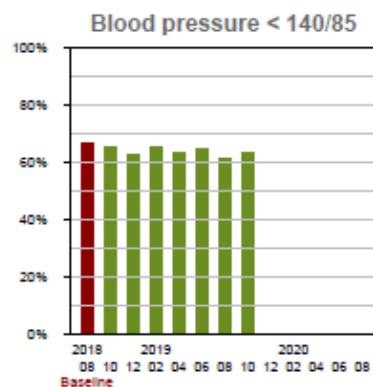
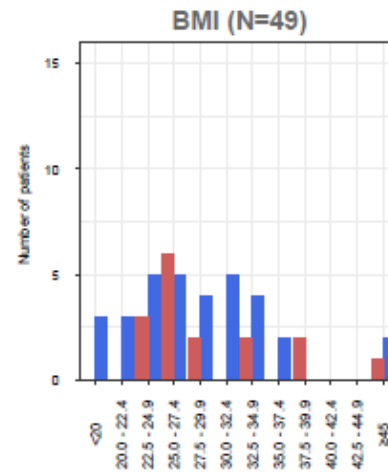
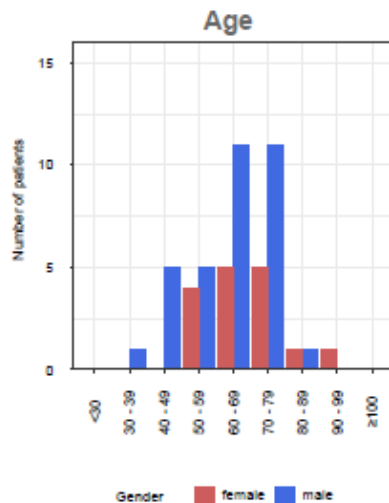


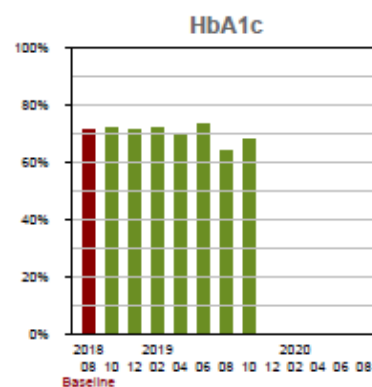
## Diabetes Feedback Report

Datum: 2019-10-31

The characteristics of your 50 patients with diabetes



Proportion of your patients with diabetes with a blood pressure measurement below 140/85 mmHg in the last 12 months



Proportion of your patients with diabetes with at least one HbA1c measurement in the last 12 months

**Spotlight from the guidelines:** Foot care in patients with diabetes: (ADA 2018, Bonner et al. 2016, UpToDate 11/2019)

- Daily check of shoes, change of socks and correct daily foot hygiene: gentle washing, drying and greasing.
- Patients should not walk barefoot, avoid hot water, trim toenails straight and wear appropriate footwear.
- Early professional care for open wounds and lesions on the foot. At least annual routine foot examinations by professionals

