidity relevance has been

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trumped by mono-morbidity rigour and, given the lack of research, there is not a research-practice gap to be closed, as often in the single condition case. While the major EU research project SELFIE has evaluated 17 programmes targeting multimorbidity within an 'integrated care' framework [1], for the foreseeable future the multimorbidity decision burden is left on the general practitioner (GP) - with limited decision support from guideline producers.

Even a GP able to offer high-quality continuity of care is unlikely to be able to come close to fulfilling the NICE guidelines on Multimorbidity [2]. As Jack, et al. point out they offer no effective guidance on their implementation [3]. The Ariadne principles on how to handle multimorbidity in primary care consultations [4], which resulted from a major international collaboration, suffer from the same 'counsel of perfection' tendency. They have failed to overcome the initial reactions on their launch in 2014.

> "One likely response is that they simply represent what would be expected of any 'good GP', harking back to well-known principles of 'patient centred' care... Although there are important modifications to take account of multimorbidity, the essence may well be familiar. The opposite reaction may be that the principles are face valid, but that achieving these principles with patients in the reality of busy clinics, with limited resources, and with patients already struggling under multiple pressures, represents a standard which is unlikely to be achieved routinely in practice." [5] (p.222).

The 3-step SHERPA framework proposed by Jack, et al. [3] is offered as more realistic guidance to practitioners. Step 1 is to 'share problems, Step 2 is to 'link problems' and Step 3 is to 'plan together'. However, there is still no operational guidance on the *how to* of each step, least of all on the central task of integrating the practitioner's knowledge - mainly judgmental beliefs, given the lack of evidence in the multi-morbidity context - with the person's preferences, an integration which is universally acknowledged to be essential in person-centred care.

In their comprehensive discussion [6] Hoffman, Jansen and Glasziou endorse the Ariadne two-phase structuring of the multimorbidity consultation: first, collaboratively establishing and assessing priorities and goals, then deciding among the management options for the highest priority problems. But it is not clear how this separation can be maintained, since the second phase

> "involves discussing the treatment options - and, for each option, the benefits and harms (including the size or likelihood of each, individualised to the patient where possible) and the practicalities and feasibility (including the treatment burden and costs) of the options - and then, the patient's preferences about the options… There are likely to be different benefit-harm trade-offs for each individual older patient with multimorbidity because of the heterogeneity within this group. Patients vary widely in their health and function (both physical and cognitive), tolerance of side effects, life expectancy, and treatment and health outcome preferences, such as valuing length of life versus quality of life." [6] (pp2-3).

The authors point out that guidelines often stress the importance of using `clinical judgement' in these more complex circumstances and that `decisions should be made with the patient, reflecting his or her preferences, needs, and values'. But they point out

that the guidelines do not offer specific guidance, approaches, or tools on how to achieve this and are not designed in a way that optimally supports patient involvement and shared decision making. While rightly skeptical about the value of existing decision aids for the multimorbidity context, Hoffman, et al. see potential in more flexible and generic tools, such as the Ottawa Personal Decision Guide [https://decisionaid.ohri.ca/decguide.html] "a template that prompts the clinician and patient to discuss and complete a form with the options, their pros and cons, how much each pro or con matters to the patient, available support, further decision-making needs, and next steps …" [6] (p3).

In line with this acceptance of the very different challenges of multi-morbidity, we offer a new 'fast and frugal' generic decision support tool, distinctive in reflecting the quantitative calculation approach to decision support rather than the deliberative reasoning of the mainstream [7]. It is compatible with many versions of 'shared decision making' and has the potential to generate 'minimally disruptive care' [8].

Method: A Generic Rapid Evaluation Support Tool (GREST)

The above background has established that any practical decision support tool for the multi-morbid consultation will be far removed from meeting the *normative* requirements of multimorbidity guidelines, or the *normative* standards for conventional decision aids [9]. The ambition of a practical tool should be only to improve care, using standard practice as the *empirical* comparator. Since we take the product of a decision making process to be a decision, the primary outcome in any empirical evaluation of decision aids must be *decision quality*, assessed at the point of decision, not some 'downstream' outcome such as quality of life or subsequent experienced regret [10].

