TDF domain
Knowledge
Skills
Memory, Attention and Decision
Processes
Behavioural Regulation
Social/Professional Role & Identity
Beliefs about Capabilities
Optimism
Beliefs about Consequences
Reinforcement
Intentions
Goals
Emotion
Environmental Context and Resources
Social Influences

Table S1. Mapping of the Behavior Change Wheel components of behavior change
to the domains of the Theoretical Domains Framework

Table S2. Doctors' and nurses' views on barriers to implementing alcohol screening and brief interventions at the baseline.

BCW Component	TDF Domain	Construct	Item	Intervention N=82	Control N=82
Capability	D1 Knowledge	Knowledge	I know the content and objectives of the guideline on alcohol screening and brief intervention	3.7±1.4	3.6±1.4
		Procedural knowledge	I know how to screen for alcohol misuse and how to deliver a brief intervention	3.7±1.5	3.5±1.2
	D2 Skills	Skills	I have been trained how to screen for alcohol misuse and how to deliver a brief intervention	2.9±1.6	2.5±1.5
			I have the skills to screen for alcohol misuse and to deliver a brief intervention	3.4±1.4	3.2±1.2
lotivation	D3 Social/professional role and identity	Professional role	Screening and advising for alcohol misuse is part of my work as a doctor/nurse	5.5±1.0	5.3±1.0
			It is my responsibility as a doctor/nurse to screen and advise for alcohol misuse	5.5±1.0	5.3±1.0
	D4 Beliefs about capabilities	Self-efficacy	I am confident that I can screen and advise for alcohol misuse even when the patient is not motivated	4.3±1.3	4.3±1.0
			I am confident that I can screen and advise for alcohol misuse even when there is little time	3.7±1.5	4.0±1.1
		Perceived behavioral control	For me, screening and advising for alcohol misuse is difficult	4.5±1.0	4.6±1.0
	D5 Optimism	Optimism	With regard to screening and advising for alcohol misuse I am always optimistic about the future	3.8±1.1	3.9±0.9
			With regard to screening and advising for alcohol misuse overall, I expect more good things to happen than bad	4.1±1.0	4.2±1.0
	D6 Beliefs about consequences	Outcome expectancies	If I screen and advise for alcohol misuse it will benefit public health	5.8±1.1	5.8±1.0
			If I screen and advise for alcohol misuse it will have disadvantages for my relationship with the patient	3.0±1.1	2.9±1.1

BCW Component	TDF Domain Construct Item			Intervention N=82	Control N=82	
Motivation	D7 Reinforcement	Reinforcement	Whenever I screen and advise for alcohol misuse, I feel like I am making a difference	4.9±1.1	5.0±0.9	
			Whenever I screen and advise for alcohol misuse, I get recognition from professionals who are important to me	4.0±1.0	4.2±0.8	
	D8 Intention	Intention	I intend to screen and advise for alcohol misuse in the next appointment	4.6±1.1	4.6±0.8	
			I will definitely screen and advise for alcohol misuse in the next appointment	4.4±1.0	4.4±0.8	
	D9 Goals	Action planning	I have a clear plan how often I will screen and advise for alcohol misuse	3.7±1.0	3.6±0.8	
anability		Priority	Generally, I am more pressured to cover something else than to screen and advise for alcohol misuse	5.0±1.3	4.9±1.2	
apability	D10 Memory, attention and decision processes	Memory	Screening and advising for alcohol misuse is difficult to remember	3.7±1.1	3.7±1.2	
			I often need to check the guideline on alcohol screening and brief intervention before screening and advising for alcohol misuse	4.4±1.2	4.3±1.2	
Opportunity	D11 Environmental context and resources	Resources/material resources	Screening and advising for alcohol misuse has a good fit with routine practice	4.3±1.3	3.9±1.0	
			In the organization I work screening and advising for alcohol misuse is routine	3.7±1.4	3.5±1.0	
			In the organization I work there is enough time to screen and advise for alcohol misuse	2.9±1.2	2.8±1.1	
			In the organization I work I have the tools to screen and advise for alcohol misuse	3.6±1.2	3.5±1.2	
			In the organization I work I have a working network for referring patients with alcohol dependence	3.7±1.4	3.8±1.5	

