#### Additional file 5.1 – Diagnostic questionnaire, domain scales associated with best practice (p≤0.05)

Record risk (N=60)	K	S	CA	СО	MI	MAD	E	SPI	SI	EM	BR
Primary				~	~		~	~	<b>&gt;</b>		<b>✓</b> *
Mixed			<b>✓</b>	~	<b>✓</b> *		<b>✓</b>	~	~		<b>✓</b> *
Adult	•			~	<b>✓</b>		<b>✓</b>	~	•		<b>✓</b> *
Risk-based recall (N=73)	K	S	CA	со	MI	MAD	E	SPI	SI	EM	BR
Primary	<b>~</b>		~		~	<b>~</b>	~				<b>✓</b> *
Mixed	<b>✓</b>		~	~	<b>✓</b>	~	<b>✓</b> *		~		
Adult											
Apply fluoride varnish (N=60)	K	S	CA	со	MI	MAD	Е	SPI	SI	EM	BR
Primary	~			~				~	<b>✓</b> *		
Mixed	<b>✓</b>			~				<b>✓</b> *			
Adult†	~			~	<b>✓</b>			<b>✓</b> *	~		
Place fissure sealants (N=73)	K	S	CA	со	MI	MAD	Е	SPI	SI	EM	BR
Primary†							~				
Mixed											
Adult†											
Demonstrate OH maint. (N=63)	K	S	CA	со	MI	MAD	E	SPI	SI	EM	BR
Primary											
Mixed					<b>✓</b>					~	
Adult					<b>✓</b>				<b>✓</b> *		
Bitewing radiographs (N=63)	K	S	CA	СО	MI	MAD	Е	SPI	SI	EM	BR
Primary		~			~		~			~	
Mixed			<b>✓</b> *	~	<b>✓</b> *				<b>✓</b>		
Adult									~		

<sup>\*</sup> Predictive of best practice in logistic regression (p≤0.05)

K – knowledge; SPI – social professional role and identity; CA – beliefs about capabilities; CO – beliefs about consequences; MI – motivation, goals, and intent; MAD – memory, attention, and decision making; E – environmental context and resources; SI – social influence; EM – emotion; BR – behavioural regulation

<sup>†</sup> No agreed guidance recommendations about best practice

#### Additional file 5.2 - Dental practice case studies, domains associated with PMC behaviours

	K	S	CA	СО	MI	MAD	E	SPI	SI	EM	BR
Record risk	~		~	<b>v</b> *	~		<b>✓</b> *	~	<b>✓</b> *		~
Risk-based recall intervals	~		<b>✓</b> *	<b>✓</b> *			<b>✓</b> *	~			<b>✓</b>
Apply fluoride varnish	~		~	<b>✓</b> *		~	~	<b>✓</b> *	<b>✓</b> *	~	<b>✓</b>
Place fissure sealants	<b>✓</b> *		~	<b>✓</b> *	•			~	<b>✓</b> *		~
<b>Demonstrate OH maintenance</b>	~		~	<b>✓</b> *			<b>✓</b> *	~	<b>✓</b> *	~	~
Take bitewing radiographs			•	<b>✓</b> *			•	~	<b>✓</b> *		<b>✓</b> *
General preventive care			•	<b>✓</b> *			<b>✓</b> *	~	<b>v</b> *	~	•

<sup>\*</sup>Three most frequently coded domains for each behaviour

K – knowledge; SPI – social professional role and identity; CA – beliefs about capabilities; CO – beliefs about consequences; MI – motivation, goals, and intent; MAD – memory, attention, and decision making; E – environmental context and resources; SI – social influence; EM – emotion; BR – behavioural regulation

#### Additional file 5.3 - Patient feedback, domains associated with PMC behaviours

Apply fluoride varnish	K	S	CA	СО	MI	MAD	E	SPI	SI	EM	BR
Adult†	<b>✓</b> *										
Child	<b>✓</b> *										
Place fissure sealants	K	S	CA	СО	MI	MAD	Е	SPI	SI	EM	BR
Adult†											
Child											
Demonstrate OH maintenance	K	S	CA	со	MI	MAD	Е	SPI	SI	EM	BR
Adult				<b>✓</b> *							
Child				<b>✓</b> *							
Take bitewing radiographs	K	S	CA	СО	MI	MAD	E	SPI	SI	EM	BR
Adult											
Child											
Oral health advice	K	S	CA	со	MI	MAD	Е	SPI	SI	EM	BR
Adult			<b>✓</b> *	<b>✓</b> *			~		<b>✓</b> *		
Child	<b>✓</b> *			<b>✓</b> *			~		<b>✓</b> *	~	
Oral health maintenance	K	S	CA	СО	MI	MAD	Е	SPI	SI	EM	BR
Adult	~		<b>✓</b> *	<b>✓</b> *	~	~	~		<b>✓</b> *	~	
Child	~		<b>✓</b> *	<b>✓</b> *	<b>✓</b> *		~		~	~	

<sup>\*</sup> Three most frequently indexed domains for each behaviour

K – knowledge; SPI – social professional role and identity; CA – beliefs about capabilities; CO – beliefs about consequences; MI – motivation, goals, and intent; MAD – memory, attention, and decision making; E – environmental context and resources; SI – social influence; EM – emotion; BR – behavioural regulation

<sup>†</sup> No agreed guidance recommendations about best practice

### Additional file 5.4 – System level informant interviews, behavioural influences on PMC by COM-B

	Scottish Government		Postgra dental ed		Profess association		Professional association		
Capability	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	
Guidance	<b>~</b>	<b>✓</b>	<b>✓</b>			✓			
Integrating prevention in					~		~		
Care planning					<b>~</b>				
Oral health messages					<b>✓</b>				
Audit, Section 63			~		<b>✓</b>				
Undergraduate training			~						
Transition from training to								✓	
Opportunity	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	
Capacity				~		<b>~</b>			
Patient context						✓		<b>✓</b>	
Environment						✓		<b>✓</b>	
Data systems		✓			<b>✓</b>	<b>✓</b>		✓	
Oral health initiatives	<b>✓</b>						<b>✓</b>	✓	
Targeted fluoride varnish	<b>✓</b>	✓							
Dental care	~				<b>✓</b>		<b>✓</b>		
Service division				<b>✓</b>		<b>✓</b>		✓	
Motivation	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	Facilitator	Barrier	
Remuneration/finances	<b>~</b>	~		~		~		<b>\</b>	
Caries as priority issue				<b>✓</b>					
Prevention in general		~			<b>~</b>	<b>✓</b>		<b>✓</b>	