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## **Helping hospital patients quit: what the evidence supports and what guidelines recommend.**

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**ABSTRACT**

**Objective:** The study aimed to critically appraise the extent and strength of systematic review evidence for, and guideline recommendations regarding hospital smoking cessation interventions.

**Methods:** Systematic reviews of smoking cessation interventions were identified via an electronic search of the Cochrane Library. Meta-analyses from Cochrane reviews were categorised as those that incorporated only studies of interventions initiated prior to or during hospitalisation; and those without such restriction. Smoking cessation guidelines for hospital health professionals were identified via a search of the World Wide Web. **Results:** The review found that evidence from meta-analyses restricted to hospital studies was insufficient to evaluate a number of specific intervention strategies and at times conflicted with the findings of meta-analyses without such restrictions. The majority of guidelines recommended the provision of brief advice, counseling, nicotine replacement therapy despite the absence of clear supporting evidence. **Conclusions:** Further hospital-based research addressing specific cessation strategies is required. Furthermore, smoking cessation guidelines for hospital based health professionals should more specifically reflect evidence from this setting.

**Key words:** Smoking cessation, hospital, guidelines, Cochrane, review.

## INTRODUCTION

Tobacco smoking is detrimental to almost every organ in the body and is a known cause of cancer, cardiovascular and respiratory disease and a diminished health status. (Us Department of Health and Human Services 2004) World wide, four million people die of tobacco-related disease annually. (Jha et al., 1999) If current trends in global tobacco use continue, tobacco smoking can be expected to become the leading cause of premature death in the world within thirty years. (MacKay et al., 2002; Taylor et al., 2000)

While the prevalence of smoking is declining in high-income countries, statistics indicate that 26% of males and 22% of females in the United States continue to smoke daily (MacKay et al., 2002) The United States prevalence is similar to prevalence estimates in the United Kingdom and New Zealand but higher than that in Australia. (MacKay et al., 2002; Australian Institute of Health and Welfare 2002) Given unacceptably high rates of tobacco use in developed countries the need remains for continued development and implementation of effective and sustainable cessation strategies. (Commonwealth Department of Health and Aged Care 1999)

Hospitalization represents an attractive opportunity to implement smoking cessation interventions given a capacity of interventions in this setting to reach large numbers of smokers, at a time when they are more receptive to modifying their tobacco use (Orleans et al., 1993), (Emmons et al., 1992), (Glasgow et al., 1991) prevented from using tobacco (NSW Health Department 1999), and have access to health professionals who can provide smoking cessation advice, medications and support. (Munafo et al., 2001) Despite these characteristics, international research consistently report low rates of cessation intervention with hospital patients. (Emmons et al., 1992; McCarty et al., 2001; Bolman et al., 2002; NSW Health Department 2002; Emmons et al., 2000)

Reviews of health care practices across a number of health care settings have found that two commonly reported barriers to the provision of preventive care were a belief that its provision will have little or no beneficial impact for patients, and a lack of knowledge of what are recommended preventive care practices. (Cabana et al., 1999) Such barriers are also reported to impede the provision of smoking cessation care. (McCarty et al., 2001; Tsui et al., 2004; McClure et al., 1997)

Two sources of evidence available to inform and guide hospital staff in their delivery of smoking cessation care are systematic reviews and clinical practice guidelines. In order for systematic reviews and guidelines to be clinically useful to health professionals, their findings or recommendations must be relevant to patient groups within the specific clinical settings of interest, (Rothwell 2005) and must provide information regarding specific care delivery strategies. As a number of strategies can be used by hospital practitioners to encourage patient smoking cessation, (Wolfenden et al., 2003) systematic reviews and guidelines should therefore incorporate research conducted in the hospital setting and provide recommendations regarding specific smoking cessation care strategies in hospitals.

Specifically, an important consideration for hospital clinicians interested in providing effective cessation care is the intensity of the intervention such as the required duration and number of intervention contacts. (Wolfenden et al., 2003) Similarly, given the range of intervention components available to clinicians to select from, such as counselling, NRT, self-help materials and follow-up support, guidance as to the most appropriate components or combinations of such components is required. (Wolfenden et al., 2003) Guidance as to the effectiveness of different types of health professionals or combinations of health professionals in delivering smoking cessation care would also assist the development and delivery of effective smoking cessation care.