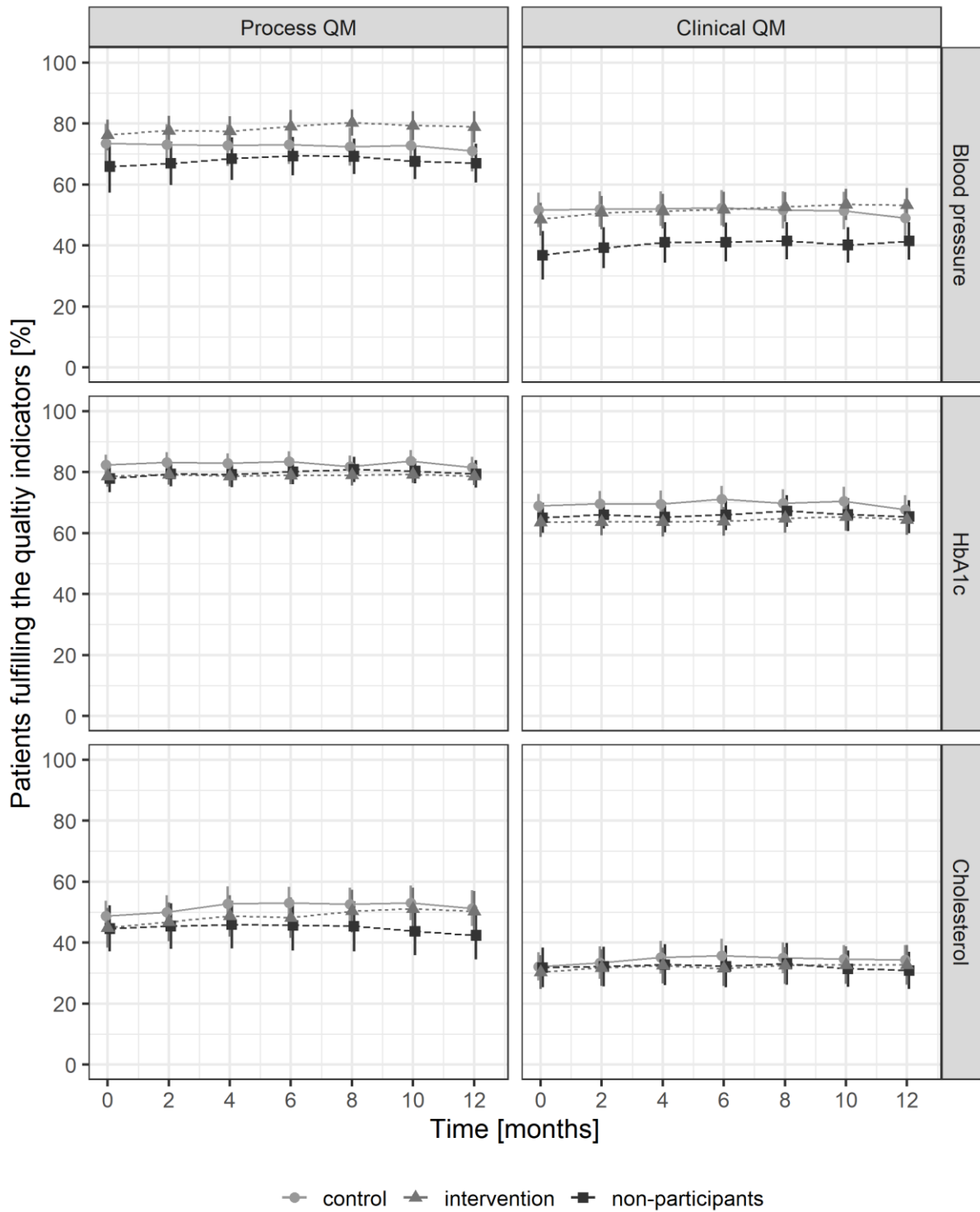


Figure 1 Illustration of sensitivity analysis: proportions of patients fulfilling the quality measures during the observation period. Primary outcomes are surrounded by thick frames. Illustrated are mean and Wald-95%-confidence-interval for each group. QM: quality measure

Supplementary table 1: Settings of the shiny balancer

Setting	Value
Imbalance measure logical	1
Weight logical	1
Imbalance measure character	1
Weight character	1
Imbalance measure integer	1
Weight integer	1
Imbalance measure double	5
Weight double	1
Generator seed	2
Random choice seed	2
Allocation ratio	0.5
Number of generated schemes	1000
Unique schemes	1
Imbalance limit	0.63
Number of balanced schemes	100

Supplementary table 2: Length of observation period of GPs dropping out:

	Reason for drop out	Length of observation period	Number of patients dropping out
<b>Intervention group</b>	GP left the practice (n= 2)	6 month observation period	33 patients
	GP left the practice (n= 2)	8 month observation period	42 patients
	Data transmission problems (n=2)	2 month observation period	52 patients
	Data transmission problems (n=2)	2 month observation period	34 patients
<b>Control group</b>	GP left the practice (n= 1)	8 month observation period	55 patients
	GP retired (n= 1)	2 month observation period	121 patients