BCW Component	TDF Domain	Construct	Item	Intervention N=82	Control N=82
Opportunity	D12 Social influences	2 Social influences Social support I can rely on a dedicated team of professionals when things get tough when screening and advising for alcohol misuse		3.7±1.3	3.6±1.3
			I can rely on my colleagues when things get tough when screening and advising for alcohol misuse	4.1±1.2	4.1±1.1
Motivation	D13 Emotion	Affect	I feel nervous when screening and advising for alcohol misuse	3.3±1.2	3.4±1.2
Capability	D14 Behavioral regulation	Automaticity	Screening and advising for alcohol misuse is something I do automatically	3.4±1.4	3.5±1.1
		Self-monitoring	I tend to notice my successes while working towards screening and advising for alcohol misuse	4.5±0.9	4.3±0.9
		Action planning	I have a clear plan when I will screen and advise for alcohol misuse	3.3±1.3	3.3±0.9
			I have a clear plan of how I will screen and advise for alcohol misuse	3.2±1.2	3.3±0.9

Table S3. Doctors' and nurses' views on barriers to implementing alcohol screening and brief interventions at the baseline and 12-month follow-up (intervention arm).

BCW	TDF							
DCW	IDI	Construct	Item	Baseline	Follow-up	р	d	BF
Component	Domain			24000000	ronon up	P	-	21
Capability	D1 Knowledge	Knowledge	I know the content					
			and objectives of the					
			guideline on alcohol	3.7±1.4	5.3±0.9	< 0.001	1.28	>100
			screening and brief					
			intervention					
		Procedural	I know how to					
		knowledge	screen for alcohol					
			misuse and how to	3.7±1.5	5.4±0.9	< 0.001	1.36	>100
			deliver a brief					
			intervention					
	D2	Skills	I have been trained					
	Skills		on how to screen for					
			alcohol misuse and	2.9±1.7	5.1±1.6	< 0.001	1.33	>100
			how to deliver a					
			brief intervention					
			I have the skills to					
			screen for alcohol					
			misuse and to	3.3±1.3	5.1±1.0	<0.001	1.46	>100
			deliver a brief					
			intervention					

Motivation	D3	Professional	Screening and					
	Social/	role	advising for alcohol					
	, professional		misuse are part of	5.5±1.0	5.8±0.9	0.01	0.29	2.8
			my work as a					
	role and		doctor/nurse					
	identity		It is my					
			responsibility as a					
			doctor/nurse to	5.6±1.0	5.8±0.9	0.02	0.26	1.5
			screen and advise	5.0±1.0	5.0±0.7	0.02	0.20	1.5
			for alcohol misuse					
			for alconol misuse					
	D4	Self-efficacy	I am confident that I					
	Beliefs about		can screen and					
			advise for alcohol	4.3±1.3	40.12	-0.001	0.40	32.8
	capabilities		misuse even when	4.3±1.3	4.9±1.3	<0.001	0.40	32.8
			the patient is not					
			motivated					
			I am confident that I					
			can screen and					
			advise for alcohol	3.7±1.5	4.7±1.1	< 0.001	0.77	>100
			misuse even when					
			there is little time					
		Perceived	For me, screening					
		behavioural	and advising for	4.5±1.0	3.6±1.2	<0.001	0.66	>100
		control	alcohol misuse is				0.00	
		control	difficult					

	D5	Optimism	With regard to					
	Optimism		screening and					
	•		advising for alcohol	3.8±1.1	4.4±0.9	<0.001	0.46	>100
			misuse I am always	3.011.1	4.410.7	<0.001	0.40	>100
			optimistic about the					
			future					
			With regard to					
			screening and					
			advising for alcohol					
			misuse overall, I	4.1±1.0	4.5±0.9	0.002	0.36	12.0
			expect more good					
			things to happen					
			than bad					
	D6	Outcome	If I screen and					
	Beliefs about	expectancies	advise for alcohol	5.8±1.2	6.1±1.0	0.009	0.30	3.5
	consequences		misuse it will					
	Consequences		benefit public health					
			If I screen and					
			advise for alcohol					
			misuse it will have					
			disadvantages for	3.0±1.1	2.9±1.4	0.89	0.02	0.13
			my relationship					
			with the patient					
Motivation	D7	Reinforcement	Whenever I screen					
MULIVATION	Reinforcement	Remorecutere	and advise for					
	Kennoreemene		alcohol misuse, I feel	4.9±1.2	5.4±1.0	<0.001	0.42	51.9
			like I am making a	4.711.4	3.471.0	×0.001	0.42	51.7
			difference					
			difference					

