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ORIGINAL ARTICLE

Identifying Evidence-Based Competences Required to Deliver Behavioural Support for Smoking Cessation

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Abstract
Background No systematic basis has yet been published for specifying competences needed to underpin behavioural support for smoking cessation.
Purpose The purpose of this study was to develop and apply a system for identifying competences required for the delivery of individual and group-based behavioural support for smoking cessation.
Methods Sets of recommended competences for behavioural support were identified from a range of guidance documents. Where possible, these were compared with ones based on behaviour change techniques identified within behavioural support programmes found to be effective in randomised controlled trials (RCTs) and, for individual behavioural support, ones associated with higher success rates in the English Stop Smoking Services.
Results Ninety-four competences were identified (71 individual and 23 additional group competences), of which 59 were cited in at least two guidance documents (51 and 8, respectively). Fourteen of the individual competences and three of the group competences were supported by RCT evidence and, for individual competences, nine were supported by evidence from the services.
Conclusions It is possible to identify competences recommended for behavioural support for smoking cessation and subsets supported by different types of evidence. This approach can form the basis for the development of assessment and training of stop smoking practitioners and is currently doing so in a national programme in England. With further research, the list of evidence-based competences is likely to be extended.

Keywords Smoking cessation · Behavioural support · Competences · Stop smoking practitioner

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Introduction

Individual and group-based behavioural support is effective in aiding smoking cessation [1–4]. There is a growing international cadre of smoking cessation practitioners delivering this support, but it is not yet clear what competences are required to achieve high cessation rates. This paper presents a first attempt to derive a set of competences (skills and knowledge necessary to fulfill a role) required to deliver individual and group support based on a systematic analysis of guidance documents and research evidence.

Ideally, competences for individual- and group-based behavioural support would be based on experimental studies demonstrating the effectiveness of specific components of behavioural support programmes. However, such

data are not as yet available. The next best approach would be to use data from randomised controlled trials (RCTs) of individual and group-based behavioural support programmes and meta-regression techniques to identify whether inclusion of particular components was associated with greater effectiveness. Unfortunately, descriptions of individual and group-based behavioural support programmes in the literature are not sufficiently comprehensive or well specified in many cases to differentiate effective from ineffective components [5]. The US Tobacco Dependence Treatment Guideline has attempted this and has drawn conclusions about the value of advice on dealing with cravings, but this is too general to form the basis for establishing competences [4].

In the absence of evidence of the kind described above, another approach is to begin the process by identifying competences that are included in, or derivable from, existing guidance documents and treatment manuals. One can then seek to identify those for which there is at least some degree of consensus and evidential support.

Many of these will relate to specific behaviour change techniques (systematic procedures designed to change behaviour). The ideal level of specificity is determined by the smallest possible procedure that could on its own bring about behaviour change. The starting point for identifying the behaviour change techniques was a taxonomy developed by Abraham and Michie for use with interventions to promote physical activity and healthy eating [6]. This 26-item taxonomy was developed to improve reporting of intervention content, and replication and implementation of interventions. A standardised terminology of discrete techniques was inductively generated from three systematic reviews, and their labels and definitions were successively refined until they could be reliably identified in intervention protocols and published reports. This taxonomy was adapted and extended for use with behavioural support for smoking cessation (Michie et al., submitted).

We used two sources of evidence to investigate the effectiveness of particular behaviour change techniques. One was to determine whether the techniques were included within interventions that were found to be effective in RCTs. As already noted, descriptions of the content of these programmes limit the potential of meta-regression as a method for identifying effective techniques. However, the descriptions should be adequate to identify a subset of techniques that are cited in at least two reports of RCTs that clearly showed efficacy. This approach is less affected by failure to report behaviour change techniques consistently, but it also runs the risk of including behaviour change techniques that are commonly used in behavioural support programmes even though they are not effective.

A second approach to gathering evidence underpinning competences is to take advantage of the natural variation in clinical practice and routine monitoring of success rates of smoking cessation services and to assess whether the inclusion of particular behaviour change techniques by some smoking cessation services is associated with higher success rates. The English Stop Smoking Services can potentially provide such data. A national network of Stop Smoking Services was introduced in England in 1999 [8] with the aim of ensuring that every smoker in the country would have access to effective evidence-based behavioural support and medication paid for by taxation through the National Health Service. This is organised around 144 Primary Care Trusts each of which has autonomy to fund, configure and run its health services under broad guidance from national bodies such as the National Institute for Health and Clinical Excellence and the Department of Health. This can lead to wide variation in practice. The stop smoking services are funded and organised by these Primary Care Trusts. We have analysed the treatment manuals and outcome data of 37 of these services for 2008/2009, each one treating some 4,500 smokers. This analysis found that the inclusion of a number of behaviour change techniques in those manuals was significantly associated with higher short-term success rates [7]. This information can be added to that collected from the RCTs to inform judgments about competences that are needed for stop smoking practitioners.

