

ARTIFICIAL INTELLIGENCE IN PHARMACOVIGILANCE – POSSIBILITIES AND CHALLENGES

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Since the last decade there is an increased interest in the application of artificial intelligence (AI) in pharmacovigilance (PV), which is in a time of great change. The aim of this paper was to emphasize the progress made in this area, but also all constraints that should be addressed before the full potential of AI can be exploited. A comprehensive review of scientific papers published in the last decade was undertaken. For the purpose of this work 15 out of 80 searched papers were selected, representing relevant results of experts in PV field. AI may be useful in PV for 1) the automatic execution of tasks associated with case report processing, 2) the identification of clusters of adverse events (AE) representing symptoms of syndromes, 3) the conduction of pharmacoepidemiological studies, and 4) the prediction and prevention of AEs through specific models using real-world data (1). The technical challenges for AI-based PV are lack of high-quality databases, insufficient human resources, weak AI technology and insufficient support from governments (2). Benefits and possibilities of application of AI in PV are numerous, but its successful implementation requires understanding of the complex interactions among all components and human-computer interface. Additional challenge is that PV professionals are traditionally recruited primarily from clinical disciplines with limited trainings in computational approaches to data analysis. Therefore, the education of PV staff and targeted recruitment of AI specialists should be key activities, both in industry and regulatory agencies, to achieve successful implementation of AI in PV.

References

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PRIMENA VEŠTAČKE INTELIGENCIJE U FARMAKOVIGILANCI – MOGUĆNOSTI I IZAZOVI

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U poslednjih deset godina raste interesovanje za primenu veštačke inteligencije u farmakovigilanci, koja prolazi kroz velike promene. Cilj ovog rada bio je da se istakne napredak koji je postignut u ovoj oblasti, ali i sva ograničenja koja treba rešiti pre nego što se iskoristi puni potencijal veštačke inteligencije. Izvršen je sveobuhvatan pregled naučnih radova objavljenih u poslednjoj deceniji. Za potrebe ovog rada odabrano je 15 od 80 analiziranih radova, jer predstavljaju relevantne rezultate eksperata iz oblasti farmakovigilance. Veštačka inteligencija može biti korisna u farmakovigilanci za 1) automatsko izvršavanje zadataka povezanih sa obradom izveštaja o slučaju, 2) identifikaciju klastera neželjenih događaja koji predstavljaju simptome sindroma, 3) sprovođenje farmakoepidemioloških studija i 4) predviđanje i prevenciju neželjenih događaja kroz specifične modele koji koriste stvarne podatke (1). Tehnički izazovi za farmakovigilancu zasnovanu na veštačkoj inteligenciji su nedostatak visokokvalitetnih baza podataka, nedovoljno ljudskih resursa, slaba tehnologija veštačke inteligencije i nedovoljna podrška regulatornih tela (2). Prednosti i mogućnosti za primenu veštačke inteligencije u farmakovigilanci su brojne, ali njena uspešna primena zahteva razumevanje složenih interakcija između svih komponenti i interfejsa čovek-računar. Dodatni izazov je to što se profesionalci u oblasti farmakovigilance tradicionalno regrutuju prvenstveno iz kliničkih oblasti, sa ograničenom obukom u računarskim pristupima analizi podataka. Prema tome, edukacija osoblja u farmakovigilanci i ciljano zapošljavanje stručnjaka za veštačku inteligenciju treba da budu ključne aktivnosti, kako u industriji tako i u regulatornim telima, kako bi se postigla uspešna implementacija veštačke inteligencije u farmakovigilanci.

Literatura

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