DIAGNOSTICA

DIAGNOSTICA APP IS A REAL AI DRIVEN DIAGNOSIS APP

There is a growing burden on all health services globally with musculoskeletal conditions comprising a significant proportion of patients presenting to primary care. The healthy aging population are remaining active for many decades along with an increasing participation in sport and exercise across all ages

As expert and experienced Orthopaedic surgeons, we appreciate that very few of these conditions will require surgery but would benefit from timely, accurate diagnosis and referral to the appropriate rehabilitation provider. What if highly accurate diagnosis was available to the patient at first presentation? What if all patients had access to opportune diagnosis and rapid evaluation as to whether a surgical route was required; or more likely a non-surgical, rehabilitative treatment plan was the more likely course of action. How would that change the face of the current healthcare model and shift the burden on services?

That is the challenge Diagnostica Solutions and its expert Orthopaedic Surgeons for Foot & Ankle conditions have undertaken. We combine patient reported outcome scores with an accurate diagnostic tool. Furthermore, these are repeatable over time to track in real time the natural history of conditions and/or the response to intervention. This is fully integrative with patient results, such as pathology, radiology and alike. We couple these data with our AI engine to achieve precision in diagnosis and recovery. Moreover, we will utilise wearable devices to record Patient behaviour and movement. This will give us granular detail pinpointing nuances in behaviour and activity that will modify outcome. Diagnostica Solutions, say yes, we can create an App and AI tools to achieve a fully comprehensive suite of tools that leads with diagnosis for patients based on real and rigorous Patient informed data. Our milestone delivery, Diagnostica App is now available for Patients with Foot & Ankle conditions. The implications of such as App, especially, one with real, evidence-based data priming AI is potentially historic and will change the paradigm.

Diagnostica proposes, AI based on smart search and/or scraping is of little or no relevance towards Patient Diagnosis since the results found by such AI tools is at best, generalised. Context is critical for AI driven Diagnoses. So, AI which has as sources, Patient informing data targeted to specific join conditions, is a richer and more relevant source than a collection of randomly sourced data on sources, such as the Internet, or even within the numerous generally unstructured healthcare data source in clinics and hospitals, which host all joint conditions over many cohort types.

Diagnostica has created, in the first instance, an App (available on Apple and Google stores) that targets Foot & Ankle conditions. The App uses Image Maps to allow Patients to describe location, intensity, and coverage of their condition. Patients are highly accurate in defining their condition, especially when it causes them pain. The patients then complete specific PROM (Patient Reported Outcome Measures) Questionnaires to accompany their Image Maps. Specialists, in this case Dr Simon Platt & Dr Gillian Jackson, Orthopaedic Surgeons and co-founders of Diagnostica Solutions, will interrogate the patient's informing data, together with the patient's results to form a Diagnosis. Beyond innovative, Diagnostica App's AI learns from both the previous data it has access too, obtained through properly managed software clinical trials, and the specialist's diagnosis, to provide a valuable and accurate analysis. From the specialist's diagnosis, the AI also learns where it can improve for this cohort of patients. When we combine a wearable device, we connect real-time data informing patient's behaviour beyond just movement and steps. With the richness of data collected the AI can start to generate precise detail in how conditions change and alter over time. This is real AI feedback and leaning innovations. Furthermore, what if the AI is suggesting that surgery is not necessary and alternative therapies are possibly available, or even, more desirable. In fact, can such an App also reduce waiting times and surgery queues by suggesting alternative or intermediate therapies. What if the AI can also advise patients of safe and reliable goals, they should obtain pre- and post-surgery, and then alert the patients and their healthcare providers if these goals are not being met. The implications for reducing unnecessary surgeries, insurance costs, waiting queues and effectively saving the healthcare industry significant costs is potentially overwhelming.

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There are still many unanswered questions. Famously, Dr Platt often says, "we don't know what we don't know". Using PROMs, wearable data and evidence-based AI, can we start to predict and diagnose conditions and treatments that have the potential to speak specifically and directly to each and every patient with a joint condition. Presently the Image Maps are 2D images, when we incorporate AR technology, patients will explain their conditions with even greater precision. The implications for the quality of the AI diagnosis is only superior enrichment and accuracy.

> ## "We don't know what we don't know"
> – Dr Simon Platt (Orthopaedic Surgeon)

Diagnostica Solutions' next step is to expand the software clinical trials to the greater APAC region and then to other continents. Diagnostica App will expand to other joint conditions such as hip, knee, back, shoulder, wrist, and neck. Diagnostica Solutions is now looking for partners and specialists to expand its software clinical trials for all the join conditions. Diagnostica Solutions is working with a major wearables organisation and a global infrastructure partner to expand its footprint globally. Diagnostica Solutions, based in Australia, is already expanding through partnerships into Indonesia and soon, into India. It is clear that the healthcare sector is looking for such a tool that is AI driven but from a real, evidence-based data perspective. Diagnostica App is a major leap into the truly context assisted Diagnosis space.

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