Thus, whilst it is not yet possible to use direct evidence from experimental studies to derive a set of competences needed to provide behavioural support for smoking cessation, it is important to gather what evidence is available to support the clinical work that is currently being undertaken in many countries. This paper attempts to pull together this evidence and apply it systematically. The specific objectives of the present study were:

1. To develop a list of competences for individual- and group-based behavioural support identified in relevant national and international guidance documents and stop smoking service treatment manuals (together referred to as "source documents").
2. To classify the competences in terms of focus on skill versus knowledge and their function in supporting smoking cessation.
3. To determine competences for which there is some level of agreement in source documents.
4. To derive a subset of competences from behaviour change techniques reported as having been used in interventions found to be effective in RCTs.
5. To derive a subset of competences from behaviour change techniques used by English Stop Smoking Services that are associated with higher short-term quit rates. These data are only available for individual behavioural support [7].

Method

Procedure

An expert panel[1] identified source documents that could be used to generate a list of competences. This was done by initial brainstorming followed by consultation with colleagues in the field, nationally and internationally. Ten such documents were located in the English language for individual behavioural support: A journal article listing the behaviour change techniques found in treatment manuals of English National Health Service (NHS) Stop Smoking Services (Michie et al. , submitted); the English NHS Service and Monitoring Guidance 2008/2009 [9]; the UK Health Development Agency Training Standard [10]; the Association for the Treatment of Tobacco Use and Dependence competence list [11]; the NHS Knowledge and Skills Framework [12]; the NHS Health Trainers Manual [13]; the UK Public Health Register draft competences for public health practitioners [14]; the Scottish National Training Standards manual [15]; the Smoking Cessation Training Framework (Northern Ireland) [16]; and the New Jersey Tobacco Dependence Program [17]. The three source documents for group-based behavioural support were: The English Health Development Agency Training Standard for Smoking Cessation [10], the Northern Ireland Training Standard [16] and a published manual of smoking cessation [18].

Competences were obtained from each document either (1) where they were specifically mentioned or (2) could be derived from a behaviour change technique. Behaviour change technique for the purpose of coding was defined as "any explicit description of intervention content that can alter a participant's smoking behaviour, e.g. not including mode or style of delivery". The level of specification was determined by the smallest identifiable activity from intervention reports with the capacity to effect change. The competence for each behaviour change technique was derived simply in terms of a statement that the practitioner should 'be able to' undertake this activity. Thus, if the behaviour change technique was 'Measure expired air carbon monoxide concentration' the competence was 'Ability to measure expired air carbon monoxide concentration'.

The competences thus identified were compared and matched across source documents to arrive at a single merged list. This list was reviewed and refined by the expert panel to arrive at descriptions and labels that went as far as possible in communicating what was involved whilst remaining brief. The number of source documents including each competence was recorded.

[1] Susan Michie, Robert West, Andy McEwen.

The competences were divided into those that focused primarily on skills and those that focused on knowledge only. The rationale for dividing competences in this way was that skills and knowledge typically require different modes of assessment and training. This classification was discussed and finalised by the expert panel. The list was also classified in terms of the main functions of the competences in promoting smoking cessation. The goal of this functional classification was to link the behaviour change techniques with a coherent theoretical underpinning, which facilitates the understanding of mechanisms of action and the development of more effective interventions [19]. The classification system was developed by discussion between two members of the expert panel (SM and RW) until the structure was judged to be complete. It was then applied independently to the remaining individual- and additional group-based competences. A 90% concordance rate was obtained and all discrepancies were resolved through discussion. The classification system, along with exemplar techniques, is shown in Fig. 1. The functions were defined in terms of a focus on:

1. Behaviour change techniques that specifically target the behaviour: intervention content that directly promotes abstinence
   (a) Address motivation: maximise motivation to abstain or minimise motivation to smoke
   (b) Maximise self-regulatory capacity and skills: promote mental and physical activities that either reduce exposure to smoking cues or help with resisting motivation to smoke
2. Adjuvant activities: intervention content that promotes activities that indirectly facilitate abstinence
3. General aspects of the interaction: competences necessary for the effective delivery of specific behaviour change techniques and adjuvant activities
   (a) Delivery of the intervention: adapt the intervention according to the client and context
   (b) Information gathering: acquire relevant information
   (c) General communication: give relevant information and verbal and non-verbal behaviour underpinning effective delivery of specific behaviour change techniques and adjuvant activities
   (d) Professionalism: general aspects of conduct as a health professional working in the field

We identified a subset of individual- and group-based behavioural support competences that were derived from at least two source documents and two RCTs. These thresholds are to some extent arbitrary, but were chosen to reflect a minimum degree of concordance bearing in mind the

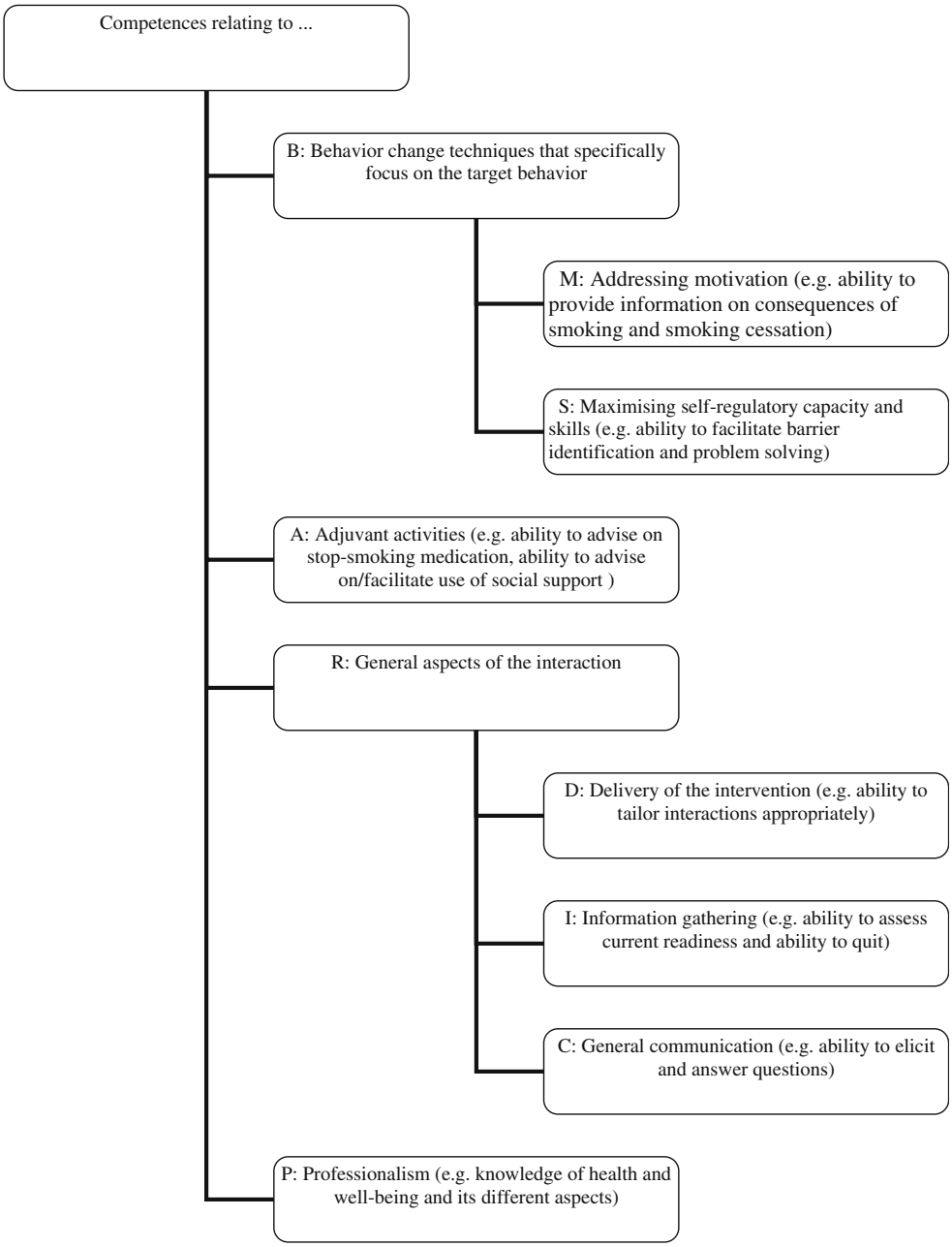

Fig. 1 System for classifying competences by function

number of source documents and trials involved. In order to establish which of the competences had some evidence base, two methods were used. In the first, the 2005 Cochrane review of 30 trials of individual behavioural support for smoking cessation [1] and the 2005 Cochrane review of 53 trials of group-based behavioural support [2] were consulted and the interventions shown to be effective in each review were identified. "Effective" was defined as a risk ratio for smoking cessation at follow-up for intervention versus control conditions of ≥1.50 and the difference between conditions being significant at $p<0.05$. Four interventions for individual [20–23] and eight for group-based behavioural support [24–31] were identified in this way. Behaviour change techniques within these interventions were identified from published study reports using an established taxonomy of smoking behaviour change techniques (Michie et al., submitted). Each behaviour change technique was used to derive a corresponding competence as described earlier.

A second source of evidence for behaviour change techniques was available from an analysis of data from the English Stop Smoking Services [7]. This examined the association between the number of times the behaviour change technique was mentioned in individual behavioural support treatment manuals for 37 Stop Smoking Services in England and the 4-week abstinence rates of those services,

Table 1 Competences classified in terms of skill, knowledge and function with their evidence base where available: individual behavioural support

Competence no.	Label	No. of source documents (maximum 10) in which the technique is cited	No. of RCT reports (maximum 4) in which the technique is cited	No. of outcome measures (maximum 2) with which the technique shows an association in analyses of data from the English Stop Smoking Services
Ability to…				