		Whenever I screen					
		and advise for					
		alcohol misuse, I get	4.0±1.0	4.4±1.0	0.007	0.31	4.2
		recognition from	T.U±1.0	7.7±1.0	0.007	0.31	'T. 4
		professionals who					
		are important to me					
D8	Intention	I intend to screen					
Intention		and advise for					
Intention		alcohol misuse in	4.7±1.1	5.2±0.9	< 0.001	0.49	>100
		the next					
		appointment					
		I will definitely					
		screen and advise					
		for alcohol misuse in	4.4±1.0	4.9±1.1	< 0.001	0.46	>100
		the next					
		appointment					
D9	Action	I have a clear plan of					
	planning	how often I will					
Goals		screen and advise	3.7±1.0	4.2±1.0	<0.001	0.49	>100
		for alcohol misuse					
-	Priority	Generally, I am					
		more pressured to					
		cover something					
		else than to screen	5.0±1.4	5.1±1.3	0.50 0.0	0.07	0.16
		and advise for					
		alcohol misuse					

Capability	D10	Memory	Screening and					
	Memory,		advising for alcohol	3.7±1.1	3.4±1.1	0.07	0.21	0.63
	attention		misuse are difficult	5.7 ± 1.1	5.7±1.1	0.07	0.21	0.05
			to remember					
	and decision		I often need to check					
	processes							
			the guideline on					
			alcohol screening					
			and brief	4.4±1.2	3.6±1.1	<0.001	0.68	>100
			intervention before		0.02111			
			screening and					
			advising for alcohol					
			misuse					
Opportunity	D11	Resources/	Screening and					
opportunity	7 DII Environmental	material	advising for alcohol					
				4.2±1.3	4 4 1 1 1	0 1 7	0.16	0.31
	context and	resources	misuse have a good	4.2±1.3	4.4±1.1	0.17	0.16	0.31
	resources		fit with routine					
			practice					
			In the organization I					
			work screening and					
			advising for alcohol	3.7±1.4	4.3±1.2	0.001	0.38	18.4
			misuse is routine					
			In the organization I					
			work there is					
			enough time to	3.0±1.2	3.4±1.3	0.008	0.31	3.88
			screen and advise					
			for alcohol misuse					

			In the organization I work I have the					
			tools to screen and	3.7±1.2	5.1±1.0	<0.001	1.13	>100
			advise for alcohol					
			misuse					
			In the organization I					
			work I have a					
			working network	3.7±1.4	4.8±1.1	<0.001	0.75	>100
			for referring					
			patients with					
			alcohol dependence					
Opportunity	D12	Social support	I can rely on a					
	Social		dedicated team of		4.7±1.3			
	influences		professionals when					
			things get tough	3.7±1.4		< 0.001	0.67	>100
			when screening and					
			advising for alcohol					
			misuse					
			I can rely on my					
			colleagues when					
			things get tough	4.1±1.2	4.8±1.1	<0.001	0.51	>100
			when screening and	4.111.4	4.8±1.1	<0.001	0.31	
			advising for alcohol					
			misuse					

Mativation	D12	Affaat	I feel normous when					
Motivation	D13 Emotion	Affect	I feel nervous when screening and advising for alcohol misuse	3.4±1.2	2.7±1.1	<0.001	0.50	>100
Capability	D14 Behavioral regulation	Automaticity	Screening and advising for alcohol misuse is something I do automatically	3.4±1.4	4.2±1.2	<0.001	0.60	>100
		Self-monitoring	I tend to notice my successes while working towards screening and advising for alcohol misuse	4.5±0.9	5.0±1.0	<0.001	0.51	>100
		Action planning	I have a clear plan when I will screen and advise for alcohol misuse	3.3±1.3	4.2±1.0	<0.001	0.86	>100
			I have a clear plan of how I will screen and advise for alcohol misuse	3.2±1.3	4.5±1.0	<0.001	1.11	>100

BF: Bayes Factor; D: Domain

Table S4. Doctors' and nurses' views on barriers to implementing alcohol

screening and brief interventions at the baseline and 12-month follow-up (control

arm).

BCW	TDF																													
-		Construct	Item	Baseline	Follow-up	р	d	BF																						
Component	Domain				ľ	•																								
Capability	D1 Knowledge	Knowledge	I know the content																											
			and objectives of			<0.001 0.39																								
			the guideline on	3.6±1.4	4.1±1.4		0.39	33.8																						
			alcohol screening	5.0±1.1	7.111.7			55.0																						
			and brief																											
			intervention																											
		Procedural	I know how to																											
		knowledge	screen for alcohol		4.3±1.2	<0.001 0.71																								
			misuse and how to	3.5±1.2			<0.001	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71	0.71
			deliver a brief																											
			intervention																											
	D2	Skills	I have been																											
	Skills		trained on how to																											
	JKIIIS		screen for alcohol	2.5±1.5	2.2.4.5	0.004	0.60	100																						
			misuse and how to		3.3±1.7	< 0.001	0.62	>100																						
			deliver a brief																											
			intervention																											