Given the need for specific guidance for hospital based health professionals, a review was undertaken with an aim to critically appraise the systematic review evidence for, and clinical practice guideline recommendations regarding:

- 1 Hospital smoking cessation interventions of varying intensity
- 2 Hospital smoking cessation intervention components
- 3 The delivery of smoking cessation interventions by various hospital health care providers
- 4 The delivery of smoking cessation interventions by multiple hospital providers
- 5 Single versus multiple component smoking cessation interventions

## **METHOD**

**Review scope**

The review focused on smoking cessation care strategies that could be delivered by hospital staff to patients during the preoperative and/or inpatient care of patients. The review did not extend to strategies for special patient groups such as pregnant women and patients with a primary psychiatric diagnosis, as such patient groups are likely to require specialised cessation care.

**Data source**

The review incorporated information from systematic reviews of smoking cessation interventions conducted by the Cochrane Collaboration, and from clinical practice guidelines which had been developed or endorsed by government departments or international agencies. Reviews conducted by the Cochrane Collaboration have been found to be comparable or of better quality than reviews published in journals, (Jadad et al., 1998) and as such, are widely disseminated and utilised by health professionals. (Forbes et al., 2003; Ghosh, et al., 2000; Grimshaw 2004)

**Search strategy**

Reviews by the Cochrane Collaboration were identified through a search of the Cochrane Library in December 2004. All reviews identified using the search key word 'smoking cessation' were assessed. Reviews were included if at least one of the included trials involved the delivery of cessation care to patients in a hospital setting prior to admission or during hospitalisation.

Clinical practice guidelines were identified through a web search using the search engine: <http://www.google.com> in December 2004. The search terms used were 'hospital smoking cessation guidelines'; 'hospital tobacco guidelines'; and 'hospital nicotine dependence guidelines'. The first 100 hits from each search term were examined. Guidelines published in English, and providing specific instruction for hospital based health professionals were included. Two reviewers searched and classified Cochrane reviews and clinical practice guidelines on the basis of the inclusion criteria. Disagreements in classification of reviews or guidelines were resolved by a third reviewer.

## **Analysis**

### *Cochrane reviews*

To address each review aim, Cochrane review meta-analyses were categorised into two categories, those that incorporated only studies of hospital based interventions (studies conducted on preoperative or hospitalised smokers); and those without such restriction and so included trials which are not hospital based. Where the results of the latter are described, an indication of the number of trials that involved hospital based interventions and the total number of trials in the analyses is provided.

### *Clinical practice guidelines*

Clinical practice guidelines were assessed to determine if a specific recommendation had been made regarding each of the review aims.

## **RESULTS**

### *Cochrane reviews*

Thirty Cochrane reviews were identified. Twenty one of these reviews (Moller et al., 2001; Stead et al., 1997; White et al., 2002; Hajek, Stead 2004; Abbot et al., 1998; Hughes et al., 2004; Hughes et al., 2000; Gourlay et al., 2004; Secker-Walker et al., 2002; Sinclair et al., 2004; Huibers et al., 2003; Park et al., 2004; Ussher et al., 2005; Stead et al., 2002; Lancaster Stead 1998; David et al., 2001; Lancaster, Stead 2002; Critchley, Capewell 2004; Lancaster et al., 2000; Moher et al., 2003), were excluded as they did not incorporate a trial of interventions for patients prior to or during hospitalisation. A further two reviews were excluded, one of which investigated interventions for pregnant women, (Lumley et al., 2004) whilst the other focused on interventions to reduce environmental tobacco smoke exposure rather than smoking cessation per se (Roseby et al., 2002). Details of the seven remaining reviews (Rigotti et al., 2002; va der Meer et al., 2001; Rice, Stead 2004; Lancaster, Stead 2002; Lancaster, Stead 2004; Silagy et al., 2004; Stead, Lancaster 2002) meeting the inclusion criteria are presented in Table 1. The number of trials contained within each review that addressed cessation interventions prior to or during

hospitalisation ranged from 1 to 17. Three of the seven Cochrane reviews conducted specific meta-analyses of interventions for patients prior to or during hospitalisation.