Specific focus on the target behaviour (B) and addressing motivation (M)				
BM1	Provide information on consequences of smoking and smoking cessation	10	4	0
BM2	Boost motivation and self-efficacy	9	1	1
BM3	Provide feedback on current behaviour	4	1	0
BM4	Provide rewards contingent on successfully stopping smoking	3	1	2
BM5	Provide normative information about others' behaviour and experiences	3	1	0
BM6	Prompt commitment from the client there and then	3	2	0
BM7	Provide rewards contingent on effort or progress	1	1	0
BM8	Strengthen ex-smoker identity	1	1	2
BM9	Identify reasons for wanting and not wanting to stop smoking	1	0	0
BM10	Explain the importance of abrupt cessation	1	0	0
BM11	Measure carbon monoxide	5	4	2
BM12	Conduct motivational interviewing	1	1	0
Specific focus on behaviour (B) and maximising self-regulatory capacity/skills (S)				
BS1	Facilitate barrier identification and problem solving	9	3	0
BS2	Facilitate relapse prevention and coping	9	3	2
BS3	Facilitate action planning/ develop treatment plan	8	2	0
BS4	Facilitate goal setting	6	4	0
BS5	Prompt review of goals	3	1	0
BS6	Prompt self-recording	2	1	0
BS7	Advise on changing routine	2	0	2
BS8	Advise on environmental restructuring	2	0	0
BS9	Set graded tasks	2	0	0
BS10	Advise on conserving mental resources	1	0	1
BS11	Advise on avoiding social cues for smoking	1	0	0
BS12	Facilitate restructuring of social life	2	1	0
BS13	Advise on methods of weight control	0	2	0
BS14	Teach relaxation techniques	0	2	0

Table 1 (continued)

Competence no.	Label	No. of source documents (maximum 10) in which the technique is cited	No. of RCT reports (maximum 4) in which the technique is cited	No. of outcome measures (maximum 2) with which the technique shows an association in analyses of data from the English Stop Smoking Services
Promoting adjuvant activities (A)				
A1	Advise on stop-smoking medication	8	2	2
A2	Advise on/facilitate use of social support	4	0	1
A3	Adopt appropriate local procedures to enable clients to obtain free medication	3	0	0
A4	Ask about experiences of stop smoking medication that the smoker is using	3	0	2
A5	Give options for additional and later support	2	2	2
General aspects of the interaction (R) focusing on the delivery of the intervention (D)				
RD1	Tailor interactions appropriately	8	1	0
RD2	Emphasise choice	2	0	0
General aspects of the interaction (R) focusing on information gathering (I)				
RI1	Assess current and past smoking behaviour	7	4	0
RI2	Assess current readiness and ability to quit	7	4	0
RI3	Assess past history of quit attempts	3	3	0
RI4	Assess withdrawal symptoms	1	0	0
RI5	Assess nicotine dependence	5	0	0
RI6	Assess number of contacts who smoke	0	2	0
RI7	Assess attitudes to smoking	0	1	0
RI8	Assess level of social support	0	1	0
RI9	Explain how tobacco dependence develops	3	0	0
RI10	Assess physiological and mental functioning	1	3	0
General aspects of the interaction (R) focusing on general communication (C)				
RC1	Build general rapport	8	0	0
RC2	Elicit and answer questions	7	1	0
RC3	Explain the purpose of carbon monoxide monitoring	6	0	1
RC4	Explain expectations regarding treatment programme	6	0	0
RC5	Offer/direct towards appropriate written materials	6	4	0
RC6	Provide information on withdrawal symptoms	6	2	1
RC7	Use reflective listening	6	0	0
RC8	Elicit client views	6	0	2
RC9	Summarise information/ confirm client decisions	3	0	1
RC10	Provide reassurance	3	0	1

