

The art and science of extracting clinical meaningful information from electronic medical records: Proof-of-concept studies in acute coronary syndrome, oncology and sepsis

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The widespread adoption of electronic medical records (eMR) has created unprecedented opportunities to harness information stored within eMRs to ascertain clinical outcomes and improve healthcare efficiency at large scale and low cost. However, significant challenges remain including accessibility of data and lengthy ethics and data governance submissions. In this abstract, we share our learnings from performing successful proof-of-concept clinical analytics projects which simultaneously demonstrate value to clinicians, hospital executives and ultimately patients. Learnings include:

1. Development of eMR-specific ethics and governance protocols and checklists to facilitate data sharing across health jurisdictions ("*Data Accord*")
 - 1) Identifying and prioritising high impact and feasible use cases which enable clinical analytics to demonstrate the greatest value quickly.
 - 2) Building infrastructure and software tools to process the heterogeneous and vast volumes of information housed in eMRs to extract clinically meaningful information. Up to 80% of data housed within EMRs is unstructured (eg. free text, images, scanned documents) and spread across multiple and disparate locations
 - 3) Processes to ensure data quality throughout the analytics process from data extraction, processing and linkage of relevant information across a patient's healthcare journey
 - 4) Building high performing interdisciplinary clinical analytics teams comprising clinical experts, analytics translators, software developers and data engineers and data scientists

Through our learnings we have developed the critical foundations necessary for clinical analytics to harness the massive yet unrealised potential of digital data and technology to address the rising incidence of complex and chronic health conditions and counter rising health care costs.