Chapter 6
Integrating Motivational Interviewing into Pulmonary Healthcare

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Overview

Making changes in health behavior can be difficult for almost everyone. Most people are aware of the benefits of behavior changes such as quitting smoking, losing weight, or exercising more. However, simply possessing the knowledge is typically not enough to influence change, be it ceasing unhealthy behaviors, beginning healthy ones, or maintaining positive behavior changes. People with pulmonary disease are no exception and may feel especially challenged to make changes because the very symptoms of their disease negatively impact virtually all of their daily activities. For example, the majority of smokers with pulmonary disease will agree with their healthcare professionals that they should quit. Most participants in a pulmonary rehabilitation program experience the positive effects of physical exercise and know that they should continue exercising after the completion of the program. Because many of these patients struggle with actually implementing such health behavior changes, motivational interviewing (MI), an empirically supported communication style, is an optimal approach to assist people with pulmonary disease clarify and resolve their ambivalence about effecting behavior change.

In this chapter, we introduce MI and briefly describe its development and initial applications. The theoretical concepts that underlie MI will be reviewed, as will specific interview and interaction techniques. A brief review of its efficacy for health conditions, including pulmonary disease, will be presented. We will offer guidance

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on integration of MI into the care of patients with pulmonary disease, in both traditional one-on-one and group settings. Hypothetical case examples will be provided to offer the reader practical exemplars of the implementation of MI theory as well as its actual practice. While the responsible practice of MI does require training, ongoing proctoring, and institutional support, it is hoped that this chapter will provide a starting point for healthcare professionals from multiple disciplines, including physicians, nurses, physical therapists, and respiratory therapists (RTs), who are interested in incorporating this approach into the care of their patients.

History and Initial Applications of MI

MI was developed by William Miller and colleagues. The original impetus occurred during a trial of behavioral treatment for alcohol misuse. Study therapists had been trained to demonstrate empathy [61], consistent with person-centered models of psychotherapy [84]. The researchers were surprised to find that therapist empathy accounted for substantial proportions of the variance in drinking outcomes as much as 2 years later [57]. These observations, combined with his experiences working with a group of psychologists in a Norwegian alcohol treatment center, led to Miller's efforts to integrate behavior therapy with a person-centered approach, and subsequently to MI [56].

At this time, addiction counselors tended to use a confrontational style that actually increased resistance to change. Counselors instructed clients to quit in ways that varied from honest feedback (e.g., "You must quit, drinking is ruining your life") to loud, profane denunciations (e.g., "Shut up and listen…alcoholics are liars, so we don't want to hear what you have to say") [97]. This observation was consistent with self-perception theory, which suggests that confrontation entrenches the client in his or her pre-existing position [5]. In contrast, an empathic, client-centered style can increase motivation to change. In MI, the clinician takes an approach that recognizes that change is difficult, and sets out to work through the reasons for and against change. The clinician explores the client's reasons for change by using reflective listening, by which the client hears him or herself argue *for* change, rather than against. Client statements arguing for change are referred to as "change talk" (Table 6.1). Eliciting change talk is an important goal of MI because change talk increases the client's commitment to making positive changes, and has been

Table 6.1 Change talk types and examples

Desire to change	I wish I could find a way to start an exercise program but it's so hard to keep it up.
Ability to change	I was better at eating healthy before my spouse got sick.
Reason to change	My son won't let the grandkids come over until I stop smoking.
Need to change	Things aren't going well – something's got to give.

associated with better behavioral outcomes [34, 36, 95]. MI is directive, as the clinician uses reflective listening and other techniques to elicit client change talk, thereby strengthening the client's motivation for change [60]. One method that an MI interviewer uses to increase change talk and motivation for change is developing discrepancy. Discrepancy refers to the strategic use of reflections and other statements intended to focus the client's attention on the gap between the client's personal values and the current state [14]. For example, the interviewer may use reflection to bring the client's attention to the fact that continuing to smoke following a heart attack is at odds with his strong desire to see his grandchildren grow up.

Having developed an initial conceptualization of MI, Miller and others proceeded to test it as the basis for intervention. MI was originally viewed as a way to enhance motivation prior to treatment [60]. However, findings from early trials indicated that brief MI-based interventions tended to be effective in and of themselves and that a confrontational clinical style engendered resistance and poor treatment outcomes [58, 66]. Findings from early trials indicated that clients who received a single MI session prior to treatment had better abstinence outcomes, were more likely to stay in treatment, and had greater motivation to change [8, 13, 65].

In 1989, Miller began a collaboration with Stephen Rollnick, yielding a new focus on ambivalence [62]. Changing maladaptive behaviors typically involves forgoing longstanding, immediately reinforcing behavior in favor of a new pattern that reduces long-term risk for negative outcomes. This naturally produces ambivalence. In MI, the role of the clinician is to acknowledge and normalize this ambivalence, and to help the client understand it. Exploring ambivalence provides the interviewer with opportunities to elicit internal motivations for change [60]. Importantly, the clinician's job is to help the client generate statements about reasons for changing. The MI clinician assiduously avoids statements that could be perceived as arguing or advocating for change, because these tend to yield resistance and reduce the likelihood of change [12, 75]. As Bem noted, people are more responsive to their own arguments than to others' [5]. Relatedly, when a client expresses resistance to change, the clinician perceives it as a natural part of working toward change. Rather than arguing, the clinician "rolls with the resistance" by using reflective listening, developing discrepancy, and exploring the reasons for resistance.

MI Principles and Techniques

Those of us who have gone into professions dedicated to helping others to reduce or cope with physical or psychological symptoms may tend to view change as the result of the services that we and our colleagues provide. However, it is increasingly clear that most people who change successfully do so on their own [41, 42, 90]. Thus, treatment may be better conceptualized as a means of facilitating the natural process of change, particularly for those who are struggling. MI is designed to accomplish this by enabling the client and the interviewer to collaboratively work through ambivalence, increasing the client's motivation to change.