Supplementary table 3: Disease identification schemes

<b>Disease</b>	<b>Identification scheme</b>
Obesity	BMI $\geq$ 30 (last 12 months) OR When BMI not available AND ICPC = T82
Hypertension	ATC = 'C02 C03A C03EA01 C0[78] C09[AB]' OR ICPC = K85 K86 K87 OR two blood pressure measurement $\geq$ 140/85
Hyperlipidaemia	ICPC = T93 OR ATC = 'C10A' OR Triglyceride >1.7 mmol/l OR Total-Cholesterol >5 mmol/l OR LDL-Cholesterol > 3 mmol/l OR (sex = 'female' AND HDL-Cholesterol $\leq$ 1.2 mmol/l) OR (sex = 'male' AND HDL-Cholesterol $\leq$ 1 mmol/l)
Chronic kidney disease stadium $\geq$ 3b	When last GFR < 45 ml/min and if there is at least one GFR<90 ml/min between date of last measure - 3 month and date of last measure - 24 month
Peripheral arterial disease	ICPC = K92
Coronary heart disease	ICPC = K74 K75 K76
Chronic heart failure	ICPC = K77
Stroke	ICPC = K90 K91
Retinopathy	ICPC = F83
Neuropathy	ICPC = N94
Insulin	ATC = 'A10A'
Oral	ATC = 'A10B'
Antihypertensive	ATC = 'C02 C03A C03EA01 C0[78] C09[AB]'
antithrombotic agents	ATC = 'B01A' AND ATC not = '^B01AD'
lipid lowering	ATC = 'C10'

Supplementary table 4: Detailed results of logistic regression models for primary and secondary outcomes

	Type	Subject	Variable	OR	95% CI	p-value
Primary outcomes	Clinical QI	BP	GP gender (ref = female)	0.654	0.448 - 0.955	<0.05
			GP age	1.018	0.999 - 1.037	0.065
			Volume of patients with diabetes	1.051	0.971 - 1.138	0.22
			Main effect intervention	0.939	0.646 - 1.364	0.742
			Main effect time	0.992	0.974 - 1.01	0.38
			Interactive effect time*intervention	1.026	0.999 - 1.053	0.06
	Process QI	HbA1c	GP gender (ref = female)	0.903	0.662 - 1.231	0.518
			GP age	0.985	0.970 - 1.000	0.050
			Volume of patients with diabetes	1.004	0.938 - 1.075	0.902
			Main effect intervention	0.736	0.527 - 1.029	0.073
			Main effect time	0.983	0.961 - 1.006	0.144
			Interactive effect time*intervention	1.014	0.982 - 1.047	0.389
Secondary outcomes	Process QI	BP	GP gender (ref = female)	0.646	0.395 - 1.056	0.081
			GP age	1.017	0.992 - 1.041	0.178
			Volume of patients with diabetes	1.086	0.974 - 1.211	0.136
			Main effect intervention	1.194	0.726 - 1.962	0.485
			Main effect time	0.986	0.966 - 1.007	0.193
			Interactive effect time*intervention	1.036	1.004 - 1.070	<0.05
	Clinical QI	HbA1c	GP gender (ref = female)	0.810	0.592 - 1.107	0.185
			GP age	0.990	0.975 - 1.005	0.200
			Volume of patients with diabetes	1.041	0.968 - 1.118	0.278
			Main effect intervention	0.729	0.512 - 1.039	0.08
			Main effect time	0.990	0.971 - 1.009	0.284
			Interactive effect time*intervention	1.023	0.995 - 1.051	0.106
	Process QI	Chol	GP gender (ref = female)	0.992	0.641 - 1.535	0.972
			GP age	0.989	0.969 - 1.010	0.298
			Volume of patients with diabetes	1.087	0.984 - 1.200	0.100
			Main effect intervention	0.725	0.448 - 1.175	0.192
			Main effect time	0.993	0.976 - 1.011	0.461
			Interactive effect time*intervention	1.027	1.000 - 1.055	<0.05
	Clinical QI	Chol	GP gender (ref = female)	1.000	0.678 - 1.475	0.998
			GP age	0.991	0.972 - 1.010	0.337
			Volume of patients with diabetes	1.096	0.995 - 1.206	0.063
			Main effect intervention	0.791	0.475 - 1.316	0.367
			Main effect time	0.995	0.977 - 1.014	0.602
			Interactive effect time*intervention	1.010	0.983 - 1.038	0.471