### ***Clinical practice guidelines***

Thirteen clinical practice guidelines with government and/or World Health Organisation endorsement were identified. Five guidelines were excluded as they did not provide specific recommendations for hospital based health professionals (de Crespigny et al., 2003; New Jersey Department of Health and Senior Services 2001; National Health Committee 2004; Ministry of Health 2004; Commonwealth Department of Health and Ageing 2004). A description of the evidence base and guideline development process for each of the remaining seven clinical practice guidelines (NSW Health Department 2002; Raw et al., 1998; West et al., 2004; US Department of Health and Human Services 2004; Ministry of health Malaysia 2004; Fiore et al., 2000; World Health Organization 2004) can be seen in Table 2.

As can be seen in Table 2, all of the included clinical practice guidelines utilised evidence from Cochrane reviews and/or meta-analyses conducted by the Agency for Health Care Policy and Research. The guidelines published in Scotland in 2004 (West et al., 2004) and in the United States in 2003 (US Department of Health and Human Services 2004) provided limited or no description of the guideline development process.

The evidence from Cochrane reviews and recommendations from clinical practice guidelines for each of the aims of this review are presented in Table 3 and 4.

## **1) HOSPITAL SMOKING CESSATION INTERVENTIONS OF VARYING INTENSITY**

### ***Cochrane reviews***

*Analyses restricted to hospital studies only*

To examine the efficacy of interventions of varying intensity, the *Cochrane review of interventions for smoking cessation in hospitalised patients (ISCHP)* grouped trials according to the following criteria (Rigotti et al., 2002)

- 1 A single contact in hospital lasting 15 minutes or less without follow-up support (referred to in this chapter as ‘intensity 1’).
- 2 One or more contacts in hospital lasting in total more than 15 minutes, without follow-up support (‘intensity 2’).
- 3 Any hospital contact plus follow-up of one month or less (‘intensity 3’).
- 4 Any hospital contact plus follow-up of greater than one month (‘intensity 4’).

None of the trials included in the *ISCHP* were classified as ‘intensity 1’. Analysis of ‘intensity 2’ studies (Odds Ratio (OR) = 1.07; 95% Confidence Interval (CI) = 0.79-1.44; 3 studies in total) and ‘intensity 3’ studies (OR 1.09; CI 0.91 – 1.31; 6 studies) identified no significant cessation benefit for patients compared with control. ‘Intensity 4’ interventions significantly increased cessation rates (OR 1.82; CI 1.49-2.22; 7 studies). Four of the interventions classified as ‘intensity 4’ incorporated an in-patient intervention lasting at least 20 minutes in duration (2 not stated). The period of post-discharge intervention in ‘intensity 4’ trials ranged from three to six months, with a total of at least five intervention contacts (including both in-patient and post-discharge contact) scheduled within this time. The *ISCHP* did not make direct comparisons between intensity groups.

#### *Analyses not restricted to hospital studies*

The *Cochrane review of nursing interventions for smoking cessation* found that low intensity interventions (nurse advice during a consultation < than 10 minutes, a leaflet and/or an additional patient contact) significantly increased patient cessation compared with a control (OR 1.76; CI 1.23-1.53; 0 of a total of 6 studies in the meta-analysis were hospital studies), as did those classified as high intensity (longer consultation, greater follow-up contact or additional strategies) (OR 1.43 CI 1.24-1.64; 7 of 14 studies). As the point estimate of the pooled effect for low intensity interventions was higher than that for high intensity interventions, indirect comparison suggested no benefit of the more intensive intervention.