Table 6.2 Motivational Interviewing Principles

Expressing empathy	Communicate respect, understanding, acceptance of clients' unique feelings, values, and perspectives
Developing discrepancy	Focus clients' attention on the difference between current behavior and values or hopes for the future
Rolling with resistance	A signal to change direction or respond in a new way to take advantage of the situation without confronting
Supporting self-efficacy	Recognize clients' strengths and bring them to the fore whenever possible

MI has four basic principles that guide the clinician: expressing empathy, developing discrepancy, rolling with resistance, and supporting self-efficacy [63] (Table 6.2). Relatedly, MI experts have emphasized the "spirit" of MI, which is viewed as more important to client outcomes than any specific techniques [2, 68]. Elements of the MI spirit include collaboration, supporting the client's autonomy to make his or her own choices, and evoking rather than demanding change talk [62]. Other interventions designed to help clients make behavior changes tend to be focused on how to accomplish the desired changes. In contrast, MI focuses on using the client–healthcare professional relationship to help the client to make the decision to change, or to strengthen motivation or resolve to do so [69]. A number of studies have supported the hypothesis that this approach yields better client outcomes [9, 17, 31, 72].

MI makes several assumptions. First is that all clients have a powerful drive toward healthy, adaptive behavior. This drive fluctuates over time and can be influenced in treatment. A second assumption is that, while the healthcare professional has useful knowledge to share, the client knows best how to change his or her circumstances. Importantly, attempting to motivate the still-ambivalent client via advice, education, persuasion, logic, or warnings is likely to generate resistance. Finally, the healthcare professional assumes that the client's decision to change and to work toward that change is a critical ingredient to successful change [69].

A common misconception is that MI is directly related to the transtheoretical model (TTM) of change [78], which includes a focus on clients' readiness to change. The TTM identifies specific stages of change (pre-contemplation, contemplation, preparation, action, maintenance, relapse, and recycle), each with a common set of thoughts and behaviors. The TTM was novel in advocating that therapists work to increase the motivation of clients not yet ready for change, and MI was a natural fit for this role; in turn, the stages of change provide a straightforward way to conceptualize the potential role of MI in helping clients move from considering changes to actively working toward them [64].

MI can be thought of as occurring in two phases. In the first, motivation-building phase of MI, the clinician focuses on building motivation for change. Motivation rests on the extent to which the client feels willing, able, and ready to change. In MI, willingness is sometimes conceptualized as the extent to which the client perceives a particular change as important, and ability as the client's confidence to effect change. A common MI technique is to ask the client to rate importance and confidence on a 0–10 scale, also known as a readiness ruler, to help guide the focus of this phase. For a client

with room for improvement in both importance and confidence, it may be beneficial to focus initially on confidence (e.g., if the client has been unsuccessful in prior change attempts), but this will be client dependent. These ratings can help the healthcare professional understand the client's motivation and determine the initial targets of treatment. Subsequent exploration of ambivalence can focus on developing discrepancy between the client's current and ideal states (e.g., "It sounds like one concern you have about smoking is that it makes it harder to be the parent you want to be.").

During the motivation-building phase of MI, five specific behaviors are recommended [63, 64]. The first four are included in the acronym *OARS: open-ended questions, affirmations, reflections, and summaries*. While these techniques are not unique to MI, in MI they are used explicitly to explore a client's ambivalence and to increase his or her motivation to change. The goal is to build a collaborative relationship, to encourage the client to be expressive, and to explore ambivalence. *Open-ended questions* facilitate this goal by encouraging greater expression from the client. For some clients, simple open-ended questions (e.g., "What brought you here today?") are sufficient to start the conversation. Others may start out less comfortable with expression or, if they have greater ambivalence, may have a harder time discussing reasons for change. In such cases, it may be useful to ask them to express both sides of the issue (e.g., "What are the good things about smoking? What benefits do you get from it?" followed by "And what about the other side – what concerns do you have about smoking?"). Some guidelines to consider include that the client should be talking more often than the healthcare professional, and that the healthcare professional should not ask more than two questions consecutively. Instead, after an open-ended question, the healthcare professional should use the other elements of OARS to explore the client's thoughts about the positive and negative aspects of change.

The second element of OARS is directly *affirming* the client. The healthcare professional may express appreciation of the client coming to treatment, or the effort that it took to talk about concerns, or the coping skills that have been required to deal with a difficult situation. Affirmations help to build rapport and reinforce the idea of mutually exploring the possibility of change.

Reflective listening is perhaps the most important element of MI Crucially, reflections encompass not only listening attentively, but also responding appropriately. A series of inappropriate ways of responding, termed "roadblocks," have been identified [35] (Table 6.3). The term roadblocks is used because this kind of communication can be obstructive and may cause the client to change direction and be resistant. Roadblocks are inconsistent with the spirit of MI. Examples include ordering or commanding, warning or threatening, giving advice, providing solutions, arguing or persuading, criticizing or blaming, shaming or ridiculing, interpreting or analyzing, approving or praising, and sympathizing or consoling. Roadblocks tend to imply an unequal relationship between the client and an expert, which undermines the collaborative spirit of MI. They also redirect the client away from examining ambivalence.

