The optimum ratio of General Practitioners and Nurse Practitioners in out-of-hours primary care teams

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Objective
The purpose of this study is to give insight in the optimum skill-mix of GPs and NPs in teams providing out-of-hours primary care.
Population studied
General practitioners (GPs), nurse practitioners (NPs) and support staff providing out-of-hours primary care.

Methods and (emerging) findings
A quasi experimental study was undertaken at one "general practitioner cooperative (GPC)". In the first stage of the study care was provided by a team of 4 GPs in the control condition and a team of 3 GPs and 1 NP in the experimental condition. In the second stage care was provided by a team of 2 GPs and 2 NPs. Quantitative data is derived from patient medical records. Work satisfaction of the care providers at the GPC was explored by interviews.
A total of 3,287 patients were included in the 4 GPs teams, 3,166 in the 3 GPs-1 NP teams and 3,048 in 2 GPs-2 NPs teams during periods of 35 weeks. There were no differences in casemix (i.e. age, gender, ICPC code) between teams. Only urgency levels of the patients differed significantly between the control team (4GPs) and the 3 GPs-1 NP teams ($p=0.01$). After correcting for casemix the 3 GPs-1 NP teams more often prescribed drugs compared to the teams with GPs only (44.2 vs 41.3 $p=0.03$). There were no differences in ordering X-rays between teams. The 2 GPs-2 NPs teams significantly more often referred patients to the Emergency Department compared to teams with GPs only (14.7 vs 12.0 $p=0.03$). According to Dutch norms 3.5% of the patients in the 4 GPs teams did not receive care within the defined time period. These numbers increased significantly in the 3 GPs-1 NP teams (5.2% $p<0.01$) and 2 GPs-2 NPs teams (8,3% $p<0.01$). There were no adverse events reported during the study.
GPs' caseload changed significantly per stage resulting in treating more urgent patients and more digestive complaints. Despite changes in casemix, there were only minor differences in GPs' productivity per hour and work satisfaction between stages. NPs' caseload did not differ between stage 1 and 2. There were no differences in casemix, resource use or productivity. Lastly, NPs and the support staff did not express any differences in work satisfaction between the stages.

Policy implications and conclusions
This study shows that a team of 3 GPs and 1 NP and a 2 GPs and 2 NPs is feasible to deliver primary care for all patients in need for care during out-of-hours. GPs delivered care convenient for their level of expertise; less complex patients received treatment by NPs. The influence of the skill-mix change on resource utilization was of minor clinical relevance. The impact of skill-mix on work satisfaction was minor. Skill-mix may be a suitable response for future challenges in primary healthcare.