Implementing the Episode Clinical Complexity Model into the Australian Refined Diagnosis Related Groups classification for Version 8.0

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Introduction
Phase one in the development of AR-DRG Version V8.0, included a Review of the AR-DRG Classification Case Complexity Process resulting in a new Episode Clinical Complexity (ECC) Model. The ECC Model allows for the assignment an Episode Clinical Complexity Score (ECCS), to each episode. These scores quantify relative levels of resource utilisation within each Adjacent Diagnosis Related Group (ADRG) and are used to split ADRGs into DRGs on the basis of resource homogeneity.

Methods
The process of deriving an ECCS for each episode begins by assigning a Diagnosis Complexity Level (DCL) to each diagnosis appearing against the episode. These DCLs are integers between zero and five that quantify levels of resource utilisation associated with each diagnosis, relative to levels within the ADRG to which the episode belongs.

The DCLs of the episode are then combined using an algorithm to define the episode's ECCS. The algorithm combines the DCLs in descending order and includes a decay component to adjust for the diminished contribution of multiple diagnoses vis-à-vis their individual contributions.

During Phase two, the development of AR-DRG V8.0 had at its core the implementation of the ECC Model within the AR-DRG classification. A comprehensive set of ADRG splitting models were evaluated against classification structure principles, splitting criteria and in terms of statistical performance and clinical relevance. ACCD's objective has been to minimise the use of non-complexity splitting variables, with a strong preference for ADRG splits based on relative complexity (i.e. ECCS). This has been achieved with only 6 of the 403 (non-error) ADRGs requiring the use of a non-complexity splitting variable.

ACCD's governance arrangements enabled the consortium to efficiently obtain informed clinical and classification advice on the validity of the proposed splits through the Classifications Clinical Advisory Group and the DRG Technical Group (DTG), with further analysis on specific areas of the classification undertaken at their request prior to finalisation of AR-DRG Version 8.0.

Results
AR-DRG V8.0 has 807 end classes or DRGs (including 3 error DRGs). V8.0 of the classification demonstrates comparable statistical performance to V7.0 in those ADRGs where LOS has been removed as a splitting variable, and outperforms V7.0 in almost all other ADRGs where splitting has occurred.

The AR-DRG classification structure itself has not been altered for AR-DRG V8.0 apart from changes required as a result of a review of the surgical hierarchy and minor code movements facilitated by incorporation of DTG approved DRG public submissions.

Conclusions
The conceptually based, theoretically derived and data driven characteristics of the ECC Model implemented within the classification provide a strong basis for ongoing refinement of the classification as changes in clinical care and improvements in data quality occur over time.

Overall, AR-DRG V8.0 represents a significant refinement to the AR-DRG classification, with major improvement in the measurement of clinical complexity through the use of the ECC Model, and simplified splitting logic leading to greater transparency. These refinements will provide improved performance and support of the AR-DRG classification in its many roles including those within hospital funding, health system analysis and clinical management.
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