

Supplement

Supplement 1 (A, B, and C):

The following examples are for a 55-year-old non-smoking non-diabetic Dutch male, with a history of coronary heart disease systolic blood pressure of 140 mmHg, a total cholesterol of 6.0 mmol/L, a creatinine of 93 μ mol/L, and LDL-cholesterol of 3.4 mmol/L. The patient currently uses atorvastatin 40 mg. *Disclaimer: These examples are for a fictionalized, hypothetical patient and not based on any actual individual.*

Supplement 1A: Anonymous example of standard-care.

Cholesterol:

Prevention program findings

The concentration of cholesterol in your blood is elevated. An elevated cholesterol level can increase the atherosclerotic process, or the accumulation of cholesterol and other deposits in the walls of your blood vessels.

Advice from the vascular team:

You are already being treated with a cholesterol lowering medication. Yet, your cholesterol level is still elevated. We therefore recommend adjusting the dose of your cholesterol lowering medication or switching to different cholesterol lowering medication. Talk to your doctor about considering this switch.

You can find more information about cholesterol and other risk factors on the internet: www.cholesterol.nl, www.hartstichting.nl, www.voedingscentrum.nl and www.vaatcentrum.nl.

Supplement 1B: Example of a 'personal health profile' for a hypothetical patient in the individualized absolute risk arm. *Disclaimer: This is a fictionalized, hypothetical patient*



My Personal Health Profile

Part of the SMART-INFORM study

In this folder you will find your personal health profile, which we have made as part of your participation in the SMART-INFORM study. Elements of your medical status were used to complete the profile.

VIDEOS MADE FOR YOU

In this envelope, you will find six short videos designed to give you a bit of background information about this health profile and cardiovascular disease in general. The six videos are:

1. What is cardiovascular disease?
2. What is cholesterol?
3. What does a statin do?
4. Do statins have side-effects?
5. How do I read my personal health profile
6. What now?

The videos have been loaded onto the USB-card you are receiving with this Health Profile. You can watch the videos by plugging the USB card into a computer.

PERSONAL HEALTH PROFILE

Mr. J. Smith 73 years old	Type of cardiovascular disease Heart
You are a non-smoker	Creatinine-level (Kidney function) 100 umol/L
Blood pressure 140 / 90 mmHg	Prescribed statin Simvastatin 40 mg
Total cholesterol 4.7 mmol/L	You do not have diabetes
You do not report having atrial fibrillation (a type of abnormal heart rhythm)	You do not report having heart-failure

In order to calculate how statin medication affects your prognosis, we used the aspects of your profile listed above. We have based these aspects on the medical records on-file at the hospital.

2

10-YEAR RISK

A 10-year risk estimates the chance that you will suffer a heart attack, stroke, or sudden death with the next 10 years. We have estimated your 10-year risk in three different situations from which you can choose.

THREE SITUATIONS FROM WHICH TO CHOOSE

You can choose from the following three situations:

1. Continue with your current statin and dose, this is your current prognosis.
2. Stop taking your statin.
3. Increase your statin effectiveness by taking the highest dose of the strongest statin (atorvastatin 80mg).

1. CONTINUE

If you continue on your current statin and dose, your 10-year risk will be **21 %**

2. STOP

If you stop taking your statin, your 10-year risk will be **29 %**

3. INCREASE

If you increase your statin dose, your 10-year risk will be **18 %**

3

QUESTIONS?

If you have any questions about the SMART-INFORM study you can contact the investigators. They can be reached on weekdays on 000 00 000 00.

WE WILL CONTACT YOU

Within a few weeks, a researcher will be in contact with you to answer any additional questions or provide additional explanation regarding the personal health profile.



4

Supplement 1C: Example of a 'personal health profile' for a hypothetical patient in the individualized life-expectancy arm. *Disclaimer: This is a fictionalized, hypothetical patient*



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3. What does a statin do?
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PERSONAL HEALTH PROFILE

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 Blood pressure 140 / 90 mmHg	 Prescribed statin Simvastatin 40 mg
 Total cholesterol 4.7 mmol/L	 You do not have diabetes
 You do not report having atrial fibrillation (a type of abnormal heart rhythm)	 You do not report having heart-failure

In order to calculate how statin medication affects your prognosis, we used the aspects of your profile listed above. We have based these aspects on the medical records on-file at the hospital.