			I have the skills to					
			screen for alcohol					
			misuse and to	3.2±1.2	3.7±1.3	< 0.001	0.43	>100
			deliver a brief					
			intervention					
Motivation	D3	Professional	Screening and					
	Social/	role	advising for					
	professional		alcohol misuse are	5.3±1.0	5.1±0.9	0.15	-0.16	0.34
			part of my work as					
	role and		a doctor/nurse					
	identity		It is my					
			responsibility as a					
			doctor/nurse to	5.3±1.0	5.2±1.0	0.53	-0.07	0.15
			screen and advise	0.0 - 1.0	0.221.0	0.00	0.07	0.120
			for alcohol misuse					
	D4	Self-efficacy	I am confident that					
	Beliefs about		I can screen and					
	capabilities		advise for alcohol	4.3±1.0	4.5±1.0	0.17	0.15	0.31
	capabilities		misuse even when					
			the patient is not					
			motivated					
			I am confident that					
			I can screen and					
			advise for alcohol	4.0±1.1	4.1±1.2	0.81	0.03	0.13
			misuse even when					
			there is little time					

	Perceived behavioural control	For me, screening and advising for alcohol misuse is difficult	4.6±1.0	4.4±1.1	0.16	-0.16	0.32
D5	Optimism	With regard to					
Optimism		screening and					
		advising for				0.17	
		alcohol misuse I	3.9±0.9	4.1±1.0	0.14		0.36
		am always					
		optimistic about					
		the future					
		With regard to					
		screening and					
		advising for					
		alcohol misuse	4.2±1.0	4.4±0.9	0.15	0.16	0.34
		overall, I expect	4.211.0	4.4 ± 0.7	0.15	0.10	0.54
		more good things					
		to happen than					
		bad					
D6	Outcome	If I screen and					
Beliefs about	expectancies	advise for alcohol					
		misuse it will	5.8±1.0	5.7±0.9	0.10	-0.18	0.45
consequences		benefit public					
		health					

			If I screen and					
			advise for alcohol			0.41	-0.09	
			misuse it will have	2.9±1.1	2.8±1.1			0.17
			disadvantages for	2.7±1.1	2.0±1.1			0.17
			my relationship					
			with the patient					
Motivation	D7	Reinforcement	Whenever I screen					
	Reinforcement		and advise for					
			alcohol misuse, I	5.0±0.9				
			feel like I am		4.9±1.1	0.40 -0.0	-0.09	0.17
			making a					
			difference					
			1471					
			Whenever I screen					
			and advise for					
			alcohol misuse, I					
			get recognition	4.2±0.8	4.2±1.0	1.00	0.00	0.12
			from professionals					
			who are important					
			to me					
	D8	Intention	I intend to screen					
	T.,		and advise for					
	Intention		alcohol misuse in	4.6±0.8	4.7±1.0	0.74	0.04	0.13
			the next					
			appointment					

	D9	Action	I will definitely screen and advise for alcohol misuse in the next appointment I have a clear plan	4.4±0.8	4.4±1.0	0.92	-0.01	0.12
	Goals	planning	of how often I will screen and advise for alcohol misuse	3.6±0.8	3.9±1.0	0.02	0.26	1.71
		Priority	Generally, I am more pressured to cover something else than to screen and advise for alcohol misuse	4.9±1.2	5.0±1.3	0.46	0.08	0.16
Capability	D10 Memory, attention	Memory	Screening and advising for alcohol misuse are difficult to remember	3.7±1.2	3.8±1.2	0.35	0.10	0.18

	and decision		I often need to					
	processes		check the					
			guideline on					
			alcohol screening					
			and brief	4.3±1.1	4.2±1.2	0.74	-0.04	0.13
			intervention					
			before screening					
			and advising for					
			alcohol misuse					
Opportunity	D11	Resources/	Screening and					
	Environmental	material	advising for					
		resources	alcohol misuse	3.9±1.0 3.9±0.9	20.00	0 55	0.07	0.14
	context and		have a good fit		3.9±0.9	0.55	0.07	
	resources		with routine					
			practice					
			In the organization					
			I work screening					
			and advising for	3.5±1.0	3.8±1.1	0.02	0.26	1.55
			alcohol misuse is					
			routine					
			In the organization					
			I work there is					
				20111	20112	0.20	0.12	0.22
			enough time to	2.8±1.1	3.0±1.2	0.28	0.12	0.22
			screen and advise					
			for alcohol misuse					

