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CONFERENCE ABSTRACT

Admission risk algorithms and data analytics to define patient suitability for a Hospital Admission Risk Program

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Introduction: The Hospital Admission Risk Program (HARP) has operated within many Victorian health services since 2005, and targets people with chronic and complex care needs at risk of avoidable hospitalisations. HARP has been proven effective in reducing hospitalisation through provision of an integrated response of specialist medical and multidisciplinary care. It is however underutilised at Eastern Health

During 2018-19, Melbourne's geographically largest public health service network (Eastern Health) participated as an intervention site in "Health-links Chronic Care" (HLCC), a multi health-network study led by the Victorian Department of Health (DHHS) in association with the Commonwealth Science and Industrial Research Organisation (CSIRO).

HLCC applied predictive analytics to routinely-collected Victorian public hospital patient admission data to identify patients at continued high risk of avoidable hospital admissions. Individual health services were then able to further screen these patients, and offered additional proactive community intervention.

The HLCC Algorithm has previously been demonstrated as having a positive predictive value of 32% for identifying patients who will have three or more bed-based admissions in the upcoming 12 months. However further refinement of the cohort via secondary individual case review is generally accepted as also indicated. This review may focus on confirming the level of admission risk and / or suitability for specific risk prevention models of care.

Theory/Methods: 228 patients at high risk of avoidable hospital admissions were identified using the HLCC algorithm. These cases were subsequently Clinician screened, to obtain Patient and Clinician perspectives on a variety of admission-risk related topics.

Results: The following were determined when the intervention cohort was examined in terms of levels of risk, perception of risk and suitability for HARP.

- A trigger admission via Short Stay Unit may indicate greater need for individual case review

- 90.4% correlation between patient and Clinician assessment of "high risk"

- Only 15% thought they were at "high risk" – only around half of the 32% who progress to three or more admissions

- Whilst diagnosis is widely regarded as not correlating with admission risk, there may be some correlations that can be drawn with regards HARP service suitability

Discussions: The Health-links Chronic Care Algorithm is a promising tool that can form part of a health community's high admission risk management strategy.

Conclusions (comprising key findings): Information has been identified that can guide a "resource intelligent" future Health-links HARP services, by targeting specific patient groups rather than attempting to intervene with all Health-links enrolees.

Lessons learned: Admissions related to Diabetes are often coded under an alternate primary diagnosis, and as such are more difficult to diagnostically profile until they reach individual case review.

Limitations: As a pilot project, limits of statistical power must be kept in mind when interpreting these findings.

Suggestions for future research: There is huge scope for further work optimising technical and clinical application of the algorithm, merging hospital and community datasets to optimise predictive value, and to streamline subsequent individual enrolee case triage and models of care to optimise cost effectiveness.