2

DISEASE-FREE LIFE EXPECTANCY

The disease-free life-expectancy indicates how long you can expect to live without having a heart attack, stroke, or sudden death. We have estimated your disease-free life expectancy in three different situations from which you can choose.

THREE SITUATIONS FROM WHICH TO CHOOSE

You can choose from the following three situations:

1. Continue with your current statin and dose, this is your current prognosis.
2. Stop taking your statin.
3. Increase your statin effectiveness by taking the highest dose of the strongest statin (atorvastatin 80mg).

1. CONTINUE

If you continue with your current statin and dose, your disease-free life-expectancy is **76 years**

2. STOP

If you stop taking your statin, your disease-free life-expectancy will be **22 months shorter**

3. INCREASE

If you increase your statin dose, your disease-free life-expectancy will be **9 months longer**

3

QUESTIONS?

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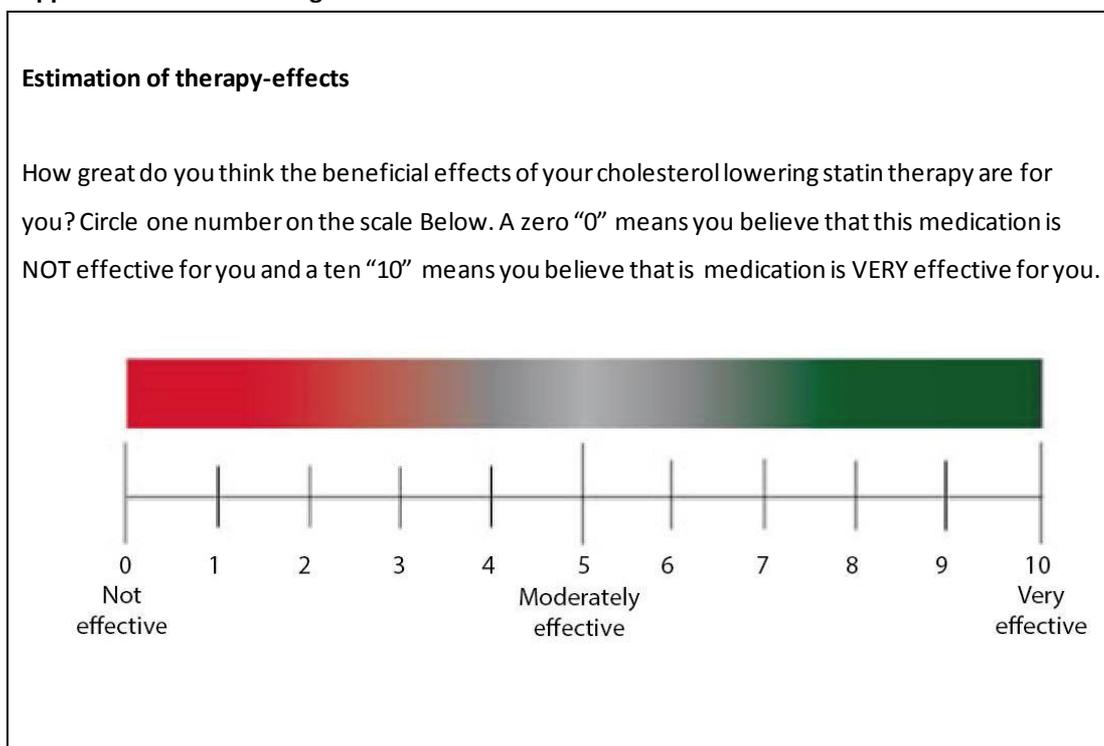


4

Supplement 2: Telephone consultation

Short motivational telephone consultation following a structured interview asking the following questions:

- Did you receive the information?
- Have you been able to watch the videos?
- Did you understand all the information?
- Which questions did you have after studying the information?
- Did you already decide which statin treatment option you prefer?
- If yes, did you discuss this with your physician?

Supplement 3: Visual analogue scale

Supplement 4: Patient questionnaire to assess statin knowledge

What do you know about medication?

Below are a number of statements with answer choices. Please circle the answer choice which you believe is correct. If you do not know the correct answer, you can mark 'I don't know'

Where in the body can you get cardiovascular disease?

- heart legs both I don't know

Possible side-effects of statins is/are

- muscle pain breathing problems neither one I don't know

A high cholesterol gives a greater risk of

- stomach bleeds muscle or joint pain stroke/heart-attack I don't know

By using statins, I reduce my risk of

- stomach bleeds pneumonias heart-attacks I don't know

Due to the use of statins, the cholesterol levels in my blood will

- increase decrease stay the same I don't know

Through the use I statins, I reduce

- the fatty plaques in my arteries my blood pressure both I don't know

How long are people usually advised to use statins?