Table 2 Competences classified in terms of skill, knowledge and function with their evidence base where available: group-based behavioural support

Competence number	Label	No. of times cited in source documents (n=10)	No. of times cited in effective interventions within RCTs (n=8)
Specific focus on behaviour (B) and addressing motivation (M)			
GBM1	Encourage group discussions	3	6
GBM2	Encourage group tasks that promote interaction and/or bonding	3	2
GBM3	Encourage mutual support	2	2
GBM4	Use furniture to reinforce group interaction	2	0
GBM5	Emphasise that each individual has a responsibility for the group	2	0
GBM6	Encourage clients to make a public promise (contract with group members)	1	3
GBM7	Communicate group member identities	1	0
GBM8	Encourage comparison of carbon monoxide readings	1	0
GBM9	Report on missing members	1	0
Promoting adjuvant activities (A)			
GA1	Implement a buddy system	1	2
GA2	Implement a betting game	1	0
GA3	Facilitate choice of medications in the group context	1	0
General aspects of the interaction (R) focusing on delivery of the intervention (D)			
GRD1	Establish a ‘closed group’	1	0
GRD2	Manage problems of co-morbidity (psychological and physical) appropriately	1	0
General aspects of the interaction (R) focusing on information gathering (I)			
GRI1	Screen suitability for group based support	2	0
General aspects of the interaction (R) focusing on general communication (C)			
GRC1	Explain group support	2	1
GRC2	Discuss maintenance support	2	0

measured by two methods: self-report and self-report validated by carbon monoxide monitoring. Data for group-based behavioural support outcomes are not yet available for those services.

The full set of behaviour change techniques used to derive the competences along with their definitions is shown in Appendix 1 (electronic supplementary material). They were examined in light of the source documents, RCT reports and treatment manuals to arrive at a set of descriptions to aid identification and labelling in future research and applications.

Results

Ninety-four competences were identified, 71 individual behavioural support and 23 group-based, of which 59 were cited in at least two guidance documents (51 and 8). Tables 1, 2 and 3 list each competence under headings of “ability to…” (skills) or “knowledge of…” and its classification in terms of function.

Individual Behavioural Support

Thirty-two behaviour change techniques were identified from the intervention descriptions in the four RCTs of individual behavioural support showing clear evidence of efficacy, of which 18 were mentioned in at least two (Table 4). Three of these were not cited in any source documents and one was cited in one source document only, leaving 14 competences that were cited in at least two source documents and at least two RCTs. These were ability to: (1) provide information on the consequences of smoking and smoking cessation, (2) provide information on withdrawal symptoms, (3) facilitate barrier identification and problem solving, (4) facilitate relapse prevention and coping, (5) facilitate action planning/develop treatment plan, (6) facilitate goal setting, (7) measure CO, (8) advise on stop smoking medication, (9) assess current and past smoking behaviour, (10) assess current readiness and ability to quit, (11) assess past history of quit attempts, (12) offer appropriate written materials, (13) prompt commitment from the client there and then and (14) give options for

Table 3 Competences classified in terms of skill, knowledge and function with their evidence base where available: professionalism