A comparison of intensive versus brief counselling in the *Cochrane review of individual behavioural counselling for smoking cessation* found no evidence of additional benefit of intensive counselling (OR 0.98; CI 0.61-1.56; 0 of 3 studies). The review also compared high and medium intensity interventions and found an advantage for high intensity intervention (OR 1.92; CI 1.16-2.23; 0 of 3 studies). Explicit definitions of what constitutes intensive, brief, high or medium intensity were not provided by the review.

*The Cochrane review of physician advice for smoking cessation* found that interventions conducted during the course of a patient consultation lasting less than 20 minutes, and which may have incorporated a basic self-help leaflet and/or a single additional patient contact, significantly increased patient smoking cessation (OR 1.74; CI 1.48-2.05; 0 of 17 studies) compared with a control, but produced lower cessation rates compared with more intensive physician intervention (OR 1.44; CI 1.24-1.67; 1 of 15 studies).

In the *Cochrane review of nicotine replacement therapy for smoking cessation*, the odds of quitting using NRT in trials with low intensity support was 1.81 (CI 1.61-2.02; 0 of 35 studies) and 1.78 (CI 1.64-1.93; 3 of 66 studies) for those with high intensity support. Low intensity support was defined as that occurring as part of routine care. High intensity support was classified as contact with smokers (including assessment for the trial) being greater than 30 minutes, or including three or more follow-up contacts. However, in a direct assessment of the efficacy of high versus low intensity support with nicotine gum no significant advantage of high intensity support was found (OR 1.30; CI 0.75-2.28; 0 of 2 studies).

### ***Clinical practice guideline recommendations***

The *US Treating Tobacco use and Dependence in Hospitalized Smokers* guideline specifies that the provision of counselling to assist hospital patient cessation should be at least five minutes in duration. No other specific details are provided in any of the seven guidelines regarding the duration (minutes) or the total number of intervention contacts.

A clear recommendation regarding the intensity of intervention was not provided in three of the seven clinical practice guidelines (Table 4). Three clinical practice guidelines recommended the provision of brief/minimal intervention to hospital patients who smoke. Two guidelines recommended the provision of specialist support to smokers but the intensity of support was not specified. One guideline stated that intensive interventions should be provided to patients whenever possible.

## **2) HOSPITAL SMOKING CESSATION INTERVENTION COMPONENTS**

### **Brief advice**

#### *Cochrane reviews*

##### *Analyses restricted to hospital studies*

No analyses were reported

##### *Analyses not restricted to hospital studies*

Analyses conducted by the *Cochrane review of nursing interventions for smoking cessation* and the *Cochrane review of physician advice for smoking cessation* regarding the significant effect of the provision of brief advice versus control has been reported under the intensity section of this paper.

#### *Clinical practice guideline recommendations*

Table 4 shows that all seven guidelines recommended the provision of brief smoking cessation advice to hospital patients.

### **Counselling**

#### *Cochrane reviews*

##### *Analyses restricted to hospital studies*

*The Cochrane review of smoking cessation for chronic obstructive pulmonary disease* reported a single study which found no difference in cessation rates of individual counselling supported with printed self-help materials, compared with brief physician advice (Relative Risk (RR)=1.56; CI 0.65 – 3.72).

#### *Analyses not restricted to hospital studies*

The *Cochrane review of the efficacy of individual behavioural counselling for smoking cessation* suggests that the provision of counselling increased the likelihood of cessation compared to control (OR 1.62; CI 1.35-1.94; 6 of 12 studies), as did proactive telephone counselling (OR 1.56; CI 1.38-1.77; 0 of 13 studies) as reported by the *Cochrane review of telephone counselling for smoking cessation*.

#### ***Clinical practice guideline recommendations***

Two guidelines recommend specialist counselling support be offered to smokers. A further two guidelines recommend that hospital staff encourage patients to seek specialist counselling services after discharge (Table 4).

### **Nicotine replacement therapy (NRT)**

#### ***Cochrane reviews***

##### *Analyses restricted to hospital studies*

The *ISCHP* found that NRT failed to significantly increase hospital patient cessation rates (OR 1.12; CI 0.65-1.93; 3 studies). All trials recruited patients with a smoking related illness. In two of these trials nicotine gum was provided for 3 months and compared with placebo, in the third trial, an intervention consisting of nicotine gum, brief advice and a self help booklet was compared with 3 other conditions combined (brief advice; advice plus booklet; and brief advice plus booklet plus placebo). None of the trials included ongoing behavioural follow-up support.