- for life 0-1 years 1-10 years I don't know

How does cholesterol get into to blood?

- My body produces cholesterol I get it from my food Both answers are correct I don't know

Supplement 5: Secondary outcomes score ranges

Scores on the IPQ range from 0 (non-threatening) to 80 (very threatening).²¹ Patient Activation Measure (PAM-13) scores range from 0 (low activation) to 100 (high activation).²² Perceived statin efficacy ranged from 0 (statins perceived as ineffective) to 10 (high level of statin effectiveness). The 9-item shared decision-making questionnaire ranged from 0 (poor shared decision-making) to 100 (optimal shared decision-making).²³ BMQ Adherence Risk Scale ranged from 0 (no self-reported non-adherence) to 4 (self-reported non-adherence).²⁴ Understanding of statin-therapy ranges from 0 (no answer correct) to 100 (all answers correct). RAND Medical Outcomes Study Short Form Survey (SF-36) questionnaire ranges from 0 (low quality of life) to 100 (high quality of life).²⁰

Supplement 6: General practitioner questionnaire

	Definitely not (1)	Probably not (2)	Uncertain (3)	Probably yes (4)	Definitely yes (5)
1. How convinced are you that a statin is worthwhile for this patient?	<input type="checkbox"/>				
2. Do you think the patient could benefit from a higher statin dose?	<input type="checkbox"/>				
3. Would you consider statin discontinuation in this patient if the guidelines allowed it?	<input type="checkbox"/>				
The following three questions are only applicable if the patient was part of an intervention arm.					
4. How probable is it that you would use this information to aid in doctor-patient communication?	<input type="checkbox"/>				
5. Do you think the consultation would be more efficient if you had this information beforehand?	<input type="checkbox"/>				
6. Do you think this information would encourage therapy-adherence?	<input type="checkbox"/>				

Legend: Questions 1-3 were asked of every GP. Questions 4-6 were additionally asked for physicians with patients randomized to the individualized absolute risk or the individualized life-expectancy groups.

Supplement table 1: Baseline characteristics per missing and non-missing for primary outcome

	Control		iPOL		iARR	
	Non-missing	Missing	Non-missing	Missing	Non-missing	Missing
Population	n=90	n=11	N=87	N=14	N=83	N = 18
Age	64 (59 - 72)	62 (60 - 67)	66 (59-71)	68 (59-73)	66 (59-72)	63 (59 – 68)
Gender (male)	77 (85%)	9 (82%)	72 (83%)	11 (79%)	71 (86%)	16 (89%)
One CVD location	79 (88%)	10 (91%)	77 (89%)	14 (100%)	75 (90%)	15 (83%)
Current smokers	13 (16%)	4 (22%)	9 (10%)	1 (9%)	9 (10%)	1 (9%)
Years clinically manifest CVD	5 (0 - 11)	0 (0 - 12)	5 (0-10)	0 (0-2)	0 (0-10)	6 (0-12)
Diabetes Mellitus	19 (21%)	4 (36%)	24 (28%)	3 (21%)	13 (16%)	1 (6%)
LDL-c (mmol/L)	2.0 (1.6 - 2.5)	1.8 (1.6 - 2.4)	2.1 (1.7 - 2.4)	1.7 (1.6 - 2.1)	2.0 (1.6 - 2.4)	2.0 (1.7 - 2.3)
LDL-c >1.8mmol/L	56 (62%)	5 (50%)	62 (71%)	6 (43%)	55 (66%)	11 (61%)
Creatinine (umol/L)	85 (75 - 92)	85 (74 - 97)	82 (74 – 96)	91 (80 – 106)	83 (78 – 95)	85 (80 – 90)
Systolic blood pressure (mmHg)	129 (122 - 142)	132 (116 - 150)	132 (121- 145)	129 (120- 132)	130 (121 - 140)	140 (124- 148)
Number of medications per day	5 (4 - 7)	7 (5 - 10)	6 (4-9)	7 (6-8)	5 (4 - 7)	5 (4 - 6)
Months required to offset disutility of daily pill-taking	42 (9 - 97)	97 (35 - 97)	61 (3 – 97)	97 (70 – 97)	61 (9-97)	12 (9-61)
High likelihood limited literacy	6 (7%)	2 (18%)	6 (7%)	2 (14%)	5 (4%)	4 (22%)
Possibility of limited literacy	9 (10%)	2 (18%)	7 (8%)	2 (14%)	7 (9%)	1 (56%)
Adequate literacy	75 (83%)	7 (63%)	74 (85%)	10 (71%)	70 (85%)	13 (72%)