Competence number	Label	No. of times cited in source documents (n=10)
Ability to ...		
P1	Keep accurate records	6
P2	Make appropriate referrals to other health care providers and inform patients of other resources	6
P3	Apply ethical principles and local policies and procedures	5
P4	Use literature to keep up to date on smoking cessation treatment	3
P5	Take responsibility for the health and safety of patients, public, colleagues and self	1
P6	Promote equality and diversity	1
P7	Work as an effective team member	1
Knowledge of…		
P8	Behaviour change models	3
P9	Specific treatment indications for special population groups	2
P10	Effective approaches and methods of communicating risk	1
P11	Different models, principles and approaches to managing risk	1
P12	Different models, principles and approaches to preventing risk and threats to population health	1
P13	Different models, principles and approaches to improving the health of individuals	1
P14	Current priorities for improving health	1
P15	Main terms and concepts that are used in epidemiology and the basis of calculations related to these terms	1
P16	Health and well-being and its different aspects	1
P17	The history, theory, philosophy and principles of public health	1
P18	The difference between individual and population health	1
For group-based support only Ability to…		
GP1	Implement a system of keeping records of group attendance and outcome	1
GP2	Use of range of methodologies to evaluate group outcomes	1
Knowledge of…		
GP3	Potential difficulties and pitfalls in recruiting patients for group treatment and ways of coping with these	1
GP4	The size of catchment area needed to run successful group programmes and of expected local throughput	1
GP5	The logistic demands of organising group clinics	1
GP6	Short-term and long-term results typically achieved in the UK smoking cessation services with group treatments	1

additional and later support. The one cited in one source document only was ‘assess physiological and mental functioning’ and the three not cited in any were: (1) advise on methods of weight control, (2) teach relaxation techniques and (3) assess number of contacts who smoke.

Nine behaviour change techniques used in individual behavioural support were associated with higher success rates in the English Stop Smoking Services: (1) strengthen ex-smoker identity, (2) elicit client views, (3) measure CO, (4) give options for additional and later support, (5) provide rewards contingent on stopping smoking, (6) advise on changing routine, (7) facilitate relapse prevention and coping, (8) ask about experience of stop smoking medication being used and (9) advise on stop smoking medication [7]. Four of these were also associated with RCT evidence: (1) measure CO, (2) facilitate relapse prevention and coping, (3) give options for additional and later support and (4) advise on stop smoking medication. Appendix 2 (electronic supplementary material) shows the descriptions of the activities and knowledge in each source document corresponding to the individual behavioural support competence.

Group-Based Behavioural Support

Six competences for group-based behavioural support were identified from the intervention descriptions in the eight

Table 4 Competences specified in the four effective interventions within the 2005 Cochrane review of trials of individual behavioural support for smoking cessation (listed in order of frequency)

		Nakamura 2004	Windsor 1987	Glasgow 2000	Weissfeld 1991	
	Risk ratio (95% CI)	4.29 (1.46, 12.59)	2.48 (1.29, 4.85)	1.68 (1.00, 2.8)	5.31 (1.25, 22.61)	
	Treatment, *n*/*N*	18/500	27/188	37/578	18/293	
	Control, *n*/*N*	4/477	11/190	22/576	2/173	
Competence number and label						Total
BM1	Provide information on consequences of smoking and smoking cessation	x	x	x	x	4
BM11	Measure CO	x	x	x	x	4
BS4	Facilitate goal setting	x	x	x	x	4
RI1	Assess current and past smoking behaviour	x	x	x	x	4
RI2	Assess current readiness and ability to quit	x	x	x	x	4
RC5	Offer/direct towards appropriate written materials	x	x	x	x	4
BS1	Facilitate barrier identification and problem solving	x		x	x	3
BS2	Facilitate relapse prevention and coping	x		x	x	3
RI3	Assess past history of quit attempts	x	x		x	3
RI10	Assess physiological and mental functioning	x		x	x	3
BM6	Prompt commitment from the client there and then		x		x	2
BS3	Facilitate action planning/develop treatment plan			x	x	2
BS13	Advise on methods of weight control	x	x			2
BS14	Teach relaxation techniques		x		x	2
A1	Advise on stop-smoking medication		x		x	2
A5	Give options for additional and later support		x		x	2
RI6	Assess number of contacts who smoke		x		x	2
RC6	Provide information on withdrawal symptoms	x		x		2
BM2	Boost motivation and self-efficacy				x	1
BM3	Provide feedback on current behaviour	x				1
BM4	Provide rewards contingent on successfully stopping smoking		x			1
BM5	Provide normative information about others' behaviour and experiences			x		1
BM7	Provide rewards contingent on effort or progress	x				1
BM8	Strengthen ex-smoker identity		x			1
BM12	Conduct motivational interviewing			x		1
BS5	Prompt review of goals	x				1
BS6	Prompt self-recording		x			1
BS12	Facilitate restructuring of social life		x			1
RD1	Tailor interactions appropriately	x				1
RC2	Elicit and answer questions		x			1
RI7	Assess attitudes to smoking				x	1
RI8	Assess level of social support				x	1

