

## Effect of partial closure of an emergency department on utilization of emergency departments, an observational study

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**Background:** As a result of multiple recommendations from the Danish Health Authority during 2005-2006, the structure of

emergency care was reconfigured, including a reduction in the number of entry points in the form of EDs. The reconfiguration process was set to start in 2007, with a goal of completion within 5-10 years. The aim of this study is to shed light on the effect of partial closure of an ED on the utilization of EDs.

**Methods:** Our population-based historic cohort study was based on data from Statistics Denmark and from Danish health registries, including the Danish Civil Registration System and the Danish National Patient Registry. We included all non-psychiatric ED contacts in citizens of Vejle municipal in the period 2014 to 2015 as Vejle ED on 5 January 2015 ceased its intake of acute orthopedic injuries between 10 pm and 7 am. As of 2015, Vejle municipality had 111,138 citizens. Contacts were excluded if patients were below 18 years old. For each contact emergency department utilized, residential municipal, and date of contact was extracted. Difference-in-difference (DID) estimation based on linear regression was employed, the dependent variable being aggregated daily ED contacts. The control group was defined as contacts between 7 am and 11 pm, and the cases being contacts between 11 pm and 7 am.

**Results:** The study included a total of 39,659 contacts. Out of these 34,901 were between 7 am and 11 pm, and 4,758 were between 11 pm and 7 am. In days before 5 January 2015 there was on average 7.33 contacts between 11pm and 7am, in days after the average was 5.75 contacts, resulting in a 21.6% drop. The DID analysis' comparison of contacts before and after 5 January 2015 resulted in a coefficient of -2.07,  $p < 0.01$ , 95%CI [-3.44, -0.70].

**Conclusion:** In conclusion, the negative DID coefficient found shows a drop of 2 contacts per day between 11pm and 7am. This drop in utilization of EDs could indicate an inequality in accessibility to healthcare. This begs the question; which citizens does not utilize the EDs after reconfiguration, and what conquests this brings?