What does reflective listening look like? The goal is to indicate that the healthcare professional hears and understands what the client is communicating. The

Table 6.3 Roadblocks – communication styles to avoid

Ordering or commanding	Criticizing or blaming
Warning or threatening	Shaming or ridiculing
Giving advice or solutions	Interpreting or analyzing
Questioning or probing	Approving or praising
Arguing or persuading	Sympathizing or consoling

healthcare professional takes a reasonable guess at the intended meaning and expresses it as a statement, rather than a question. The distinction is important, as a question may be more likely to generate resistance. The statement's purpose is to check its accuracy with the client, and to keep the client moving toward change talk. Simple reflections may repeat a portion of the client's statement, while deeper reflections may guess at the emotion the client is feeling or "continue the paragraph" by reflecting the statement the client may make next. Deeper reflections tend to be more effective but are also a function of the healthcare professional's experience. It is important to note that reflective listening is directive. The healthcare professional is choosing which statements to follow up on. After asking an open question, the healthcare professional should respond to the client's answers with reflective listening, with the goal of eliciting change talk. Healthcare professionals with strong MI skills will typically reflect 2–3 times more often than they ask questions. The case vignette outlined later in this chapter illustrates the frequent use of reflections.

The final component of OARS is *summarizing*. Summary statements bring together and reinforce multiple points of discussion. For example: "It sounds like you're worried about the impact smoking is having on your life. Because you're not breathing as well it's hard to be active, and to be the grandparent you want to be. You're also concerned it could lead to bigger problems that would force you to retire, creating a financial burden for your family. What else?" Summaries send the message that the healthcare professional has been listening. Some are brief and intended to continue the client's momentum. Others may link a current discussion to an earlier discussion, particularly with an eye toward clarifying ambivalence. Finally, transitional summaries are intended to shift focus to the next topic, either between sessions or between MI phases.

The fifth MI skill is *eliciting change talk*, which is explicitly a directive method for resolving ambivalence utilizing OARS. The healthcare professional seeks to have the client make the argument for change [56]. The primary categories of change talk are the advantages of changing, the disadvantages of not changing, optimism about the ability to change, and expressions of intent to change. The more statements the client makes that fall into these categories, the more likely she or he is to change. A healthcare professional may use client ratings of importance and confidence as a starting point. If a client rates her confidence as 3 out of 10, the healthcare professional may ask "Why 3 and not 0?" "What would it take for you to move from 3 to 8?" Most of the time, a client's responses to such questions will take the form of change talk. It can also be helpful to make a list of the pros and cons of changing and of not changing. This provides a picture of the client's ambivalence that can be explored. Another method for eliciting change talk is asking a client to

imagine the worst possible consequences of not changing, or the best possible consequences of change – e.g., "Imagine that you decide not to make any changes – what are the worst things that might happen?" Or "Imagine that you were able to make this change successfully. How might things go differently for you?" Discussing how things were different before the current problem began, or how they might change if it can be resolved, can also be helpful ways to induce change talk. The latter approach may also fit well with discussing a client's goals and values, and how they are or are not consistent with current behavior. To the extent that behavior seems to be inconsistent with deeply held values, such a discussion provides the healthcare professional with an opportunity to explore and increase motivation for change by developing discrepancy. Table 6.4 summarizes the MI skills relevant to the motivation-building phase of MI.

In the second, strengthening phase of MI, the focus shifts to bolstering the client's commitment to change. This phase begins when the client feels willing to make changes and confident that he or she can do so. Signs of this readiness include lessening resistance and increased change talk, envisioning the future after making a change, and questions about change in place of questions about the existing problem area [63]. In this phase, the main task is to keep the client pointed toward change. This phase is often – though not always – easier than the first. Nevertheless, this second phase includes some problems to avoid. The first is assuming that all ambivalence has been resolved. The second is overprescribing, or recommending a plan that the client does not agree with. The final potential problem is not providing enough help. All of these problems risk increasing ambivalence and resistance, and decreasing motivation to change. So how should the healthcare professional approach the second phase?

A good first step is to recap progress to date, including initial problems and concerns, ambivalence, and client statements about the importance of change and his or her confidence in changing. A recap can be followed by a key question, which is an open question that elicits the client's plans. The goal is to get the client to think and talk about next steps (e.g., "What do you think is next for you here?"). The client's response should be met with reflections to clarify his or her thoughts and plans, and to respond appropriately to change talk and to resistance. At this point, the healthcare professional may also give some advice, sharing his or her expertise, while taking care to only do so after understanding the client's thoughts and knowledge and when the client has requested it or given permission. From these steps, the client and the healthcare professional can collaborate on a plan for

Table 6.4 MI Skills

Open-ended questions	Encourage greater expression from the client
Affirming	Rapport-building and reinforce intent to work collaboratively toward change
Reflective listening	Statements indicating the client has been heard and understood
Summarizing	Reinforce multiple elements of discussion, often including pros and cons of change
Eliciting change talk	Client expresses desire, ability, reasons, and/or need for change

enacting change. This generally includes four steps: setting goals, considering options for change, developing a plan, and eliciting commitment to change. During this part of the process, it is important for the healthcare professional to help the client to set goals and make plans that are realistic and client-determined. Imposing the healthcare professional's goals is likely to backfire. The extent to which plans are realistic or advisable can be determined collaboratively, by asking the client to give a confidence rating, or discussing potential consequences. After collaborative development of a change plan, the healthcare professional may use a summary of the plan that includes goals, needs, intentions, and beliefs. The next step is to elicit commitment from the client, often by directly asking, "Is this what you want to do?" If the client is not ready to do so, the healthcare professional should return to OARS techniques to explore and resolve this ambivalence.

