ICSI Institute for Clinical Systems Improvement

Health Care Guideline

Healthy Lifestyles

How to cite this document:

Kottke T, Baechler C, Canterbury M, Danner C, Erickson K, Hayes R, Marshall M, O'Connor P, Sanford M, Schloenleber M, Shimotsu S, Straub R, Wilkinson J. Institute for Clinical Systems Improvement. Healthy Lifestyles. Updated May 2013.
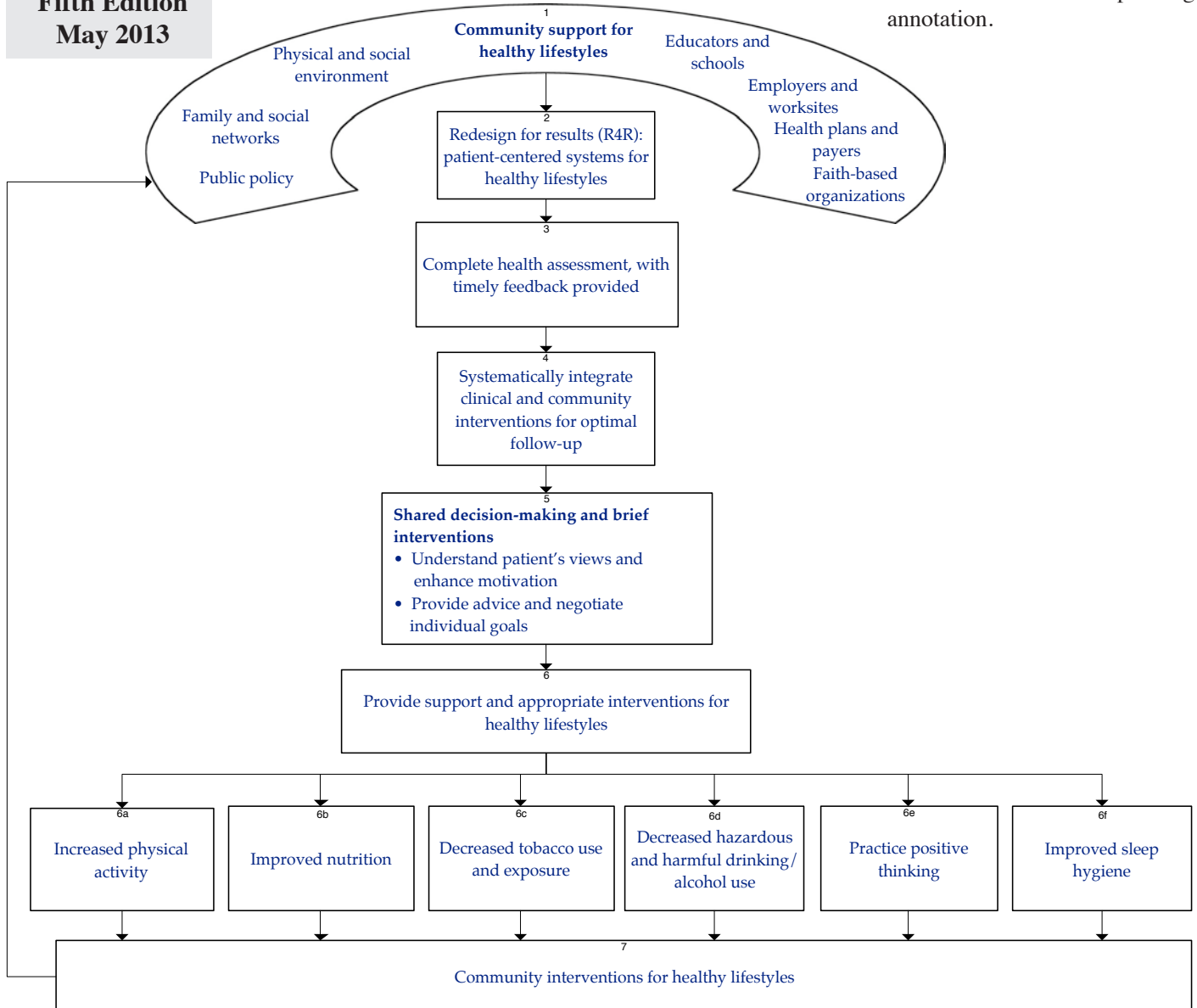
Health Care Guideline:
Healthy Lifestyles

Fifth Edition
May 2013

Text in blue in this algorithm indicates a linked corresponding annotation.