*Analyses not restricted to hospital studies*

The *Cochrane review of nicotine replacement therapy for smoking cessation* investigated the efficacy of NRT for hospital patients (in patient and outpatients) and found that unlike nicotine gum, nicotine patch uses significantly increases cessation (OR 1.75; CI 1.19-2.57; 2 of 4 studies). Analysis of trials of NRT across a variety of settings suggests that NRT increased quit rates by 77% (OR 1.77; CI 1.66-1.88; 5 of 105 studies).

*Clinical practice guideline recommendations*

Four of the seven clinical practice guidelines recommend the provision of NRT to smoking patients (Table 4). The remaining three guidelines recommend the use of ‘pharmacotherapy’ or ‘medication’, but do not make explicit reference to NRT.

**Self-help material***Cochrane reviews*

No analyses were reported.

*Clinical practice guideline recommendations*

The provision of self-help materials to assist hospital patients to quit is recommended in 1 clinical practice guideline.

**Follow-up support****Telephone follow-up***Cochrane review*

*Analyses restricted to hospital studies*

In all trials included in the intensity analysis by the *ISCHP*, proactive (provider initiated) telephone follow-up was provided. As previously indicated, those providing follow-up for a period of longer than a month (intensity 4) successfully increased quit rates whereas those providing follow-up for less than one month (intensity 3) did not. Intensity 4 interventions incorporated follow-up comprising of at least four post-discharge telephone contacts over at least a three month period.

The *Cochrane review of nursing interventions for smoking cessation* reported that the provision of repeated telephone support following hospital based intervention significantly increased cessation rates above those receiving an identical intervention with a single follow-up telephone contact (OR 1.4; CI 1.00 – 1.96; 1 study).

#### *Analyses not restricted to hospital studies*

The *Cochrane review of telephone counselling for smoking cessation* found that patients who had received additional follow-up telephone support were no more likely to quit than those receiving a face to face intervention alone (OR 1.08; CI 0.87-1.33; 0 of 4 studies).

#### ***Clinical practice guideline recommendations***

As illustrated in Table 3, the provision of follow-up telephone support to smoking hospital patients, is recommended by two guidelines. Follow-up support generally is recommended in two of the seven clinical practice guidelines. However the specific modality for such support is not specified. Although two guidelines recommend that hospital staff provide advice and assistance to patients on how to remain abstinent after discharge, it is not clear if this extends to the provision of follow-up support.

#### **Face to face follow-up support**

##### *Cochrane reviews*

##### *Analyses restricted to hospital studies*

No analyses were reported.

*Analyses not restricted to hospital studies*

The *Cochrane review of physician advice for smoking cessation* found that compared with no advice controls, the efficacy of physician advice interventions including follow-up visits (OR 2.55; CI 2.04 – 3.19; 0 of 5 studies) was greater than those where follow-up support was not provided (OR 1.63; CI 1.39-1.91; 0 of 17 studies). A comparison of additional follow-up to a minimal intervention (advice during a consultation lasting less than 20 minutes, with or without a basic self-help leaflet and/or a single follow-up visit) found a significant increase in the likelihood of cessation in favour of the additional follow-up (OR 1.61; CI 1.1-2.37; 0 of 5 studies).

*Clinical practice guideline recommendations*

The provision of face to face follow-up strategies is recommended by two guidelines (Table 4).

### **3) THE DELIVERY OF SMOKING CESSATION INTERVENTIONS BY VARIOUS HOSPITAL PROVIDERS**

*Cochrane reviews*

*Analyses restricted to hospital studies*

The *Cochrane review of nursing interventions for smoking cessation* found that nurse delivered interventions to hospitalised patients with cardiovascular disease significantly increased patient smoking cessation (OR 1.44; CI 1.16-1.78; 4 studies) compared with a control. A significant effect was not apparent for interventions delivered to non-cardiac hospitalized smokers (OR 1.2; CI 0.92-1.56; 2 studies).

