DEEP DIVER → Assistance in the search for diagnoses with suspicion of Occupational Diseases

The need

Occupational Diseases (OD) are a group of pathologies whose causal relationship with the job is proven, and which implies a legal responsibility in their prevention and care. However, most OD go unnoticed as Common Diseases, with the public system assuming their costs. The Murcia Health Service has implemented a system of OD suspicion alerts on new diagnoses in the Primary Care (PC) application facilitating the telematic communication of the suspicion to the Health Inspection. However, alerts only act when a new episode is opened in PC, without acting on historical episodes where most chronic diseases and cancers are. The need is to extend the alerts to detect suspicions of OD by taking advantage of all the information in the clinical history of PC and hospital, as well as the free text of the clinical records.

The solution

A set of Natural Language Processing techniques and classification algorithms has been applied to electronic health records to develop a system that is able to detect the suspicion of occupational diseases. The system has managed to successfully analyze hundreds of thousands of electronic medical records and discover suspicions of occupational diseases relationed with asbesto that have been validated by a committee of medical experts in the field.

#DeepLearning

#NLP

#OccupationalDiseases

Impact

- Area under the ROC curve = 0.983, just seventeen thousands from perfection (=1).
- 4.207 suspicions of Occupational diseases validated.
- Over 250,000 historical electronic medical records tracked.

Co-creation and Business Support

Pilot region: Murcia (Spain) | Period: June 2019-September 2020

Challenger	Solver	Users	Supporter	Funder
SMS and Murcia Health Ministry	Vócali	Health inspectors	Ticbiomed	INFO
1 innovation professional 3 IT professionals 1 clinic documents expert 2 health inspectors from the Health Ministry	3 engineers	2 health inspectors from the Health Ministry 1.300 potential end users among Primary Care physicians	2 business supporters	2 experts

Hear the stories!

InDemand has been an opportunity to collaboratively develop a technological tool that speeds up the identification of patients treated by SMS with potential occupational diseases such as pathologies caused by asbestos. This makes significant progress for the Unit for Monitoring Suspicions of Occupational Diseases.

Miguel Soriano Contreras, Health Subinspector at the Health Ministry

Solver and Challenger, we spoke different languages. Ones about algorithms and the others about the clinical processes, but in the end, we managed to understand each other and to build a very comprehensive solution for the detection of ocupational diseases.

Pedro Vivancos, CEO at Vócali

About inDemand

inDemand boosts digital health solutions proposed and co-created with healthcare profesionals

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