Supplementary file 3: The effects of the projects on clinical practice

Supplement to: EW Verkerk, SA van Dulmen, GP Westert, L Hooft, P Heus, RB Kool, To do or not to do programme collaborators. Reducing low-value care. What can we learn from eight de-implementation studies in the Netherlands?

Project	Sample size and study period	Primary outcome(s) Low-value care volume	Secondary outcome(s) Patient outcomes	Use of other care
1	1645 COPD patients in the intervention group and 446,012 patients in the national control group. Pre-intervention period: Jan-March 2017. Intervention period: Jan-March 2018.	No reduction in the intervention group in the number of ICS/ICS-LABA distributions per COPD patient in 3 months (1.3% reduction, P=0.693). There was an 11.4% reduction in the control group, which was statistically significant (p<0.001).	The number of prednisolone and antibiotic prescriptions per patient did not change in the intervention group, and was reduced in the national control group (3.3% reduction in prednisolone, P<0.001 and 7.1% reduction in antibiotics, P<0.001). This indicates no increase in exacerbations.	The use of bronchodilators (LAMA/LABA) per patient did not change in the intervention group, but was reduced in the national control group (1.6% reduction, P=0.004).
2	639 (in 2016), 681 (in 2017) and 391 (in 2018) patients with lymphoma in the intervention group and 16163 (in 2016), 18834 (in 2017) and 22267 (in 2018) in the control group.	No reduction in the intervention group and no reduction in the control group in the number of CT scans per patient per year. (Intervention group: 8.4% reduction (P=0.052) from pre-intervention (2016) to intervention year (2017), but a subsequent 11.5% increase (P=0.015) from intervention (2017) to post-intervention (2018). Control group: 2.0% reduction from 2016 to 2017 and 0.0% reduction from 2017 to 2018 (not tested for significance).	-	-
3	32,163 patients with degenerative knee complaints in the intervention group and 104,283 in the control group. Pre-intervention period: Jan 2016-June 2017. Intervention period: July 2017-Dec 2018.	A monthly 0.15% reduction in the percentage of patients with degenerative knee complaints who receive an MRI, and a monthly 0.19% reduction in arthroscopic surgery in both the intervention and control group. No statistically significant difference between groups for both outcomes (MRI P=0.228 and arthroscopy P=0.688). More details can be found in this paper.[1]	-	-
4	324 patients with a urinary catheter pre-intervention (Sept 2016-Aug 2017) and 398 patients post-intervention (Sept-2017-April 2018). 1665 patients with an intravenous catheter pre-intervention and 1912 patients post-intervention. These catheters were assessed for appropriateness.	A 25.6% reduction in the percentage of patients with an inappropriate urinary catheter (from 32.4% inappropriate use (105 of 324 catheters) to 24.1% (96 of 398 catheters); P=0.013). Time-series analysis was not statistically significant. A 34.5% reduction in the percentage of patients with an inappropriate intravenous catheter (from 22.0% inappropriate use (366 of 1665 catheters) to 14.4% (275 of 1912 catheters); P<0.001). Time-series analysis confirmed this reduction (P=0.011). More details can be found in this paper.[2]	The percentage of patients with a catheter-related infection, length of hospital stay, and mortality rate showed no change.	-
5	13 GP practices in intervention group A and 13 GP practices in intervention group B, with a total population of 195,000 patients. Pre-intervention period: May 2016-April 2017.	A 23% reduction in the number of vitamin D tests in both groups (from 17.527 to 13.447). This reduction of 22 tests per 1000 patients was significant (P<0.001). A 20% reduction in the number of vitamin B12 tests in both groups (from 12,304 to 9891). This reduction of 12 tests per 1000 patients was significant (P=0.003).	The mean test results of vitamin D and vitamin B12 did not change.	The number of vitamin D and B12 prescriptions appeared to decrease after the de-implementation strategy (vitamin D from 90.2 to 69.2 per 1000 patients, vitamin B12 from 48.8 to 37.6 per 1000

	Intervention period: May 2017-April 2018.	Additional patient information in intervention group B resulted in a 10% extra reduction of vitamin D tests compared to group A (odds ratio 0.88, 95%CI 0.83-0.92), and a non-significant 4% extra reduction of vitamin B12 tests (odds ratio 0.96, 95%CI 0.91-1.02). More details can be found in this paper.[3]		patients, no P-value calculated).
6	130,920 patient contacts in the intervention group (4 hospitals) and 519,544 contacts in the control group (19 hospitals). Pre-intervention period: Aug 2016-Feb 2017. Post-intervention period: May 2017-April 2018.	A 11.4% reduction in the intervention group (from 11.0 to 9.7 laboratory tests per patient contact) and an 2.4% increase in the control group (from 10.9 to 11.2 laboratory tests per patient contact). Three of the four intervention hospitals showed a statistically significant reduction in the slope for laboratory test volume over time (H1: -1.55 P<0.001, H3: -0.74 P=0.03, H4: -2.18 P<0.001). The last hospital showed no change (H2: -0.34 P0.73). More details can be found in this paper.[4]	Apart from a decrease in outpatient visits in one hospital (a 0.40 reduction in the slope for visits over time, P=0.01), the length of hospital stay and rate of outpatient visits did not change in all four hospitals.	Three hospitals showed data of other diagnostics. Radiology use decreased in one hospital (a 0.03 reduction in the slope for radiology use over time, P=0.005). Microbiology use decreased in one and increased in another hospital (a 0.15 increase and a 0.16 reduction in the slope of microbiology use over time, P=0.02 and P=0.02). Nuclear medicine decreased in two hospitals (a 4.96 and a 14.26 reduction in the slope for nuclear medicine use over time, P=0.02 and P<0.001).
7	278 patients with BCC pre-intervention (2014) and 195 during the intervention (2016).	A 14.8% reduction in the number of BCC-related dermatology visits per patient within one year of diagnosis (from 1.59 to 1.34) in the intervention group. This change was statistically significant (P=0.04). More details can be found in this paper.[5]	There was no change in the patients' satisfaction with their physician, the hospital, and the information provided. Also, there was no change in their perceived health.	The number of BCC related visits to a GP did not change.
8	62 patients with dyspepsia who were referred for an upper gastrointestinal endoscopy in the intervention group and 57 patients in the control group. Patients were recruited between Nov 2017-March 2019, with follow-up 1 year after randomization.	A 61.3% reduction (from the 62 patients who were referred for an upper gastrointestinal endoscopy, 24 underwent the gastrointestinal endoscopy after the intervention) in the intervention group and a 17.5% reduction (from 57 to 47) in the control group. This difference was statistically significant (P<0.001). More details can be found in this paper.[6]	The severity of symptoms and the quality of life improved equally in both groups (symptoms reduced by 0.56 in the intervention and 0.62 in the control group, P<0.001 and P<0.001, quality of life improved by 0.42 in the intervention and 0.61 in the control group, P<0.003 and P<0.001). Health anxiety declined in the intervention group (mean reduction 0.18, P=0.008) but not in the control group.	-

LABA, Long-acting β adrenoceptor agonists; ICS, Inhaled corticosteroids; COPD, Chronic obstructive pulmonary disease; BCC, basal cell carcinoma.

References

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