Resistance to change is common, in either phase of MI. Resistance tends to be reflected in either "sustain talk" or statements that favor not making changes, or in discord, which is a disruption of the therapeutic relationship. There are two general approaches to responding to resistance, both of which can be useful. The first approach consists of different types of reflections. The first is a simple reflection acknowledging the client's perception or feeling. This allows for exploration of the feeling and maintains the collaborative spirit of MI. A second type is amplified reflection, which is intentionally exaggerated beyond the client's meaning (e.g., "So you may have gotten a DUI, but that was just bad luck. Your drinking hasn't caused you any problems"). The case vignette later in this chapter contains another example of an amplified reflection. If an amplified reflection works, it will encourage the client to backtrack and engage in change talk. Importantly, the amplified reflection must be done empathically and without sarcasm to avoid sounding hostile. Finally, the healthcare professional may use a double-sided reflection that expresses both sides of ambivalence; for example, "You do think that you will feel better if you used your CPAP machine and at the same time you know it will be really difficult and disruptive." The second approach consists of different ways of refocusing the client. These include temporarily moving toward a less difficult issue; reframing (e.g., conceptualizing repeated unsuccessful efforts as perseverance); and agreeing with a twist. The latter consists of initially reflecting and then reframing the client's statement.

It is important to recognize that resistance is normal and not a sign of pathology. In fact, resistance offers an important opportunity to the healthcare professsional. The client has likely expressed similar resistance before, internally and/or with others. The client may expect the healthcare professional to argue against resistance, playing the same role that others have done in the past. The healthcare professional who avoids this path increases the odds of a different outcome [63].

Efficacy Studies

More than 500 controlled trials of MI have been published in the past 40 years, across a variety of clinical concerns [60] as well as several meta-analyses [14, 45, 50, 53, 73, 85]. MI has generally been found to have a modest effect in addressing

problems including alcohol, tobacco, and other substance use [46, 49, 87], behavioral concerns such as problem gambling [98], and other problematic health behaviors [10, 18, 20, 33, 37, 55].

In addition to clinical trials, the hypothesized mechanisms in MI have been subject to a number of process-oriented studies. It has been posited that MI consists of two primary mechanisms: the "spirit" component (e.g., accurate empathy, collaboration, and respect for the client's autonomy) and the technical component (e.g., using reflections to elicit change talk). The latter has received greater attention in the literature. First, it has been shown that a healthcare professional's use of MI techniques yields client change talk, and that this effect can be reversed by the use of behaviors that would be expected to increase resistance [32]. Multiple other studies have confirmed that interviewers with better MI skills will produce both the frequency and the strength of clients' change talk, and conversely that behaviors that are frowned upon in MI increase sustain talk [11, 29, 38, 54]. Importantly, data also suggest that when clients engage in more change talk relative to sustain talk, they are more likely to change behavior [16, 30, 38, 67, 95].

While studies of the active ingredients of MI have generally focused on the use of specific techniques, evocation of change talk and subsequent outcomes, there is also indirect evidence for the importance of the MI spirit. For example, the efficacy of MI has varied across sites in multisite trials [4], and across healthcare professionals within individual trials [79]. Interestingly, one MI meta-analysis found that MI was more effective in trials that did not use therapist manuals [36]. These findings suggest that variables that are sometimes referred to as "common" or "nonspecific" factors that are clinician- but not therapy-specific but are a focus of MI (e.g., empathy, client-centered interpersonal skills), play an important role in determining clinical outcomes [59, 70, 71, 92].

MI Applications in Pulmonary Disease

Smoking Cessation (See Chap. 14)

There are a number of behaviors relevant to pulmonary disease that can be targets for an MI approach. Probably the most robust body of literature on the efficacy of MI, not specific to the pulmonary disease population, is focused on smoking cessation. A meta-analysis of 28 studies and 16,000 participants revealed that MI approaches do have positive, albeit modest, effects on likelihood of abstinence from smoking for at least 6 months [49], with a reliable advantage of MI over usual care or brief advice. Interestingly, trials that implemented brief sessions of MI, e.g., 20 minutes or less, reported effect sizes that were as good as or better than those with longer sessions. This finding suggests that the efficacy of MI does not hinge on lengthy and repeated sessions; rather even brief conversations using MI concepts in the course of usual contact with patients may be helpful. Thus, we advocate for a truly "integrative" approach to using MI with patient populations where healthcare professionals, which we define broadly here to include physicians, nurses, RTs, and others, can implement the techniques reviewed above whenever an opportunity

arises to discuss behavior change with their patients. The case vignette presented later exemplifies such an opportunity.

MI for smoking cessation in patients either with or at high risk for pulmonary disease has been investigated, with generally positive effects. For example, a telephone-based series of MI counseling sessions (up to six sessions) resulted in higher quit rates than usual care for a group of patients at risk for lung cancer [89]. In another study, smokers consulting a pulmonologist received in-person MI from the healthcare professional, alone or in conjunction with pharmacotherapy; findings indicated that smoking prevalence decreased regardless of whether pharmacotherapy was provided [48].

There are challenges to implementing MI in smokers with pulmonary disease who are driven by concerns and beliefs unique to this population. These factors were described in a small qualitative study of smokers with chronic obstructive pulmonary disease (COPD) who were interviewed about their beliefs related to smoking and quitting [51]. Distinct themes were identified such as fear of not being able to quit and thus becoming ill and hospitalized, feeling criticized by others including healthcare professionals for not being able to quit, hiding their smoking from loved ones and healthcare professionals, and avoiding frightening health information, e.g., not wanting to partake in lung function tests or other evaluations. Flott [28] directly relates suggested strategies for smoking cessation to the patient's stage of change. For example, for a patient still deciding whether to change, which can be characterized as the contemplation stage of change, the healthcare professional should address potential misconceptions about smoking, one of which may be that, since the individual already has lung disease, “the damage is done” and quitting smoking will not help. Another common misconception among smokers with pulmonary disease is that there is a “safe” amount of cigarettes they can smoke. Again, such patients may be in the contemplation stage since they are considering some kind of behavior change, e.g., cutting down the quantity of cigarettes they are smoking. For a patient who has quit or cut down smoking and is continuing to work toward achieving or maintaining abstinence (action stage of change), a review of the improvement in symptoms may help reinforce behavior change. These strategies can be used in conjunction with MI to enhance motivation. These studies provide very useful information about features unique to patients with pulmonary disease who continue to smoke. In order to maximize the benefits of an MI approach, healthcare professionals are advised to listen for and even introduce these factors in their work with patients. Such efforts, in combination with more extensive training and ongoing supervision in MI, may more effectively encourage and empower healthcare professionals to use MI strategies with their pulmonary patients.