*Analyses not restricted to hospital studies*

The provision of smoking cessation interventions by physicians (OR 1.74; CI 1.48-2.05; 0 of 17 studies), nurses (OR 1.47; CI 1.29-1.68; 7 of 20 studies), and trained counsellors (OR 1.62; CI 1.35-1.94; 6 of 12 studies) was reported in various included Cochrane reviews (Table 3).

### ***Clinical practice guideline recommendations***

Five of the seven clinical practice guidelines did not identify a specific provider for the delivery of smoking cessation interventions to hospital patients (Table 4). In two of the five guidelines it was recommended that hospital patients receive intervention from a clinician and that those patients interested in quitting be provided with additional specialist support.

*The guide for the management of nicotine dependent inpatients* recommends the delivery of intervention during the inpatient period by either physician or nursing staff and that patients seek additional follow-up support following discharge from their general practitioner, pharmacist or telephone Quitline counsellors. The *US guideline for treating tobacco use and dependence in hospitalized smokers* recommends the provision of intervention by a physician in addition to a designated staff member, which may include physician assistants, nurse practitioners, clinical psychologists, clinical social workers, respiratory therapists or pharmacists.

## **4) THE DELIVERY OF SMOKING CESSATION INTERVENTIONS BY MULTIPLE HOSPITAL PROVIDERS**

### ***Cochrane reviews***

No analyses were reported.

### ***Clinical practice guideline recommendations***

Three clinical practice guidelines do not provide any suggestion of the number of providers recommended to deliver a cessation intervention to hospital patients (Table 4). Recommended practice described in the four remaining guidelines, included the provision of cessation care by two or more health care providers.

## **5) SINGLE VERSUS MULTIPLE COMPONENT SMOKING CESSATION INTERVENTIONS**

### *Cochrane reviews*

#### *Analyses restricted to hospital studies*

The *Cochrane review of smoking cessation for chronic obstructive pulmonary disease* reports a single study which found no difference in cessation rates between patients receiving brief advice and those receiving two intervention components, individual counselling plus self-help material (RR 1.56; CI 0.65 – 3.72).

#### *Analyses not restricted to hospital studies*

As has been described, the *Cochrane review of physician advice for smoking cessation* found that the cessation rates of interventions involving the provision of follow-up support to physician brief advice and/or self-help material were greater than those where such support was not provided.

The *Cochrane review of telephone counselling for smoking cessation*, found no evidence for additional effectiveness when proactive follow-up telephone support was provided in addition to face to face cessation intervention (OR 1.08; CI 0.87-1.33; 0 of 4 studies), or in conjunction with the use of NRT (OR 1.08; CI 0.82-1.43; 0 of 4 studies).

### *Clinical practice guideline recommendations*

All clinical practice guidelines recommend the provision of brief advice and some form of pharmacotherapy. The most common combination of components includes brief advice, counselling, NRT, and follow-up support. Additionally the *US guideline for treating tobacco use and dependence in hospitalised smokers* recommends the provision of self-help materials (Table 4).

## DISCUSSION

The review of meta-analyses restricted to hospital studies provided evidence supporting the provision in hospitals of intensive interventions, the use of repeated follow-up telephone support and identified nursing staff as having the capacity to deliver efficacious interventions to cardiac patients who smoke. None of the meta-analyses restricted to hospital studies provided evidence to support the use of other interventions components individually, the provision of multi-component interventions, or the provision of care by more than one provider.

In contrast, the findings of Cochrane meta-analyses which were not restricted to hospital studies suggests that both low and high intensity interventions are efficacious in increasing smoking cessation rates, as are intervention components such as brief cessation advice, counselling, NRT, and face to face follow-up support. Furthermore such meta-analyses suggest that both physician and nursing staff are efficacious providers of cessation interventions.

