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Understanding care when cure is not likely for young adults who face cancer: a realist analysis of data from patients, families and healthcare professionals.

Supplementary file 3 - Our approach to a realist logic of analysis.

Data analysis involved the use of a realist logic analysis with the goal of using the collected data (e.g. interviews) to confirm, refute or refine (test) aspects of our preliminary programme theory. Analysis required interpretation and judgement of data. Data coding was both deductive (informed by our preliminary programme theory), inductive (came from the data within data sources) and retroductive (where inferences are made based on interpretations of the data within data sources about underlying causal processes – i.e. mechanisms). We had used the data collected to develop themes. We then use a different analytical lens (a realist logic of analysis) to reanalyse the data we had used to develop our themes. More specifically, we used a series of questions to help us analyse the data, as set out below:

Relevance:

- Are sections of text within the collected data that are relevant to programme theory development or testing?

Interpretation of meaning:

- If the section of text is relevant, do its contents provide data that may be interpreted as functioning as context, mechanism or outcome?

Interpretations and judgements about Context-Mechanism-Outcome-Configurations:

- For the data that has been interpreted as functioning as context, mechanism or outcome, which Context-Mechanism-Outcome-Configuration (CMOC) (partial or complete) does it belong to?
- Are there further data to inform this particular CMOCs contained within this source or other sources? If so, which other sources?
- How does this particular CMOC relate to other CMOCs that have already been developed?

Interpretations and judgements about programme theory:

- How does this particular (full or partial) CMOC relate to the programme theory?
- Within this same source are there data which informs how the CMOC relates to the programme theory? If not, are there data in other sources? Which ones?
- In light of this particular CMOC and any supporting data, does the programme theory need to be changed?

Data to inform our interpretation of the relationships between contexts, mechanisms and outcomes were sought not just within the same data source, but across sources (e.g. mechanisms inferred from one source could help explain the way contexts influenced outcomes in a different source). Synthesising data from different sources is often necessary to compile CMOCs, since not all parts of the configurations will always be articulated in the same source.

Within the analytic process set out above, we used interpretive cross-case comparison to understand and explain how and why observed outcomes have occurred, for example, by comparing contexts where young adults had a 'better' end-of-life care experience with those where this was not the case. This enabled us to understand how context had influenced outcomes and why. When working

through the questions set out, where appropriate we used the following forms of reasoning to make sense of the data:

- Juxtaposition of data: for example, where data about context in one source enabled insights into data about outcomes in another source.
- Reconciling of data: where data differed in apparently similar circumstances, further investigation was appropriate in order to find explanations for why these differences had occurred.
- Adjudication of data: on the basis of the plausibility of what was reported.
- Consolidation of data: where outcomes differed in particular contexts, explanations were constructed of how and why these outcomes occur differently.

During the evaluation, we moved iteratively between the analysis of particular examples, refinement of programme theory, and further data collection to test particular theories.