Physical Exercise (See Chap. 8)

One of the most challenging behaviors to initiate or maintain for people with pulmonary disease is exercise. COPD patients, for example, spend half as much time as healthy people doing physical activities and have more sedentary periods [77,

94]. Dyspnea and fatigue, symptoms present even in mild stages of the disease, substantially lessen motivation to engage in nonsedentary activities, as does the use of supplemental oxygen. There is also a prominent psychological component; 37–71% percent of people with chronic pulmonary disease experience depression [88], which has a direct negative impact on engagement in activities. Unfortunately, as many patients with pulmonary disease will readily attest, the relationship between reduced activity and increased depression is a "vicious cycle," where inactivity worsens mood, which in turn further drives down the patient's motivation to be active. Substantial evidence, however, indicates that increasing physical activity or at least decreasing sedentary periods is beneficial for people with chronic lung disease, to the point that greater physical activity is the strongest predictor of mortality for COPD patients when many other factors are accounted for [96]. Most people with pulmonary disease acknowledge that engaging in regular physical exercise is challenging but makes them feel better physically and emotionally. This "conundrum" of physical exercise for pulmonary patients and the ambivalence that patients experience when comparing its benefits to its notable challenges create an optimal opportunity for MI approaches.

Not surprisingly then, MI-based interventions to target physical activity have been attempted in patients with pulmonary disease. A small study randomized COPD patients to a control condition or four in-person MI sessions and measured physical activity with a pedometer [21]. Although the patients who received MI did increase their step count more than the controls, with a moderate-to-large effect size, this difference did not reach statistical significance in the small sample. A larger study found similarly modest results such that COPD patients in a pulmonary rehabilitation (PR) program randomly assigned to receive MI as part of their treatment did not spend more time walking, though their levels of moderately intense activity were somewhat greater than that of the control group [15]. Strengths of these studies include objective measures of physical activity (i.e., pedometer/accelerometer), but potential limitations were noted such as likely insufficient MI training of the healthcare professionals (see section on fidelity below) and patients' general lack of adherence to their PR programs. More broadly, a systematic review on the effects of MI on physical activity levels in people with chronic health conditions suggested a modest positive effect of the intervention [73]; however, this meta-analysis did not include findings specific to patients with lung disease. Thus, the question of whether MI can reliably increase physical exercise in the pulmonary population remains unanswered. Fortunately, there are two additional clinical trials in progress. One group [80] is randomizing patients with COPD in a PR program to either treatment as usual or several in-person MI sessions and will track physical activity with ambulatory devices. Another study reportedly in progress [39] will take place at two different hospital sites and randomize COPD patients to either a traditional hospital-based PR program or a home-based program with telephone MI sessions. There is much progress to be made in facilitating physical activity in people with pulmonary disease, and well-designed trials with experienced MI healthcare professionals are vital.

As we await the progression of empirical research, we suggest that healthcare professionals take steps to integrate MI communication techniques into everyday

interactions with patients about physical exercise. An open-ended query about recent activity or exercise behavior, followed by simple reflections of the patient's response, is an easy starting point for a potentially fruitful discussion about where the patient is at present versus their personal goals for physical activity. An example of how such a conversation might go is presented later in this chapter.

Self-Management of Disease and HRQoL (See Chap. 11)

Self-management, defined as the patient's own ability to cope with his/her medical condition, is strongly related to better HRQoL in people with chronic lung disease [19]. To that end, Benzo and colleagues [6] have developed an eight-session intervention for patients with COPD that uses MI to communicate with patients about individualized "action plans" that can include strategies for coping with stress and difficult emotions, quitting smoking, breathing more effectively, managing fatigue, increasing physical activity, taking medications, and other personalized goals. Training of clinicians in the intervention techniques is intensive and includes didactics, role playing, and monitoring of skills via videotape and feedback. The authors have also implemented treatment fidelity methodologies. Patient participants reported high satisfaction with treatment and a good working alliance with healthcare professionals, and tended to remain in treatment. Although implementing an individualized program that requires intensive professional training may seem daunting, its potential positive benefits are likely worth the investment. Patients' subjective feedback about the MI-based interventions included an increased sense of self-awareness and accountability, improvement in physical activity and mood, and positive feelings about their relationships with their healthcare professionals [7]. Whether these positive experiences manifest in objective, measurable improvements in health indices is an important next step of investigation. A series of telephone-based MI sessions in people with COPD yielded decreases in self-reported dyspnea and improvements in fatigue and other domains of HRQoL [81], which, despite the lack of a control condition, is a valuable finding especially relevant to patients who cannot access a hospital-based program. An ongoing trial is randomizing patients recently hospitalized for COPD exacerbation or heart failure to either standard of care or an intervention that incorporates in-person and telephone MI-based sessions to encourage self-management strategies [27]. Re-hospitalization rates will be the primary outcome measure, which should have downstream implications for healthcare usage and overall HRQoL.

While much of the work described above has focused on patients with COPD, one study examined post-operative patients with lung cancer [40]. A six-session treatment based on MI principles was compared to treatment as usual in a small group of patients. Positive effects of MI were observed in depression and anxiety

symptoms, self-efficacy, and HRQoL measures, although lung function did not differ from controls. This study adds to a body of literature suggesting that MI interventions have promise in improving patients' subjective experience, including their sense of autonomy and control over certain aspects of their diseases, which even in the absence of objective changes in health status can have a powerful and personally meaningful impact for individuals who suffer with lung diseases. Very little work has been conducted on conditions such as interstitial lung disease, pulmonary fibrosis, and others; clearly more research is needed in those unique populations.