Legend: Data are reported as median (interquartile range) or n (%). CVD locations defined as coronary artery disease, peripheral artery disease, or abdominal aortic aneurysm in addition to cerebrovascular disease. Health literacy based on the Newest Vital Sign baseline questionnaire.²⁹ Number of medications excludes over the counter medications, (nasal) sprays, and topical medications.

Supplemental table 2: Physician reported secondary outcomes

	Median (IQR)			Two-sided p-value
	Control-group	iAR-group	iLE-group	
Post-interventional LDL-c				
LDL-c values determined	n=55	n=43	n=43	
No LDL-c values determined	n=27	n=42	n=42	
Unknown**	n=19	n=21	n=16	
Post-interventional LDL-c at 6 months (mmol/L)	1.9 (1.6 - 2.3)	1.9 (1.4 - 2.3)	1.9 (1.5 - 2.4)	p=0.60
Physician opinion of intervention				
Approached	n=93	n=88	n=87	
Participated	n=51	n=48	n=42	
Convinced that a statin is worthwhile for the patient*	5 (4-5)	5 (5-5)	5 (5-5)	p=0.50
Believes patient could use a higher dose*	3 (2-4)	3 (2-4)	3 (2-4)	† p=0.11
Would consider statin discontinuation if guidelines allowed*	2 (1-3)	2 (1-4)	2 (1-4)	† p=0.84
How probable to use information*	N/A	4 (4-5)	4 (3-5)	† p=0.84
Believes that consultation would be more efficient*	N/A	4 (3-5)	4 (3-5)	p=0.4
Believes that information would encourage therapy adherence*	N/A	4 (3-5)	4 (3-4)	p=0.50

Legend: Data are reported as median (interquartile range) or n (%). †Only applicable for the intervention groups LDL-c=low-density lipoprotein cholesterol. Precise questions and answer choices are shown in supplement 6 "General Practitioner Questionnaire."

*Median numbers of five-point scale where 1 = definitely not, 2= probably not, 3= uncertain, 4= probably yes, 5 = definitely yes.

** No link with dossier from general practitioner possible after six months.

† Denotes a non-parametric test was applied.