1
Community support for healthy lifestyles

Physical and social environment

Family and social networks

Public policy

Educators and schools

Employers and worksites

Health plans and payers

Faith-based organizations

2
Redesign for results (R4R): patient-centered systems for healthy lifestyles

3
Complete health assessment, with timely feedback provided

4
Systematically integrate clinical and community interventions for optimal follow-up

5
Shared decision-making and brief interventions
- Understand patient's views and enhance motivation
- Provide advice and negotiate individual goals

6
Provide support and appropriate interventions for healthy lifestyles

6a	6b	6c	6d	6e	6f
Increased physical activity	Improved nutrition	Decreased tobacco use and exposure	Decreased hazardous and harmful drinking/ alcohol use	Practice positive thinking	Improved sleep hygiene

7
Community interventions for healthy lifestyles

Return to Table of Contents

6a-f. Behavioral Decision Tree

This decision tree is most effective when the following recommendations are employed:

- Motivational interviewing as the intervention framework

- A multidisciplinary team approach, an assessment of program needs and use of local resources

- Implementation should be tailored or customized for each health care organization
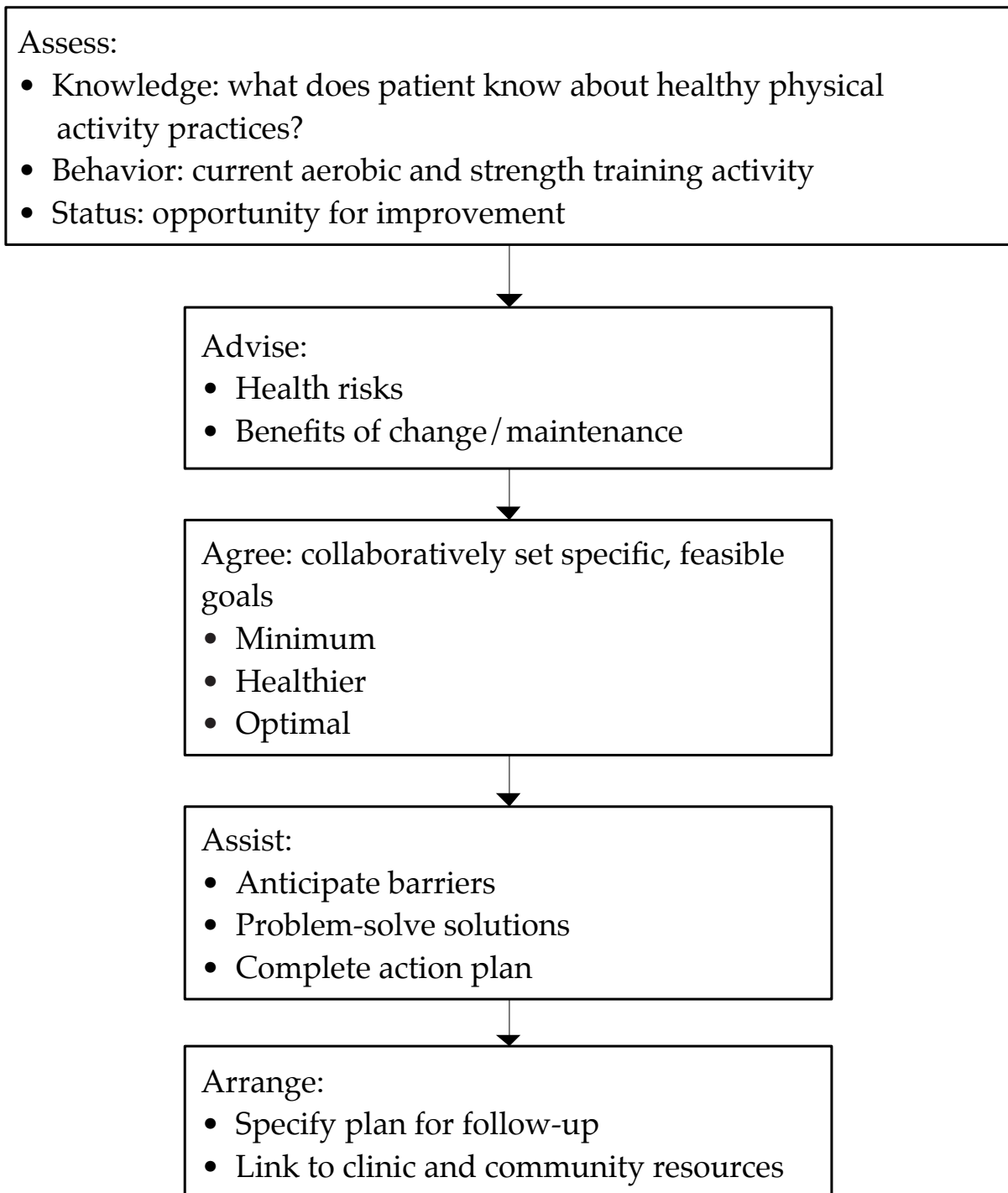