Other Pulmonary and At-risk Populations

MI can be applied to other health behaviors relevant to pulmonary disease such as treatment adherence. For example, MI-based interventions have been effective in increasing compliance with continuous positive airway pressure (CPAP) treatment in people with obstructive sleep apnea [3, 74]. A particularly challenging condition with respect to treatment adherence is cystic fibrosis (CF). Increasing the lifespan of individuals with CF requires an intensive regimen of medications and airway clearance therapies, but treatment adherence is a particular challenge in children and young adults coping with the disease [22]. To that end, clinicians in the United Kingdom developed and evaluated a training program in MI for healthcare professionals who work with CF patients [23]. The training was positively received by the healthcare professionals who reported that they subsequently felt relatively confident in delivering MI, but barriers were also identified such as lack of sufficient time with the patient and lack of continuity of care such that the same healthcare professional did not always work with the patient. Consistent with other studies, ongoing training and support in implementing MI were recommended, which will be further discussed below. It remains to be seen whether an MI-based approach can improve adherence in this population, but committed and well-trained healthcare professionals are a necessary initial step. Unique issues must be taken into account in the CF population. Adolescence is a time when striving for independence and autonomy is normal and healthy. From the MI standpoint, teens' reluctance to adhere to CF treatment is not necessarily framed as "resistance" or "noncompliance"; rather the healthcare professional can highlight adolescents' desired sense of self-efficacy as a strength prior to exploring ways in which patients could retain some autonomy while participating in treatment. For younger patients with CF, family involvement is critical, which may include exploring barriers to treatment adherence with parents, highlighting their intentions to do the best for their children and other personal values held by the parents.

Successful implementation of MI has the potential for far-reaching public health impact, e.g., in communities or populations that are at elevated risk for pulmonary conditions. Rates of asthma are disproportionally high in young African Americans

as are poorer outcomes [1]. In one study, home-based MI following an emergency room visit for asthma exacerbation in a small group of African-American adolescents resulted in greater motivation to adhere to treatment, but no substantial increases in actual medication adherence [83]. An innovative approach is exemplified by the Detroit Young Adult Asthma project [52]. This project has developed a multicomponent, technology-based intervention to promote use of asthma inhalers which consists of several computer-based sessions facilitated by an avatar, or a digital character that interacts with the participant, that the participant selects. The avatar incorporates MI principles of empathy, optimism, respect for the patient's autonomy, and highlighting of the patient's strengths. These sessions are supplemented with text messages and text-based assessments of mood and behavior (ecological momentary assessment) to reinforce the principles learned in the sessions and obtain readiness to change ratings. Such an innovative and technologically driven intervention, since it relies less on healthcare professional time and effort, has the potential for wide dissemination and may truly represent the future face of MI.

The children of parents who smoke are another at-risk population for pulmonary disease. Passive smoke exposure is associated with higher rates of childhood asthma [91], prompting researchers to develop interventions targeted at parents to prevent or reduce exposure. MI-based interventions in this population have been moderately effective [24, 26, 43], although at least one study observed that reductions in smoke exposure were not sustained over a longer period of time [43]. A cost analysis of an MI plus education intervention versus education alone indicated that the relative expenses of the MI-based treatment were high in the short-term, but there were reduced emergency department visits over the course of 1 year in the group that received the MI intervention [44]. Such findings should be brought to the attention of policymakers and healthcare administrators. Again, second-hand smoke exposure is disproportionally high in low-income and ethnic minority populations; thus any intervention targeted at these groups, including MI, must take into account socioeconomic and cultural factors. One example described by Eakin and colleagues [24] is that, for families who live in urban areas, children need to be near their smoking parents much of the time for safety reasons. Unless such real-world factors are addressed, or at least identified by the healthcare professional as important to the parent, any intervention's chance of success is limited. The healthcare professional can use MI techniques such as reflective listening to explore the relevance of these issues and, when appropriate, highlight the parents' motivation to protect their children.

Fidelity to MI by Pulmonary Healthcare Professionals

Healthcare professional-related barriers to implementing MI in these populations have been identified. Healthcare professionals working with smokers with COPD received several days of training on MI techniques and were subsequently

videotaped during a consultation with their patients [25]. Use of a rating scale that measures fidelity to MI techniques revealed that healthcare professionals rarely used the reflections and open-ended questions that are core to MI. The study by Burtin and colleagues on the use of MI to promote physical activity also posited that insufficient training of healthcare professionals in MI skills may have influenced the results [15]. Importantly, these findings are not unique to healthcare professionals caring for pulmonary patients; broader studies of MI fidelity have shown that it is these same techniques that are challenging to adhere to for many beginning MI clinicians, particularly those without previous psychotherapy training [82]. The authors concluded that a few educational sessions of MI are insufficient to teach the complexities of this approach and that ongoing coaching is critical. Another informative study included a one-day MI workshop for RTs, who were then interviewed to assess their perspectives on the feasibility and utility of using MI with their patients [86]. Again, the need for more extensive training and ongoing supervision was highlighted. In addition, RTs felt that MI was very different from their typical communication style with patients and believed that it would require more time than they typically are able to allocate. The implementation of MI in clinical settings is fraught with challenges that are not specific to pulmonary healthcare professionals, and a recent scoping review identified useful recommendations at the level of the healthcare professional, the clinical team, as well as institutional policy to enhance successful integration of MI [47]. These recommendations included training on MI but also ongoing supervision and coaching, encouraging leaders to facilitate the use of MI including ensuring adequate funding, monitoring healthcare professionals' performance, and incorporating MI principles into the institution's shared values and vision. These are ambitious goals that place the responsibility for effective use of MI on the shoulders of not only the healthcare professional, but also the institution.