Supplementary table 5: Random effects of hierarchical logistic model

QI	Cluster	Variance	Std. deviation
bp_proc_qual	arzt_id:praxis_id	0.57	0.76
bp_proc_qual	praxis_id	0.20	0.44
bp_out_qual	arzt_id:praxis_id	0.36	0.60
bp_out_qual	praxis_id	0.08	0.28
hba1c_proc_qual	arzt_id:praxis_id	0.18	0.43
hba1c_proc_qual	praxis_id	0.12	0.34
hba1c_out_qual	arzt_id:praxis_id	0.18	0.42
hba1c_out_qual	praxis_id	0.17	0.41
chol_proc_qual	arzt_id:praxis_id	0.36	0.60
chol_proc_qual	praxis_id	0.33	0.57
chol_out_qual	arzt_id:praxis_id	0.23	0.48

chol_out_qual	praxis_id	0.49	0.70
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Supplementary table 6: Baseline characteristics and baseline quality indicator performance compared by group

	Intervention group	Control group	Non-participants
<b>Practice and GP characteristics</b>			
Practices	21	22	16
GPs	36	35	33
GPs per practice	1.0 (1.0 - 2.0)	1.0 (1.0 - 2.0)	1.0 (1.0 - 2.0)
Network participation (% no)	4 (11.1)	2(5.7)	11 (33.3)
Age	48.0 (42.0 - 57.3)	54.0 (46.0 - 63.0)	51.5 (43.8 - 54.3)
Gender (% male)	24 (66.7)	27 (77.1)	21 (63.6)
Volume of patients with diabetes per GP (%)	5.0 (3.3 - 6.4)	4.9 (3.7 - 6.4)	4.1 (2.9 - 6.4)
<b>Patient characteristics</b>			
Patients	1771	2067	1541
Patient age	70.0 (59.0 - 79.0)	69.0 (60.0 - 77.0)	68.0 (58.0 - 77.0)
Patient gender (% male)	989 (55.8)	1209 (58.6)	900 (58.4)
<b>Treatment and disease characteristics</b>			
Consultations in observation period	8 (3 - 15)	7 (3 - 12)	7 (3 - 15)
Blood pressure measurements	3 (1 - 4)	2 (1 - 4)	2 (1 - 4)
Systolic blood pressure [mm Hg]	137.5 (128.4 - 149.0)	134.0 (125.0 - 143.3)	136.0 (127.4 - 148.0)
Diastolic blood pressure [mm Hg]	80.0 (74.0 - 86.0)	80.0 (73.3 - 85.0)	81.0 (75.0 - 88.0)
HbA1c measurements	2 (1 - 3)	3 (1 - 4)	2(1 - 3)
HbA1c [%]	6.8 (6.3 - 7.5)	6.8 (6.3 - 7.5)	6.8 (6.4 - 7.5)
Cholesterol measurement	1 (1 - 2)	1 (1- 1)	1 (1 - 2)
Cholesterol [mmol/l]	4.5 (3.8 - 5.3)	4.6 (3.8 - 5.4)	4.5 (3.9 - 5.3)
BMI measurements	2 (1 - 3)	2 (1 - 3)	2 (1 - 3)
BMI [kg/m <sup>2</sup> ]	29.4 (26.5 - 33.1)	29.6 (26.3 - 33.5)	29.8 (26.3 - 34.2)
<b>Diabetes associated Comorbidities</b>			
Obesity	759 (42.9)	855 (41.4)	392 (25.4)
Hypertension	1566 (88.4)	1765 (85.4)	1288 (83.6)
Hyperlipidaemia	1098 (62.0)	1167 (56.5)	665 (43.2)
Chronic kidney disease	212 (12.0)	242 (11.7)	121 (7.9)
Peripheral arterial disease	54 (3.0)	80 (3.9)	16 (1.0)
Coronary heart disease	127 (7.2)	107 (5.2)	55 (3.6)
Heart failure	48 (2.7)	35 (1.7)	22 (1.4)
Stroke	29 (1.6)	38 (1.8)	12 (0.8)
Retinopathy	11 (0.6)	3 (0.1)	1 (0.1)
Neuropathy	44 (2.5)	56 (2.7)	8 (0.5)
<b>Diabetes associated medication</b>			
Insulin only	159 (9.0)	129 (6.2)	119 (7.7)
Oral anti-diabetic medication only	866 (48.9)	1112 (53.8)	961 (62.4)
Combination therapy insulin and oral anti-diabetic medication	258 (14.6)	262 (12.7)	229 (14.9)
Antihypertensive medication	862 (48.7)	975 (47.2)	738 (47.9)
Antiplatelet therapy and anticoagulants	736 (41.6)	806 (39.0)	661 (42.9)
Lipid lowering medication	258 (14.6)	262 (12.7)	656 (42.6)