Assess:
- Knowledge: what does patient know about healthy physical activity practices?
- Behavior: current aerobic and strength training activity
- Status: opportunity for improvement

↓

Advise:
- Health risks
- Benefits of change/maintenance

↓

Agree: collaboratively set specific, feasible goals
- Minimum
- Healthier
- Optimal

↓

Assist:
- Anticipate barriers
- Problem-solve solutions
- Complete action plan

↓

Arrange:
- Specify plan for follow-up
- Link to clinic and community resources

---

www.icsi.org

Table of Contents

Work Group Leader
Thomas E. Kottke, MD, MSPH
Cardiology, HealthPartners Medical Group and Regions Hospital

Work Group Members
Allina Medical Clinic
Courtney Baechler, MD, MS
Cardiology

HealthPartners Medical Group and Regions Hospital
Patrick O'Connor, MD, MPH
Family Medicine

Michael Schoenleber, MD
Family Medicine

Rebecca Straub, RD, LD
Dietician

Hennepin County Medical Center
Scott Shimotsu, PhD, MPH, CPHQ
Data Analyst

Mayo Clinic
John Wilkinson, MD
Family Medicine

Otter Tail County Public Health
Kristin Erickson, RN, BSN, PHN
Public Health

Stillwater Medical Group
Marna Canterbury, MS, RD
Dietician

Martha Sanford, MD
General Internist

University of Minnesota Clinicians
Christine Danner, PhD, LP
Psychology

ICSI
Rochelle Hayes, BS
Systems Improvement Coordinator

Melissa Marshall, MBA
Clinical Systems Improvement Facilitator

Evidence Grading

Literature Search

A consistent and defined process is used for literature search and review for the development and revision of ICSI guidelines. The literature search was divided into two stages to identify systematic reviews (stage I); and randomized controlled trials, meta-analysis and other literature (stage II). Literature search terms used for this revision are physical activity tracking, dietary intake tracking, use of dietitians in clinical practice, multidisciplinary teams, ways to assess physical activity status, social determinants, positive thinking and positive psychology. They include literature from June 2009 through January 2013.

GRADE Methodology

Following a review of several evidence rating and recommendation writing systems, ICSI has made a decision to transition to the Grading of Recommendations Assessment, Development and Evaluation (GRADE) system.

GRADE has advantages over other systems including the current system used by ICSI. Advantages include:

- developed by a widely representative group of international guideline developers;

- explicit and comprehensive criteria for downgrading and upgrading quality of evidence ratings;

- clear separation between quality of evidence and strength of recommendations that includes a transparent process of moving from evidence evaluation to recommendations;

- clear, pragmatic interpretations of strong versus weak recommendations for clinicians, patients and policy-makers;

- explicit acknowledgement of values and preferences; and

- explicit evaluation of the importance of outcomes of alternative management strategies.

