

Conflicts and duplications when applying more than one clinical practice guideline to a patient

October 4 2019, by Alice Scott



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Researchers in WMG at the University of Warwick have developed a new method that could solve the problem of how to automate support of managing the complexities of care when applying multiple clinical practice guidelines, to patients with more than one medical issue.

This will preserve the speed and accuracy of automated [treatment decisions](#) without introducing serious treatment conflicts or wasteful duplication of treatments and procedures.

Clinical Practice Guidelines (CPGs) are evidence-based statements or flow charts, which are used to support the decision-making of health professionals. CPGs are a body of knowledge representing best practice, based on the available evidence. Guidelines are relatively straightforward to input into a computer (a.k.a Computer Interpretable Guidelines (CIGs)), enhancing the speed and accuracy of patient care in many situations.

However, it becomes more problematic for patients who have more than one conditions. In such cases (known as multimorbid patients), the guideline recommendations for each treatment can be at odds, produce serious treatment conflicts and ultimately potential harm to the patient.

For instance, one drug-based medication might assist one condition but could worsen the other. This is particularly critical for elderly patients who are most likely to have dynamic and multiple health conditions.

The research team from WMG's Institute of Digital Healthcare at the University of Warwick (Ms Eda Bilici, Dr. George Despotou and Professor Theodoros Arvanitis) have implemented [a framework of automating computer-based management of multiple Clinical Practice Guidelines](#) to overcome this problem.

The new framework is called MuCIGREF—(Multiple Computer Interpretable Guideline Representation and Execution Framework). It allows development CIG models for each CPG. Once the CIG models are created, they are then concurrently executed to generate a unified personal plan for each individual multimorbid patient.

It ensures care optimization to avoid unnecessary resource use or potential care duplications because of the multiple plans (e.g., carer time, lab test). It identifies potential conflicts in the care plan and resolves them through the modification of clinical activities (e.g., activity start time, duration), or its associated care element (e.g. the drug dose level).

The researchers tested the new framework on several CPGs from the UK National Institute of Care Excellence (NICE), and they hope to conduct further work that will involve user validation and application in real-world cases.

This first stage in the work has just been published in a chapter entitled "Concurrent Execution of Multiple Computer- interpretable Clinical Practice Guidelines and Their Interrelations" in the Ebook [Health Informatics Vision: From Data via Information to Knowledge](#).

More information: Eda Bilici, et al. Concurrent Execution of Multiple Computer-interpretable Clinical Practice Guidelines and Their Interrelations, *IOS Press, Volume 262: Health Informatics Vision: From Data via Information to Knowledge* . [DOI: 10.3233/SHTI190003](#).

Provided by University of Warwick

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