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8. IBM WATSON HEALTH: HOW COGNITIVE TECHNOLOGIES HAVE BEGUN TRANSFORMING CLINICAL MEDICINE AND HEALTHCARE

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Background: IBM Watson Health (<http://www.ibm.com/smarterplanet/us/en/ibmwatson/health/>) belongs to a new generation of smart cognitive computing technologies (a type of artificial intelligence) that are poised to transform the way healthcare is delivered, and to vastly improve clinical outcomes, quality of care and patient safety.

Objectives: Our goal was to collect and document the huge potential of a range of emerging and exemplary uses of IBM Watson in healthcare in both developed and developing country settings.

Methods: A survey of current peer reviewed and grey literature has been conducted, looking for reports and case studies involving the use of IBM Watson in different health and healthcare applications.

Results, conclusions and clinical implications: With its ability to make sense of unstructured medical information by analysing the meaning and context of natural language, and uncovering important knowledge buried within large volumes of data and information, including medical images, IBM Watson is exceptionally well suited for clinical and healthcare decision support, where there are often elements of ambiguity and uncertainty. It has been (or is currently being) successfully deployed in many developed countries in the West, as well as in developing countries, such as India and South Africa. IBM Watson unlocks a complex case by acquiring information from multiple sources, e.g., accessing the electronic patient record, then parsing all related medical evidence at up to 60 million pages per second. After processing all of this information, Watson offers relevant and prioritised suggestions to the decision-maker, e.g., helping clinicians identify the best diagnosis and treatment options in complex oncology cases, and providing hospital managers with new operational insights. The ultimate goals are to reduce cost, medical errors, mortality rates, and help improve patients' quality of life.