This document is in transition to the GRADE methodology

Transition steps incorporating GRADE methodology for this document include the following:

- Priority placed upon available Systematic Reviews in literature searches.

- All existing Class A (RCTs) studies have been considered as high quality evidence unless specified differently by a work group member.

- All existing Class B, C and D studies have been considered as low quality evidence unless specified differently by a work group member.

- All existing Class M and R studies are identified by study design versus assigning a quality of evidence. Refer to Crosswalk between ICSI Evidence Grading System and GRADE.

- All new literature considered by the work group for this revision has been assessed using GRADE methodology.

Return to Table of Contents

Crosswalk between ICSI Evidence Grading System and GRADE

ICSI GRADE System	Previous ICSI System	
High, if no limitation	**Class A:**	Randomized, controlled trial
Low	**Class B:**	[observational] Cohort study
	Class C:	[observational] Non-randomized trial with concurrent or historical controls
Low		Case-control study
Low		Population-based descriptive study
*Low		Study of sensitivity and specificity of a diagnostic test

* Following individual study review, may be elevated to Moderate or High depending upon study design

	Class D:	[observational]
Low		Cross-sectional study Case series Case report
Meta-analysis	**Class M:**	Meta-analysis
Systematic Review		Systematic review
Decision Analysis		Decision analysis
Cost-Effectiveness Analysis		Cost-effectiveness analysis
Low	**Class R:**	Consensus statement
Low		Consensus report
Low		Narrative review
Guideline	**Class R:**	Guideline
Low	**Class X:**	Medical opinion

Evidence Definitions:

High Quality Evidence = Further research is very unlikely to change our confidence in the estimate of effect.

Moderate Quality Evidence = Further research is likely to have an important impact on our confidence in the estimate of effect and may change the estimate.

Low Quality Evidence = Further research is very likely to have an important impact on our confidence in the estimate of effect and is likely to change the estimate or any estimate of effect is very uncertain.

In addition to evidence that is graded and used to formulate recommendations, additional pieces of literature will be used to inform the reader of other topics of interest. This literature is not given an evidence grade and is instead identified as a **Reference** throughout the document.

Return to Table of Contents

Foreword

Introduction

In the last half of the 20th century, chronic diseases – particularly heart disease, stroke, cancer, diabetes and depression – emerged as the major causes of death, disability and rising health care costs for the American public. Chronic disease accounts for 7 out of 10 deaths and affects the quality of life of 90 million Americans *(Jordan, 2008 [Low Quality Evidence])*. Moreover, a significant portion of the preventable component for all of these conditions can be traced to four behaviors: poor nutrition, inadequate levels of physical activity, smoking and exposure to tobacco smoke, and hazardous drinking of alcohol. In fact, 40% of all deaths in the United States can be attributed to these four behaviors alone *(Mokdad, 2004 [Systematic Review])*. An additional fifth behavior around positive thinking has been shown to increase happiness and decrease report of depression systems *(Seligman, 2005 [Low Quality Evidence])*.

There is growing evidence that interventions to increase physical activity, improve nutrition, decrease tobacco use and exposure, decrease hazardous and harmful drinking/alcohol, and adopt positive mental strategies will reduce the burden of disease, disability and premature death. A prospective study was conducted on individuals aged 45-64, looking at four healthy lifestyle behaviors. The behaviors are defined as eating at least five fruits and vegetables a day, exercising a minimum of 2.5 hours a week, maintaining a body mass index between 18.5 and 30, and not smoking. The study found that maintaining a healthy lifestyle reduced all-cause mortality by 40% and cardiovascular disease events by 35% over four years *(King, 2007 [Low Quality Evidence])*. There is also a growing body of evidence that these changes will lead to a more productive workforce and reduced health care costs *(Ozminkowski, 2002 [Low Quality Evidence]; Ozminkowski, 2000 [Low Quality Evidence]; Goetzel, 1998 [Low Quality Evidence])*. In the area of mental health, practicing appreciating and using signature attributes to help others have been shown to increase reports of happiness and reduce symptoms of depression *(Seligman, 2005 [High Quality Evidence])*. In addition, greater use of certain high-value preventive services, particularly smoking cessation advice and assistance, and alcohol screening and brief counseling will save lives, with little additional investment *(Maciosek, 2010 [Systematic Review])*.