If a decision support tool (DST) is to incorporate explicitly elicited patient preferences over relevant considerations and integrate them transparently with the best estimates available of how well each option performs on these criteria, Multi-Criteria Decision Analysis (MCDA) is the most promising basis. It differs in numerous respects from the 'multi-criteria deliberative' basis of the major alternative decision aids.

The proposed MCDA-based DST, called GREST CLIN, is designed to allow the GP or other clinician to involve persons living with mono- or multimorbidity conditions in a decision as to whether to change their management from OLD to NEW, (which may be either a single therapy or combination of therapies). The most effective way to understand the tool's content and sequencing is to engage with it at https://ale.rsyd.dk. Enter 1516 as survey ID. This is a demonstration version and only anonymous data should be entered, as full security cannot be offered. The first task is to select a country, since the EQ-5D-5L tariffs for 12 countries are included in the tool in order to establish the Health-related Quality of Life measures used for the patient.

In the opening section of GREST CLIN the practitioner notes the person's characteristics and condition/s they believe should impact on the current management decision. It is vital that all relevant morbidities are briefly documented here, since the Ratings subsequently entered need to reflect all these morbidities *considered*

collectively. (i.e. as *one* multi-dimensional condition). In the default 5-criterion GREST CLIN* there are four condition-specific criteria - a selected Marker (e.g. bone mineral density), a selected Function (e.g. 6 minute walk test), Side effects, and Treatment burden – and one generic criterion, Quality-Adjusted Life Years (QALYs).

The person (or clinician as proxy) indicates whether they have No=1, Slight=2, Moderate=3, Severe=4, or Extreme=5 problems on the EQ-5D-5L dimensions (Mobility, Self-Care, Usual Activities, Pain/Discomfort and Anxiety/Depression). This establishes their HRQOL *today*, on OLD, expressed, for example, as 32333.. The clinician enters their best estimates of the person's Ratings *at 1 year* if they remain on OLD *and at 1 year* if they move to NEW. The three HRQOL values, derived from the lookup table containing the appropriate country's tariff, are then displayed.

GREST is concerned only with the NOW decision. If neither NEW nor OLD is expected to have any effect beyond year 1 (ignoring no repetition or continuation of NEW) the QALY change will be the same as the HRQOL change. But two other possibilities must be catered for. So, first, the clinician is asked for how long (if at all) the effect of NEW on HRQOL is expected to extend beyond year 1. And, second, they are asked for their best estimates of the person's expected Life Years (LYs) at OLD now, and for OLD and NEW at 1 year. These latter estimates are used in combination to produce the NEW QALY rating, which is the percentage gain over OLD at 1 year.

The practitioner then enters their evidence and expertise-based estimates for the performance of OLD and NEW for the Marker, Function, and Side effect criteria.

The person's ratings for Treatment Burden are elicited. They then provide their importance Weightings for the five criteria. Following this, the opinion of the DST is immediately revealed. The person then has the chance to vary their weights, but the Scores panel is best closed during this phase to prevent 'gaming' to produce a verdict in favour of either OLD or NEW.

In summary, the practitioner produces 20 belief judgments: the 5 HRQOL ratings for OLD and NEW at 1 year; for how long, if at all, the health benefits of NEW will extend beyond one year (without repetition); their three estimates for Life Expectancy under the OLD and NEW scenarios; and the OLD and NEW option Ratings for the three condition-specific criteria that are their responsibility. The person produces 7 belief judgments: the 5 HRQOL ratings for OLD at present and Burden Ratings for OLD and NEW. And their importance Weightings for the five criteria.