Supplemental table 3: Median DCS score per subgroup strata

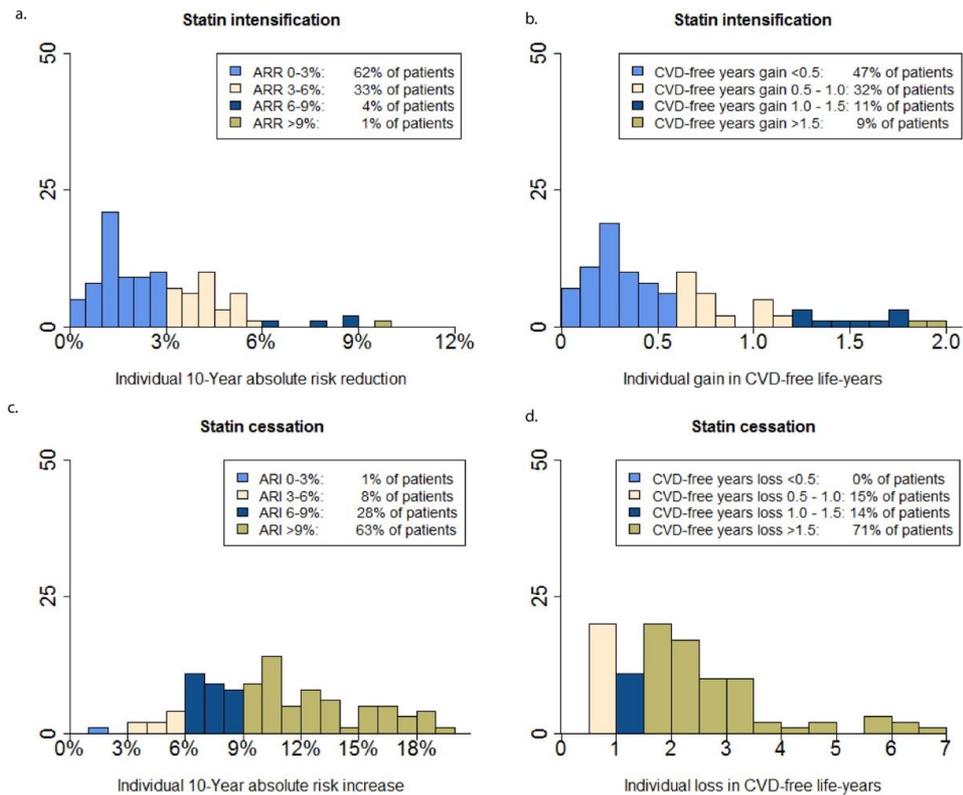
	Control –group		iAR –group		iLE –group	
Gender (F=7.02, p-value for interaction=0.32)						
Men	29.7 (19.5 - 42.2)	n=71	23.4 (11.7 - 29.7)	n=72	25.0 (10.9 - 32.8)	n=77
Women	25.8 (21.0 - 47.7)	n=12	14.1 (10.2 - 25)	n=15	26.6 (9.4– 29.7)	n=13
Age (F=0.17, p-value for interaction=0.90)						
>65	19.0 (20.3 - 42.2)	n=45	18.8 (9.0 - 28.6)	n=44	25.0 (8.6 - 31.3)	n=42
≤65	30.0 (19.5 - 42.6)	n=38	23.5 (13.3 - 30.7)	n=43	25.0 (12.9 - 31.6)	n=48
Patient activation measure (F=1.4, p-value for interaction=0.40)						
Low	26.7 (14.8 - 39.1)	n=21	21.9 (3.1 - 25.0)	n=13	26.6 (24.2 - 49.2)	n=15
High	26.7 (25.2 - 42.2)	n=43	23.4 (12.5 - 30.7)	n=43	22.4 (4.7 - 29.7)	n=49
Years since first CVD-event (F=1.4, p-value for interaction=0.24)						
>1 year	29.7 (20.3 - 45.3)	n=33	23.4 (4.7 - 29.7)	n=43	25.0 (14.9 - 33.2)	n=52
≤1 year	26.7 (19.9 - 39.8)	n=50	21.0 (14.1 - 30.0)	n=44	23.5 (5.5 - 33.2)	n=38
Educational level (F=2.8, p-value for interaction=0.09)						
Low	28.1 (25.0 - 37.5)	n=14	6.3 (3.1 - 18.8)	n=17	14.1 (1.6 - 25.0)	n=15
Middle	29.7 (13.3 - 46.1)	n=35	25.0 (16.4 - 30.7)	n=40	25.0 (22.3 - 30.5)	n=38
High	26.6 (20.7 - 41.0)	n=34	21.9 (17.2 - 30.9)	n=30	25.0 (7.8 - 34.4)	n=37
Health literacy* (F=4.0, p-value for interaction=0.02)						
High likelihood limited literacy	50.0 (29.7 - 53.1)	n=5	7.8 (3.1 - 13.7)	n=6	28.1 (25.0 - 31.3)	n=6
Possibility limited literacy	31.2 (25.0 - 41.4)	n=7	29.7 (18.7 - 30.5)	n=7	25.0 (0.0 - 42.1)	n=9
Adequate literacy	26.6 (18.8 - 41.8)	n=70	22.7 (12.9 - 29.7)	n=74	23.4 (8.6 - 29.7)	n=75
Disutility (F=0.6, p-value for interaction=0.54)						
Low (<9 months)	26.6 (14.1 - 45.3)	n=23	18.8 (3.1 - 25.0)	n=25	22.7 (9.0 - 25.4)	n=24
Middle (9-97 months)	32.0 (23.4 - 44.5)	n=18	23.4 (20.7 - 28.5)	n=14	27.3 (14.8 - 41.8)	n=26
High (>97 months)	32.0 (25.0 - 43.0)	n=24	17.2 (3.1 - 29.7)	n=31	23.4 (0.39 - 35.0)	n=22

Legend: Data are reported as median (25th – 75th percentile). *Further analyses for health-literacy are shown in supplemental figure 2. Health literacy based on the Newest Vital Sign.²⁸