RCTs showing clear evidence of efficacy, of which five were mentioned in at least two (Table 5). Three competences were cited in two or more source documents and at least two RCTs. These were: (1) encourage group discussions, (2) encourage group tasks that promote interaction and/or bonding and (3) encourage mutual support. The two competences cited in one source document only were 'implement a buddy system' and 'encourage clients to make a public promise/contract with group members'. Appendix 3 (electronic supplementary material) shows the descriptions of the activities and knowledge in each source document corresponding to the group-based behavioural support competence.

Figure 2 summarises the results, showing the numbers of competences meeting the various criteria for agreement and effectiveness.

Table 5 Group-based techniques specified in the eight effective interventions within the 2005 Cochrane review of trials of group behavioural support programmes for smoking cessation (listed in order of frequency)

	Curry 1988	Bakkevig 2000	DePaul 1989	DePaul 1994	Zheng 2007	Leung 1991	Romand 2005	Hollis 1993	Total
Risk ratio (95% CI)	2.44 (1.45, 4.09)	4.26 (1.70, 10.66)	3.79 (1.57, 9.16)	3.38 (1.70, 6.70)	9.97 (3.15, 31.58)	9.00 (1.21, 66.97)	4.89 (1.46, 16.31)	1.41 (0.82, 2.41)	
Treatment, *n*/*N*	15/28	21/69	22/206	34/283	33/118	9.0/32	16/119	31/675	
Control, *n*/*N*	20/91	5.0/70	6/213	10/281	3/107	1.0/32	3/109	22/675	
Competence number and label									
GBM1. Encourage group discussions	x		x	x	x	x	x		6
GBM6. Encourage clients to make a public promise (contract with group members)	x			x		x			3
GBM2. Encourage group tasks that promote interaction and/or bonding				x	x				2
GBM3. Encourage mutual support			x	x					2
GA1. Implement a buddy system				x			x		2
GRC1. Explain group support								x	1

Discussion

To our knowledge, this is the first attempt to develop a list of competences for smoking cessation practitioners delivering individual- and/or group-based behavioural support based on a systematic analysis of guidance documents and available evidence.

The process has been carefully documented and followed specific rules as far as possible, but judgments have still had to be made. Where possible, the process has involved quantifying the reliability of these judgments, and where this has not been practicable, consensus has been reached within an expert panel. The most important issues on which judgments had to be made and could have been made differently, were:

1. Level of generality/specificity used to identify competences
2. Number of source documents citing a competence that signified broad agreement (at least two)
3. Number of RCTs including a competence that signified supporting evidence (at least two)
4. In the case of the individual behavioural support competences, the decision to use the stringent criterion for the effectiveness of a significant association with both CO-verified and self-reported smoking cessation outcome.

With regard to the first issue, the choice of label was dictated by a judgment of the balance between brevity and clarity. Previous research had found that the level of description of behaviour change techniques from which the skill-based competences were mainly derived was successful in enabling the reliable coding of text from intervention manuals (Michie et al., submitted). This is an evolving field of study and it will be important for this type of research to track what is going on in the behaviour change field more generally [32]. With regard to the second and third issues, higher thresholds could have been set, but the risk would have been higher of missing competences that were in fact important. With regard to the fourth issue, there were limitations for using self-reported and CO-verified success rates individually that could have biased the results, so the conservative option of requiring both seemed appropriately cautious.

The competences identified for the delivery of individual behavioural support from RCT and clinical service evidence were skills specifically related to the delivery of behaviour change techniques. The additional three competences identified for the delivery of group-based behavioural support were skills related to group cohesion and mutual support. Others from the full list may well be important to enable these to be delivered effectively or in their own right. For example, being able to build rapport would be expected to be important in any behavioural support interaction. Therefore, in practice, users of these findings may wish to consider the full list and add to the evidence-based set any that they judge to be important in a particular clinical situation or are underpinned by other evidence. The RCT evidence used in this study involved studies published before 2005 that met the Cochrane review criteria, so new evidence should be considered as it emerges.