The findings highlight a dilemma facing hospital based health professionals. Meta-analyses of hospital studies from Cochrane systematic reviews fail to address specific cessation strategies and often contradict meta-analyses which incorporate trials from other clinical or community settings. The findings may suggest that unlike meta-analyses which are not restricted to hospital settings, meta-analyses with such restriction do not investigate specific cessation strategies or are comprised of too few trials to provide sufficient power to detect small but meaningful differences in cessation. Alternatively, the contrasting findings may indicate that minimal or single intervention components that appear sufficient for patients in other settings may not be of sufficient strength to encourage cessation among hospital patients. (France et al., 2001) Further trials of hospital based interventions are required to clarify these hypotheses.

The review found that a majority of clinical practice guidelines recommended the provision of brief advice, counselling and NRT, multi-component interventions, and the delivery of cessation interventions by multiple providers. However, guidelines often failed to provide explicit instruction to hospital health providers regarding recommendations of intervention intensity, the use of follow-up support and self-help material, and the type of provider to deliver smoking cessation interventions. A more thorough description of recommended practice by clinical practice guidelines is required to provide more practice relevant information for healthcare providers.

Recommendations made by clinical practice guidelines most closely resemble the findings of meta-analyses conducted by Cochrane reviews not restricted to hospital studies. Such findings may reflect the fact that, of the five guidelines which cite Cochrane reviews as a source of evidence base, just two were published or relied on evidence published following publication of the *Cochrane review of smoking cessation interventions for hospitalised patients* (Rigotti et al., 2002). Such findings suggest that the majority of existing hospital based guidelines have been developed with limited consideration of research conducted within hospitals, and rely primarily on evidence from outside this setting. An alternative explanation is that the guidelines are based on an assumed generalisability of findings from primary care and other clinical settings to hospital care. Revision of guideline recommendations based on newly available hospital evidence is warranted.

### *Study limitations*

A number of methodological issues require consideration. The review relied on meta-analytic evidence from Cochrane reviews. Cochrane reviews were selected for review as they are internationally recognised as a leading source of best practice evidence for health professionals (Forbes et al., 2003; Ghosh et al., 2000) and unlike many other systematic reviews, provide meta-analytic evidence of intervention effects. A limitation of this approach is a reliance on the narrow focus of Cochrane meta-analyses to address the review aims. A further limitation of the use of Cochrane meta-analyses is that such analyses can mask important differences in trials

grouped as the same, they do not include evidence from trials which have been published since the latest Cochrane update and they do not include evidence of trials not subject to Cochrane systematic reviews such as non randomized controlled trials (West et al., 2000). However, the findings of analyses of hospital based studies reported in this study are consistent with the findings of other systematic reviews reporting analyses of hospital based cessation trials (Lichtenstein et al., 1996; Rice, 2006; Bernstein SL, et al.,2002).

The search strategy to identify clinical practice guidelines was similarly limited. The use of electronic databases such as 'Medline' could have located additional guidelines suitable for inclusion in this review. A further constraint of this study is that while providing recommendations for practice within hospitals, 5 of the 7 identified guidelines were developed primarily for primary care clinicians. While a primary care focus may help explain the omission of specific recommendations for hospital clinicians in some guidelines, a need for more explicit guidelines and recommendations specifically for hospital based health professionals is clearly evident.

## CONCLUSIONS

Relative to smoking cessation research conducted in primary care settings, hospital based smoking cessation research is in its infancy (Fiore et al., 2000). Given the limited number of smoking cessation trials conducted in hospitals, clinical practice guidelines appear to have based clinical recommendations regarding smoking cessation practices in hospitals on the strength of evidence from primary care. Based on the small number of smoking cessation trials reported in analyses of hospital trials by Cochrane reviews, the study suggests that the findings of research from settings including primary care may not be appropriate to generalize for care of hospital patients. As such if the intention of meta-analytic reviews and clinical practice guidelines is to provide meaningful direction to clinicians, a clear need for further hospital specific research regarding the efficacy of smoking cessation care is required, as is the development of guidelines based on this evidence. In the absence of such information clinicians are less likely to engage in the provision of effective cessation care, thereby limiting the realization of potential clinical and population health benefits from such care in this setting (McClure et al., 1997).

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