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THE EFFECTS OF INTEGRATING AN EMERGENCY DEPARTMENT AND GENERAL PRACTITIONER COOPERATIVE INTO ONE EMERGENCY POST

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Background: Increasingly, general practitioner cooperatives (GPCs) and Emergency Departments (EDs) in the Netherlands are merging into Integrated Emergency Posts (IEP). IEPs are intended to improve quality of care by giving patients access to the right care provider at the right time,

and to increase cost-effectiveness. In general there is one front office with two back offices. During out-of-hours patients call a regional telephone number and triage is done by a nurse supervised by a GP. Patients receive nurse-led telephone advice, are visited at home by a GP, or receive an appointment at the IEP where they receive a consult by a GP for less urgent problems or are sent to the ED specialist for more complex urgent care. This reduces unnecessary self-referrals to the ED and as there is one access point to medical care it reduces confusion among patients with regard to choosing the right provider. In 2010, the GPC and ED of a general hospital in Twente merged into one IEP with the intention to provide care to patients as effectively and efficiently as possible with optimal use of personnel and resources.

Aim: The aim of this study is 1) to assess the effects of IEP using simulation models and 2) to generalize the results to other IEPs.

Methods: The results of a simulation model for the situation before the integration (non-integrated post (NIP)) are compared to a discrete event simulation model of the IEP in Twente as described before (Mes, Bruens, Proceedings of the Winter Simulation Conference 2012). Three changes are present in the IEP compared to the NIP: i) self-referrals go to the GPC, ii) absence of travel time between GPC and ED, and iii) an extra nurse practitioner is hired. Several simulation experiments have been performed incorporating one or more of these changes. The same data is used for both models. Results are generalized by performing a sensitivity analysis on number of patients and number of self-referrals.

Results: A first experiment, comparing the NIP and IEP, showed that integrating the two organizations led to lower waiting times and lower length of stay (LOS), which is preferable from the patients' point of view. However, this improvement can be caused by all three changes (self-referrals to GPC, nurse practitioner, and absence of travel time). In a second experiment the IEP without a nurse practitioner was compared to the NIP, also without a nurse practitioner, resulting in only two differences between the IEP and the NIP: travel time between the two organizations in the NIP, and self-referrals have a choice on where they want to go in the NIP. The LOS at the GPC in this experiment was somewhat higher in the IEP situation than in the NIP; having no travel time in the IEP did not compensate for the increase in LOS due to the increase in number of patients at the GPC. However, LOS was lower in the ED and in the IEP in general. In a third experiment the IEP was compared to the NIP with a nurse practitioner. Waiting times and LOS were somewhat lower for the GPC, lower for the ED, as well as the IEP in total, compared to the NIP with a nurse practitioner. In the last two experiments, a situation with a nurse practitioner in both IEP and NIP and the situation without in both, the only difference was the choice of self-referrals as where to go. There was no travel time. In both situations the LOS in the GPC in the IEP situation was higher, while the LOS in the ED and in the IEP in total was lower.

The sensitivity study showed that when the number of patients increases, the added value of the IEP decreases, in extreme cases leading to a situation in which the IEP is not

beneficial. However, having this increase in patients without adapting e.g. nurse practitioner capacity, would be an unrealistic situation in practice. When the number of self-referrals increases as is seen in more densely populated areas, the added value of the IEP increases making it even more beneficial to collaborate.

Conclusion: The integration of the GPC and the ED into one IEP, as in Twente, has had a positive effect on the LOS. Especially the lower LOS in the ED is important as the ED receives the more complex urgent care patients. Also, in a more general setting, especially when the number of self-referrals increases, it is beneficial for the organizations to collaborate.

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