A project that modeled the impact of interventions to prevent and treat heart disease found that the largest impact from intervention would accrue from helping people adopt and maintain healthy lifestyles before they developed heart disease or while they were living in the community with heart disease. A significant portion of the benefit accrues from the fact that the lifestyles that prevent heart disease also prevent several other chronic diseases *(Kottke, 2009 [Low Quality Evidence])*.

There is a growing recognition and understanding of the role that community networks, the physical and social environments, and public policy all play in fostering healthy lifestyles. Individuals are very often activated or motivated to adopt and maintain healthy lifestyles by various social factors and supports, or other incentives, originating with employers and the workplace, health plans, communities, social service agencies, and government policies and programs. While not the primary focus of the guideline, we do discuss examples of various initiatives in the wider society designed to encourage healthy lifestyles.

Medical groups cannot be given the sole responsibility for promoting healthy lifestyles; the relative infrequency of patient visits, limited time and reimbursement pressures on clinicians, and the high cost of delivering health promotion interventions in the clinic setting all present significant barriers to success. There is little evidence that the current health care system, much less individual clinicians when they are acting alone, can reliably or consistently motivate or activate individual patients for healthy lifestyles. Rather, health care delivery systems should be designed and organized, based on best evidence, to support already motivated and activated individuals, and to effectively collaborate with other stakeholders.

Only about 5% of the population have no identifiable risk factors *(Daviglus, 2004 [Low Quality Evidence])*. Therefore, nearly all individuals could benefit from healthy lifestyle intervention and assistance in behavior change. Moreover, the majority of the disease burden, and the associated costs, originate with individuals who are at or not far above the "average" population risk *(Lauer, 2007 [Low Quality Evidence])*. Although the average change in nutrition patterns, levels of physical activity, population smoking rates, rates of hazardous drinking or changes in negative thinking are small in the trials that provide the documentation for this guideline, individuals who make significant lifestyle changes can expect to experience large reductions in risk of disease and in risk of future health care costs. Furthermore, the small changes in average disease risk expected with the interventions, because they will be spread widely across the population, can be expected to result in large reductions in disease rates and health care costs *(Rose, 1985 [Low Quality Evidence])*.

There is also growing interest in what has sometimes been termed "primordial prevention" (preceding "primary prevention"), based on growing evidence that chronic disease prevention begins in childhood before physiological risk factors develop. While many of the interventions and concepts presented in this guideline are effective in adolescents and children, the evidence for long-term benefits in children is not yet fully developed *(Lavizzo-Mourey, 2007 [Low Quality Evidence])*. Therefore, the work group members recommended that, for now, the scope of this guideline be limited to adults.

Scope and Target Population

This guideline, Healthy Lifestyles, outlines the existing evidence for the effectiveness of strategies and programs designed to help adults optimize health by adopting healthy lifestyles (increased physical activity, improved nutrition, decreased tobacco use and exposure, decreased hazardous and harmful drinking/alcohol use, practiced positive thinking and sleep hygiene). It also outlines how these programs might be integrated into preventive services in health care systems, which traditionally have focused on early detection of disease or treatment of risk factors rather than intervening to preserve health.

Nearly all individuals would derive measurable benefits from healthy lifestyles; even small improvements across a large portion of the population would have a greater impact than focusing on a small portion of the population that is at the upper end of the risk distribution. Therefore, the target population for this guideline includes all adults (age 18 and older) in the community, irrespective of their utilization of the health care system.