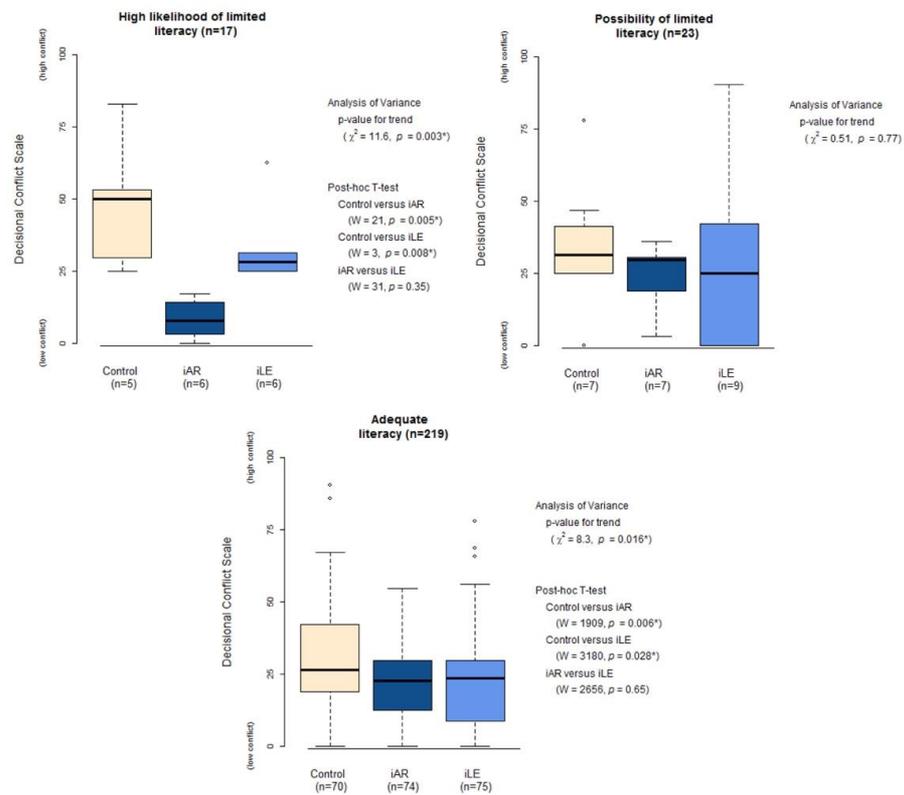
Supplemental table 4: Sensitivity analyses: Patient Reported Secondary Outcomes corrected for baseline characteristics.

	ANCOVA
	p-value
DCS (1)	p=0.49
DCS (6)	p=0.50
Brief-IPQ (1)	p=0.21
Brief-IPQ (6)	p=0.63
PAM (1)	p=0.39
PAM (6)	p=0.29
Perceived Statin Efficacy (1)	p=0.67
Perceived Statin Efficacy (6)	p=0.44
Understanding of therapy-effects (1)	p=0.16
Understanding of therapy-effects (6)	p=0.60
BMQ Adherence Risk Scale (1)	p=0.382
BMQ Adherence Risk Scale (6)	p=0.32
SDMQ9 (1); Reported visiting GP (n)	p=0.21
SDMQ9 (6); reported visiting GP (n)	p=0.35
RAND-36 Quality of life (6)	
Physical functioning	p=0.12
Role limitations due to physical health	p=0.48
Role limitations due to emotional problems	p=0.69
Energy/fatigue	p=0.86
Emotional well-being	p=0.25
Social Functioning	P = 0.71
Pain	p = 0.53
General health	P = 0.86

Sensitivity analyses for all outcomes at one (1) and six (6) months post intervention corrected for baseline characteristics: gender, age, smoking status, diabetes status, LDL-cholesterol (mmol/L), creatinine (umol/L), disutility score, NVS health literacy, and number of medications used per day



Supplemental Figure 1: Therapy-benefit from statin intensification to atorvastatin 80mg for a) iAR arm and b) iLE arm. Loss of benefit from statin discontinuation in c) iAR arm and d) iLE arm. In the iAR group, the median baseline 10-year absolute CVD risk was 37.6% (28.1-49.0). The estimated absolute 10-year risk change was -2.4% (-1.2 to -3.9) after intensification and 10.2% (7.7- 13.5) after discontinuation. In the iLE group, the median CVD-free life-expectancy was 75.4 years (73.0-82.7). The median change in CVD-free life-years was 0.5 years (0.3 – 0.8) after intensification and -2.0 years (- 1.3 - - 2.8) after discontinuation.



Supplemental figure 2: Subgroup analysis. Box-and-whisker plot depict the decisional conflict score at one month stratified by baseline health literacy. The colored boxes denote the median (25th – 75th percentiles).