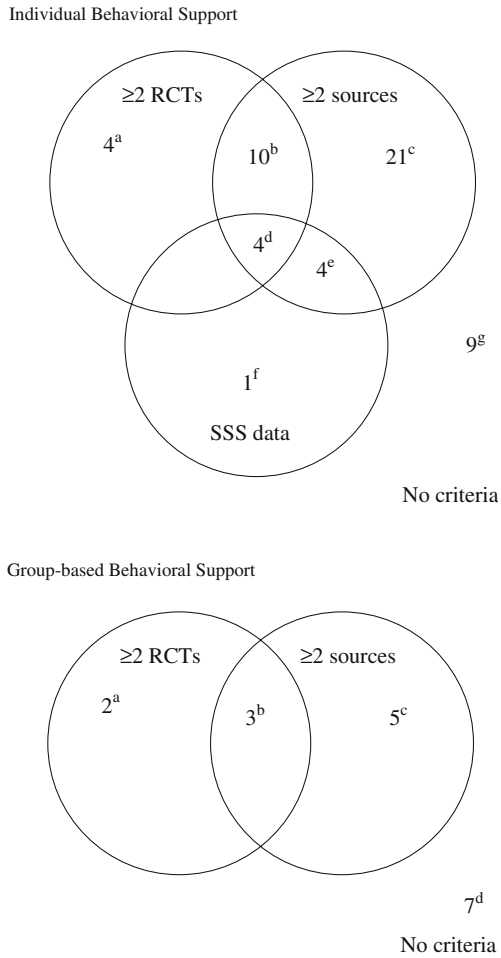

Fig. 2 Competences for delivering behavioural support for smoking cessation categorised according to source and evidence base. Individual behavioural support. *RCT* randomised controlled trial, *SSS* stop smoking services. Behaviour change techniques codes from Tables 1, 2 and 4 in each cell are as follows: *a* BS13, BS14, RI6, RI10; *b* BM1, BM6, BS1, BS3, BS4, RI1, RI2, RI3, RC5, RC6; *c* BM2, BM3, BM5, BS5, BS6, BS8, BS9, BS12, A2, A3, RD1, RD2, RI5, RI9, RC1, RC2, RC3, RC4, RC7, RC9, RC10; *d* BM11, BS2, A1, A5; *e* BM4, BS7, A4, RC8; *f* BM8; *g* BM7, BM9, BM10, BM12, BS10, BS11, RI4, RI7, RI8. Group-based behavioural support. Behaviour change techniques codes from Table 1 in each cell are as follows *a* GBM6, GA1; *b* GBM1, GBM2, GBM3; *c* GBM4, GBM5, GRI1, GRC1, GRC2; *d* GBM7, GBM8, GBM9, GA2, GA3, GRD1, GRD2

Some behaviour change techniques may perform more than one function in promoting smoking cessation, and some may be most effective when combined with others. Further research will help shape and sharpen how techniques are conceptually grouped together in mechanisms of action and hence how they may be most effectively combined. One potential limitation is the assumption that it is the behaviour change techniques within the interventions in the RCTs that determined effectiveness. It is possible that individual factors, such as those relating to delivery and/or adherence to the intervention protocols, influenced whether (or not) the interventions were successful.

A further limitation concerns the incomplete descriptions of behaviour change techniques available in RCT reports. It may be, therefore, that behaviour change techniques that are important to effectiveness were not included. There is an urgent need for journals to require full descriptions of behaviour change techniques to be publicly accessible so that a more complete analysis can be undertaken [33, 34].

When considering evidence from the English Stop Smoking Services, there may be behaviour change techniques specified in treatment manuals that are not reliably delivered in practice and behaviour change techniques that are delivered that are not specified in behaviour change technique treatment manuals. Research into the fidelity of the delivery of manualised behaviour change techniques is essential for accurately identifying the key ingredients of effective practice.

This study is part of a programme of research carried out by the National Health Service Centre for Smoking Cessation and Training (NCSCT), the goal of which is to establish what constitutes best practice in treatment to aid smoking cessation and the competences required of stop smoking practitioners, and to develop and implement assessment and training to ensure that all practitioners possess those competences (see www.ncsct.co.uk). The extent to which it is possible to develop valid assessment of the competences, especially the skills, is an empirical question. Similarly, research is needed to determine the effectiveness of training in developing these competences. It is expected that this research programme being undertaken by the NCSCT will address these questions and lead to a refined and supplemented list of evidence-based smoking cessation competences.

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