GP: general practitioner; BMI: body mass index;



Supplementary table 7: Detailed results of logistic regression models for primary and secondary outcomes for the additional analysis

	Type	Subject	Variable	OR	95% CI	P-value
Primary outcomes	Clinical QI	BP	GP gender (ref = female)	0.74	0.54-1.01	0.054
			GP age	1.02	1.00-1.04	<0.05
			Volume of patients with diabetes	1.06	0.99-1.13	0.08
			Main effect intervention «non-participants»	0.70	0.48-1.03	0.073
			Main effect intervention «treat»	0.98	0.66-1.44	0.905
			Main effect time	0.99	0.97-1.01	0.383
			Interactive effect time*intervention «non-participants»	1.01	0.98-1.04	0.563
			Interactive effect time*intervention «treat»	1.03	1.00-1.05	0.06
	Process QI	HbA1c	GP gender (ref = female)	0.82	0.64-1.07	0.14
			GP age	0.99	0.97-1.00	0.056
			Volume of patients with diabetes	1.04	0.98-1.09	0.206
			Main effect intervention «non-participants»	0.81	0.57-1.15	0.23
			Main effect intervention «treat»	0.72	0.52-0.99	<0.05
			Main effect time	0.98	0.96-1.01	0.145
Interactive effect time*intervention «non-participants»			0.99	0.96-1.03	0.638	
Interactive effect time*intervention «treat»			1.01	0.98-1.05	0.391	
Secondary outcomes	Process QI	BP	GP gender (ref = female)	0.70	0.47-1.03	0.068
			GP age	1.02	1.00-1.05	<0.05
			Volume of patients with diabetes	1.09	1.01-1.18	<0.05
			Main effect intervention «non-participants»	0.85	0.52-1.38	0.499
			Main effect intervention «treat»	1.27	0.79-2.04	0.321
			Main effect time	0.99	0.97-1.01	0.193
			Interactive effect time*intervention «non-participants»	0.99	0.96-1.02	0.476
			Interactive effect time*intervention «treat»	1.04	1.00-1.07	<0.05
	Clinical QI	HbA1c	GP gender (ref = female)	0.82	0.63-1.05	0.113
			GP age	0.99	0.98-1.00	0.155
			Volume of patients with diabetes	1.07	1.01-1.13	<0.05
			Main effect intervention «non-participants»	0.83	0.58-1.19	0.31
			Main effect intervention «treat»	0.72	0.52-1.00	0.053
			Main effect time	0.99	0.97-1.01	0.286
			Interactive effect time*intervention «non-participants»	1.00	0.97-1.03	0.872
			Interactive effect time*intervention «treat»	1.02	1.00-1.05	0.105
	Process QI	Chol	GP gender (ref = female)	0.96	0.64-1.43	0.83
			GP age	0.99	0.97-1.01	0.263
			Volume of patients with diabetes	1.06	0.97-1.15	0.219
			Main effect intervention «non-participants»	0.66	0.36-1.22	0.182
Main effect intervention «treat»			0.71	0.40-1.27	0.251	
Main effect time			0.99	0.98-1.01	0.452	
Interactive effect time*intervention «non-participants»			0.98	0.95-1.01	0.143	
Interactive effect time*intervention «treat»			1.03	1.00-1.06	<0.05	
Clinical QI	Chol	GP gender (ref = female)	0.99	0.70-1.41	0.968	
		GP age	0.99	0.97-1.01	0.253	
		Volume of patients with diabetes	1.06	0.98-1.15	0.159	
		Main effect intervention «non-participants»	0.73	0.39-1.34	0.308	
		Main effect intervention «treat»	0.78	0.44-1.38	0.391	
		Main effect time	1.00	0.98-1.01	0.593	
		Interactive effect time*intervention «non-participants»	0.99	0.96-1.02	0.441	
		Interactive effect time*intervention «treat»	1.01	0.98-1.04	0.449	

OR: odds ratio; CI: confidence interval; QI: quality indicator; BP: blood pressure; Chol: cholesterol; GP: General practitioner