Implementing MI in a Group Setting

MI-based interventions in pulmonary disease, as reviewed above, are typically delivered individually. MI has been adapted for group settings, primarily for treatment of substance use disorders, but has also been suggested for health behaviors such as weight loss [76]. Velasquez and colleagues [93] present a useful description of adapting MI to a group setting. Suggested strategies include highlighting personal choice (e.g., behavior change is up to the patient), selectively emphasizing and reinforcing change talk, completing a decisional balance exercise where the entire group generates reasons for and against behavior change, and asking for group members' points of view on common themes. The latter is especially important so that the session does not devolve into a series of interventions by the healthcare professional that are exclusively targeted to individual members of the group.

How might an MI-based group be helpful for people with pulmonary disease? This approach may be most applicable for patients participating in PR which is typically a group-based program. In fact, some of the studies reviewed above that attempted MI in the context of PR utilized telephone or home visits, perhaps because the traditional PR setting did not appear conducive to implementing MI. We would argue that MI can be integrated into PR, in a group format, even in a single group session. One of the authors (AM) has used MI principles in group sessions to promote exercise in PR participants. What follows is a detailed description of this intervention, with the caveats that it is a single example of MI deployed in PR and that evidence of its effectiveness is limited to patient satisfaction and not objective measures of engagement in physical exercise. We have included it here so that healthcare professionals contemplating integration of MI in PR programs have an example of its use.

This one-hour group session is the last in a series of four groups with the program psychologist. Thus, group members have already established cohesion among one another and rapport with the facilitator. During this final meeting, patients are coming to the end of the program and are faced with the decision of whether, and how, to continue a regular exercise regimen. The facilitator begins by soliciting aspects of the PR program that group members have found most helpful. Without fail, one or more group members mention the physical exercise component. The facilitator then introduces the reality that, although members agree that the physical exercise is beneficial, continuing it on their own after the program can be challenging. A discussion typically ensues about how behavior change requires more than simply knowing that a behavior is beneficial or harmful. Many group members can relate to this concept with the analogy of smoking and the likelihood that mere knowledge about the adverse effects of smoking is usually not sufficient to prompt them to quit smoking permanently and with ease.

The facilitator then introduces the group decisional balance exercise as recommended by Velasquez [93]. Group members are asked to list the pros and cons of continuing a physical exercise routine, as well as the pros and cons of electing not to exercise, all of which the facilitator lists on a display board. This portion of the session is typically quite lively; for many patients it may be the first time that a healthcare professional has invited them to describe the negative aspects of a healthy behavior such as exercise. The facilitator takes great care to allocate equal attention to the adverse effects of exercise as well as the benefits, in line with the MI principles of highlighting ambivalence and avoiding the urge to persuade. Fig. 6.1 illustrates a typical result of the decisional balance exercise.

Next, the facilitator describes readiness rulers, often with a personal example of rating her own motivation and confidence in making a behavior change. Besides illustrating the concept of the rulers, the example serves the important purpose of humanizing and normalizing ambivalence, as the facilitator intentionally chooses an example of a behavior with a low rating on the readiness ruler. Group members are encouraged to share their own ratings of motivation and confidence. True to MI, the facilitator inquires both about what makes the rating as high as it is (“What makes your motivation to exercise a 3 and not a zero?”) and what might make it higher

Pros of Physical Exercise	Cons of Physical Exercise
Will help with better breathing	Makes me short of breath
Muscle strength	Tiring
Will increase my energy	Pain/muscle soreness
Improves my mood	Time-consuming
Helps me feel confident	I might overdo it
Weight loss/management	Difficult to get motivated
Good for heart/lungs/whole body	It's not part of my routine
Could be a social activity	Gym memberships are expensive
Might increase my lifespan	Going to the gym is a hassle
Will be easier to be active	Embarrassing to exercise in public
Makes my thinking more clear	
Pros of Not Exercising	**Cons of Not Exercising**
More time to do what I want	Health will get worse
More physically comfortable	Will be more short of breath later
Acceptance of my situation	Quality of life will decrease
Don't have to worry about overdoing	Maybe shorter lifespan
Save money	More depression and anxiety
	Doctors/family will nag me
	Muscles will get weaker
	Unwanted weight gain
	Will feel guilty

Fig. 6.1 Example of a completed decisional balance exercise in a group Pulmonary Rehabilitation session

("Now what would it take to get it up to a 5?"). This discussion is usually a time when common themes arise of potential barriers to continuing physical exercise as well as need and ability statements, e.g., "I need to exercise if I want to see my grandkids grow up"; "I'm not sure if I'll be able to get to the gym." The facilitator encourages group members to share their point of view about these themes, and members exchange suggestions about how to overcome obstacles to exercising. Throughout the session, the facilitator emphasizes personal choice: "It's your body and your decision." The session ends with a discussion of behavioral strategies to increase the likelihood of engagement in exercise (setting realistic goals, rewarding oneself,

making exercise part of a structured routine), but MI principles continue to be implemented, e.g., change talk on the part of the patients is highlighted, as is their autonomy.

As stated above, we lack objective follow-up data to assess whether this group MI intervention has been effective in increasing actual engagement in physical exercise following the end of PR. During the first year of the implementation of the MI session, however, patients were administered a written survey as to the helpfulness of the discussion about physical exercise, as well as other topics covered in the group sessions with the psychologist. Of the 98 patients who completed that item of the survey, 77.6% of patients rated the physical exercise discussion as "very helpful." In fact, the physical exercise intervention had the most reliably high ratings of all of the topics patients were asked to rate. Thus, the group MI intervention was generally well received and considered beneficial in this robust sample of PR patients.