			In the organization					
			I work I have the					
			tools to screen and	3.5±1.2	3.7±1.1	0.14	0.17	0.36
			advise for alcohol					
			misuse					
			In the organization					
			I work I have a					
			working network					
				20115	40,12	0 1 7	0.15	0.20
			for referring	3.8±1.5	4.0±1.2	0.17	0.15	0.30
			patients with					
			alcohol					
			dependence					
Opportunity	D12	Social support	I can rely on a					
	Social		dedicated team of					
	influences		professionals					
			when things get	3.6±1.3	10110	0.02	0.26	1.72
			tough when	3.0±1.3	4.0±1.2	0.02	0.20	1./2
			screening and					
			advising for					
			alcohol misuse					
			I can rely on my					
			colleagues when					
			things get tough					
				4.1±1.1	4.4±1.1	0.01	0.29	3.22
			when screening					
			and advising for					
			alcohol misuse					

Motivation	D13 Emotion	Affect	I feel nervous when screening and advising for alcohol	3.4±1.2	3.4±1.2	0.62	-0.06	0.14
			misuse					
Capability	D14	Automaticity	Screening and					
	Behavioral		advising for					
	Denuviorai		alcohol misuse is	3.5±1.1	3.8±1.1	0.07	0.20	0.61
	regulation		something I do					
			automatically					
	S	Self-monitoring	I tend to notice my				0.13	0.23
			successes while					
			working towards	4.3±0.9	4.5±1.0	0.25		
			screening and	4.3±0.9				
			advising for					
			alcohol misuse					
		Action	I have a clear plan					
		planning	when I will screen					
		1 0	and advise for	3.3±0.9	3.5±0.9	0.04	0.23	0.97
			alcohol misuse					
			I have a clear plan					0.45
			of how I will	3.3±0.9	3.5±1.1	0.10	0.18	
			screen and advise	5.5±0.7	5.5±1.1	0.10	0.10	0.45
			for alcohol misuse					

	Baselir	ie	12-month follow-up		
Owentier	Intervention	Control	Intervention	Control	
Question	(N=82)	(N=82)	(N=78)	(N=82)	
1	39 (47.6)	25 (30.5)	50 (64.1)	36 (43.9)	
2	28 (34.1)	19 (23.2)	33 (42.3)	26 (31.7)	
3	10 (12.2)	6 (7.3)	32 (41.0)	14 (17.1)	
4.1	14 (17.1)	12 (14.6)	38 (48.7)	18 (22.0)	
4.2	28 (34.1)	28 (34.1)	37 (47.4)	36 (43.9)	
4.3	17 (20.7)	16 (19.5)	38 (48.7)	20 (24.4)	
4.4	15 (18.3)	9 (11.0)	51 (65.4)	11 (13.4)	
4.5	9 (11.0)	15 (18.3)	36 (46.2)	19 (23.2)	

Table S5 – Distribution of doctors' and nurses' correct responses to each of the questions of the knowledge section of the questionnaire

Values are N (%)

Question 1 – How many grams of pure alcohol are in a standard drink?

- a. 10 grams
- b. 12 grams
- c. 14 grams
- d. 18 grams
- e. 20 grams

Question 2 – From what daily number of standard drinks would you start advising a healthy computer programmer 45-year-old male to cut-down?

- a. 2 standard drinks
- b. 3 standard drinks
- c. 4 standard drinks
- d. 6 standard drinks
- e. 9 standard drinks

Question 3 – Which of the following is true in respect to the AUDIT questionnaire (based on the Portuguese guidelines):

- a. A man scoring 5 points on the AUDIT-C should be screened again in four years time
- b. A woman scoring 2 points on the AUDIT-C should be asked the full AUDIT questionnaire
- c. A man scoring 18 points on the full AUDIT should be diagnosed as person with a dependence on alcohol
- d. A woman scoring 14 points on the full AUDIT is considered to have a hazardous alcohol use
- e. A man scoring 23 points on full AUDIT is considered to have a harmful alcohol use

Question 4 – According to the Portuguese guidelines, and for each of the following scenarios, please indicate whether it is true or false that a brief intervention should be delivered by a primary healthcare provider:

- 4.1 A 33-year-old man scoring 29 points on the full AUDIT
- 4.2 A 69-year-old woman scoring 6 points on the full AUDIT
- 4.3 A 57-year-old man scoring 16 points on the full AUDIT
- 4.4 A 44-year-old woman scoring 8 points on the full AUDIT
- 4.5 A 74-year-old man scoring 18 points on the full AUDIT