In many ways GREST does not support multimorbidity decisions very differently from the many mono-morbidity ones where the available evidence does not relate at all well to the person in front of the clinician. The required judgments will simply be more difficult to make in the multimorbidity context.

Result

A sample output screen for a UK person appears in Figure 1. The Ratings and Weightings are self-evident, apart from the QALY ratings. These are produced by EQ-5D-5L ratings for OLD now 32333 (= .53) , OLD at 1 year 42433 (=.40) and NEW at 1 year 22323 (=.57), with the HRQOL gain persisting for 1 year and NEW extending Life Expectancy from 14 to 18 years. The QALY gain from NEW is 29.8%.

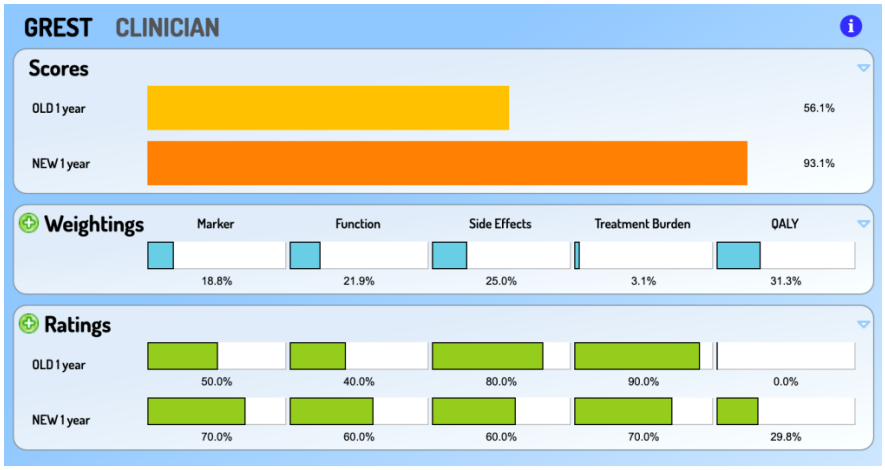

Figure 1: A sample screen capture from GREST CLIN

Discussion

The recent major 3D cluster randomised trial of a complex intervention in a multi-morbidity population failed to detect any effect on patients' quality of life, measured by EQ-5D-5L, but enhanced various aspects of the patient experience [11]. A systematic review and synthesis of qualitative research on GP's perspectives on the management of patients with multimorbidity [12] identified four specific sources of difficulty in this setting: the disorganisation and fragmentation of healthcare; the inadequacy of guidelines and evidence-based medicine; the challenges in delivering patient-centred care; and barriers to shared decision-making.

> While expressing his doubts about the Ariadne guidelines, Bower noted that
> " it is argued that GPs are in an excellent position to know their patients, and that a return to professional judgement and clinical decision-making is needed: Greenhalgh et al. talk of '*rapid, intuitive reasoning informed by imagination, common sense, and judiciously selected research evidence and other rules*'. However, GP assessments of important facets of their patients are not always accurate. How can we ensure equity and consistency in how these complicated factors are assessed and somehow '*taken into account*' in clinical decision-making?" [5] (p2).

Conclusion

‘Many primary care interventions aimed at changing practitioner behaviour have fallen foul of the adage that feasible changes are not effective, and effective changes are not feasible’ - old adage. GREST does no more than specify the numerical judgments that need to be made by the practitioner, but its coherent structuring shows how those judgements can be *taken into a count* and provide practical and transparent decision *support* in multi-morbidity. We welcome the chance to establish whether GREST is both effective and feasible in routine ‘shared decision making’, beyond the current proof of method, assuming the definitions of ‘effective’ and ‘feasible’ are appropriate.

*GREST COMM is a companion DST for use by Commissioning Groups or Practices who have budget constraints and need to establish policies for ‘reference cases’ or respond to ‘special circumstance’ requests. It adds an ‘equity’ criterion [13].

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Conflict of Interest
Jack Dowie has a financial interest in the Annalisa software when used commercially.

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