Integrating MI: A Case Vignette

The following dialogue details a hypothetical patient–healthcare professional interaction using MI to target physical exercise. Although the details are fictional, this scenario introduces common reactions and concerns patients with pulmonary disease express about exercise. It is important to note that an interaction does not have to be lengthy or formalized; rather, MI techniques can be integrated into a spontaneous conversation with a patient struggling with a difficult behavior.

John is a 70-year-old man with COPD. He is in a PR program and has attended every session. His RT notes today that, although John started to walk on the treadmill as instructed during the exercise session, he stopped after 5 minutes. The RT is speaking with him to use MI to target his physical exercise behavior. The RT also wishes to speak with him about continuing an exercise routine after the program has concluded. Table 6.5 outlines this hypothetical interaction. Suggested responses are in italics with the relevant MI technique in parentheses. Potential roadblocks, cautions, and other notes are included.

Summary

The goal of this chapter was to inform healthcare professionals about the principles of MI and how to apply them to improve outcomes and increase HRQoL for those who have been diagnosed with a pulmonary condition. As we have stressed, training and continuing proctorship in MI is necessary for responsible practice. However, we would also remind readers of the research that factors such as empathy and openness on the part of the clinician are as important, and perhaps even more so, than prescriptive MI techniques as detailed in an MI manual. Thus, we suggest that all healthcare

Table 6.5 Hypothetical case vignette of MI techniques to promote physical activity

Patient Statements	MI Technique and Healthcare Professional's Response	Cautions/Notes
RT: John, I've been noticing that you stopped the treadmill today after a few minutes of exercise. Can you tell me what's going on? John: Yeah, I just don't feel like exercising today.	*(Reflection) Sounds like you're not up to exercising today like you usually do, do I have that right?* *(Affirmation) I want to acknowledge that you attended the program today even though you didn't feel like exercising, good job!* *(Open-Ended Question) What do you think is going on for you today that's making it difficult to exercise?*	Do not begin this dialogue with John by reminding him about the importance of physical exercise or lecturing him.
John: You and my doctors keep telling us to exercise but you don't understand how hard it is.	*(Reflection) Sounds like it's annoying to be lectured all the time about exercising.* *(Emphasize humanity) I hear you, I don't think I'd like always being told what to do.* *(Emphasize control) In the end, only you get to decide how much or how little you exercise. It's your body and your call!*	It may be tempting to defend the healthcare professionals' genuine efforts to help the patient. Avoid statements such as "We only want what's best for you."
John: I don't know, I'm just not sure all of this exercise is worth it. I understand it's supposed to be good for me but it's hard!	*(Double-Sided Reflection) So on one hand you seem to know that the exercise has health benefits, and on the other hand you're finding it difficult to do, is that right?* *(Responding to ambivalence) Tell me what you know about why the physical exercise is good for you. Now tell me what makes it hard to do.* *(Readiness Ruler) On a scale of 0 to 10, how motivated do you feel to do some more exercise today? Why is that number not a zero? What would it take for you to get from (John's number) to (slightly higher number) today?*	The urge to teach, or use logic to persuade, may arise here, e.g., only emphasizing the positive aspects of exercise. But the RT is witnessing ambivalence. It is best to resist this urge and to respond to both sides of John's thought.

(continued)

Table 6.5 (continued)

Patient Statements	MI Technique and Healthcare Professional's Response	Cautions/Notes
John: I know you want me to exercise after this program is over but I really don't know if I can.	*(Reflection) Sounds like you're having doubts about your ability to exercise after the program, is that right?* *(Highlight Ambivalence) What do you think the longer-term benefits of keeping up an exercise routine might be? And what is going to get in the way for you?*	The RT may feel tempted to get ahead of John's own readiness. It is too soon to suggest a gym membership, or buying weights, etc. John is in pre-contemplation or contemplation and the RT should avoid jumping ahead to action.
John: I just don't see me exercising after this program is over.	*(Amplified reflection) What I think I hear you saying is that it's going to be impossible for you to exercise when this program is over.* *(Open-Ended question) What, if anything, would have to change for exercise to be possible?*	Be cautious about protesting to John's statement. Instead, an amplified reflection might prompt John to object to your use of the word "impossible," thereby re-establishing change talk.
John: I think I'm just going to be too lazy to exercise.	*(Positive statements/highlight successes) I don't know if I'd call you lazy. You've been coming here weekly for 6 weeks and exercising most of those days. What do you think is going to get in the way?*	Many individuals who struggle with physical exercise use the term "lazy" to describe themselves. This is a good opportunity to highlight behaviors that will increase their sense of self-efficacy and self-esteem.
John: OK, I know I'm supposed to exercise. But how do I get motivated to get off the couch?	*(Reflection/humanizing) So you might be struggling with how to keep going with exercise. You're not alone, most people find it really difficult to stick with exercise.* *(Eliciting ability statements) You've no doubt done difficult things in the past. Maybe even things that you didn't want to do. How have you done it?* *(Eliciting need statements) Let's review the health benefits if you do continue an exercise routine.*	John's statement here is consistent with the stages of contemplation and preparation. Now the healthcare professional can be more active in introducing behavioral strategies. At the end of this conversation, the RT should offer a summarizing statement of the discussion.

professionals have the potential to integrate MI principles into the care of their patients, with the following basic strategies: (1) Ask open-ended questions that cannot be simply answered in the affirmative or negative; (2) When in doubt, attempt a simple reflection which is a restatement of what the patient said; (3) Listen more than you talk; and (4) Always remember the patient's humanity. His or her behavior may be frustrating but you will always be able to identify one strength and highlight it.

Although MI may seem novel and even antithetical to traditional ways healthcare professionals have been taught to communicate with patients, medical education programs increasingly recognize the potential of MI in promoting health-related behavior change. Thus, the next generation of healthcare professionals is entering practice with this empathic, nonjudgmental communication approach as part of their armamentarium. There is every reason to believe that people with pulmonary disease will benefit.

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