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**POSTER ABSTRACT****Developing Regional Primary Health Analytic Capability**1<sup>st</sup> Asia Pacific Conference on Integrated Care, Brisbane, 06-08 Nov 2017

Stephen Chu, Sharon Sweeney, Tonia de Bruin, Paul Mathiesen, Peta Shaw, Jenaya Price, Joshua Warlow, Peta Antonarakis

Brisbane South PHN, Australia

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**Introduction:** Brisbane South PHN, in partnership with Primary Health Providers (PHP) in the region, have built a rich trusted source of de-identified population health data. Analytics outputs from the dataset are used by PHP partners to improve patient management, resulting in improved healthcare outcomes.

**Description:** A 2014 Dell EMC report [1] estimated that in 2013 healthcare generated 153 Exabytes of data, which by 2020 will likely increase by 150%. We see the enormous benefits in using analytics on de-identified data from our PHP partners' electronic medical records to identify barriers to care, help improve prevention, diagnosis, management and follow-up care. Informed by whitepaper [2] and international literature [3], a health data analytics framework (Figure 1) has been developed and used to implement an incremental, methodical pathway towards advanced analytics.

**Our current efforts focus on:** Prescriptive analytics identifying: the "what happened", "how many", "how often" questions?

For example, population health data analytics that show prevalence of chronic co-morbidity in our region's cardiovascular disease patient population and their gender distributions (Figure 2); how many patients with chronic conditions don't have management plans, or no health check in 6 or 12 months.

Level 1 predictive analytics to consider: "why did this happen", "what can/should be done"?

For example, analytics that show risk factors which may explain differences in prevalence by gender (Figure 3), and what risk-stratified interventions can be considered.

Analytics results are used by PHP partners to improve care and interventions, resulting in improved outcomes. We use similar analytics tools and models deployed by our acute care partners in the region. The methodologies are transferrable to other healthcare sectors.

We are working on strategies to address challenges, e.g., sustaining analytics momentum, improving data quality, interoperability, and tools (through design, use, collaboration), keeping pace with analytic science and technology maturity.

Our intermediate term goal is to advance our capabilities, including effective predictive risk models [4] application to achieve accurate population risk stratification, optimise management and outcomes. Longer term goal is to progress towards advance predictive and applied AI analytics through collaborations and capability building.

**Conclusion:** We are at an early stage on the analytic maturity curve. Our current aim is to optimise healthcare data and analytics output values. Future success will depend on our ability to improve data quality and interoperability; grow analytics capabilities; and to provide quality analytics outputs as catalysts for our PHP partners to improve their intervention strategies and patient outcomes.

**Discussion:** Current analytics techniques are either question-driven – the “what”, “why”, and “how”; or hypothesis driven (Figure 1). As more data are generated, more complex questions will be considered and hypotheses generated. Healthcare analytics is still a maturing discipline. The ability to ask useful questions; generate accurate hypotheses; convert hypotheses into effective analytics questions; and to produce high value outputs is dependent on expert knowledge, predictive models and technology maturity.

Over time, our strategy is to improve analytics capabilities; work with technology suppliers and experts to improve tools, knowledge and skills; and initiate pathways towards achieving applied AI analytics.

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**Keywords:** descriptive analytics; predictive analytics; applied artificial intelligence analytics; risk stratification; healthcare outcomes

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