Aims

1. Increase the percentage of population age 18 years and older screened for presence of the six healthy lifestyle behaviors and who have screening results discussed. *(Annotations #6a-f)*

2. Increase the percentage of population age 18 years and older who are not at a recommended optimal goal with regards to six healthy lifestyle behaviors – and set goals toward reaching recommended levels. *(Annotations #6a-f)*

3. Increase the percentage of health plans, public health organizations, fitness programs and worksite wellness programs offering resources that address six healthy lifestyles. *(Annotation #1)*

4. Increase the percentage of population who are aware of one or more community resources that are available to address each of the six healthy lifestyles. *(Annotation #7)*

Clinical Highlights

- Four lifestyle behaviors – adequate physical activity, a diet that emphasizes fruits and vegetables, abstinence from tobacco and avoidance of tobacco smoke, and avoidance of hazardous and harmful drinking – are associated with a decade or more of increased life expectancy. Individuals who adopt these behaviors, at any age, have significantly lower total mortality rates. A fifth behavior, practicing positive thinking, has been shown to increase reports of happiness and decrease symptoms of depression. *(Annotations #6a-e; Aim #2)*

- A sixth behavior of sleep hygiene has been found to lead to better health. *(Annotation #6f)*

- Medical groups cannot be given the sole responsibility for supporting healthy lifestyle behaviors. There is a growing recognition and understanding of the role that community networks, physical and social environments, and public policy all play in fostering healthy lifestyle behaviors. *(Annotation #1; Aim #3)*

- A broad approach is necessary to achieve and support healthy lifestyle behaviors in individuals. It requires individual commitment, health care system redesign, as well as public health, community, employer and payer support. *(Annotation #2; Aim #3)*

- Health assessments are most effective when combined with feedback and access to interventions that support healthy lifestyle behaviors. *(Annotation #3; Aim #1)*

- Shared decision-making and brief, combined interventions are effective in helping motivate and engage patients in maintaining or adopting healthy lifestyle behaviors. *(Annotation #5)*

Implementation Recommendation Highlights

The following system changes were identified by the guideline work group as examples to incorporate in support of the implementation of this guideline.

- Develop a plan for educating all clinicians and staff about the organizational goals for the promotion of healthy lifestyles and their role in delivering effective team-based care.

- Develop a process for obtaining a height and weight, and then calculating a body mass index on patients.

- Develop scripting and brief counseling that promotes a healthy lifestyle and that can be utilized by all members of the health care team.

- Develop decision support processes in electronic medical records to support clinicians and staff in delivering specific components of the guideline.

- Develop a process to promote worksite wellness programs and the completion of health assessments, and to support behavioral changes intended to promote healthy lifestyles.

- Seek leadership support for the implementation of an internal worksite wellness program in order to "lead by example."

- Build a collaborative relationship between health care clinicians and employer leadership to support healthy lifestyles. Create communication processes to share initiatives such as wellness programs, health assessments, educational opportunities and other support programs.

- Place education materials that focus on healthy lifestyle throughout the facility to include but not be limited to posters, pamphlets, videos, available Web sites, support groups and promotion of health assessments by informing individuals about the benefits and subsequent assistance with adopting and maintaining healthy lifestyles.

- Build relationships between clinic/medical group leadership and community leaders in the area to learn about what kinds of wellness program(s) they provide or would like to provide for their citizens.

Related ICSI Scientific Documents

Guidelines

- Diagnosis and Management of Type 2 Diabetes Mellitus in Adults

- Diagnosis and Treatment of Hypertension

- Lipid Management in Adults

- Major Depression in Adults in Primary Care

- Prevention and Management of Obesity for Adults

- Preventive Services for Adults

- Stable Coronary Artery Disease

Return to Table of Contents

Definition

Clinician – All health care professionals whose practice is based on interaction with and/or treatment of a patient.

Return to Table of Contents

Algorithm Annotations

1. Community Support for Healthy Lifestyles

Recommendations:

- Individuals are increasingly activated or motivated to adopt and maintain healthy life-styles through various community-level initiatives, particularly through employers and worksites *(Strong Recommendation, Moderate Quality Evidence)*.

- Broad-based community and environmental supports, in collaboration with the health care system, contribute to healthy lifestyles in the population *(Strong Recommendation, Moderate Quality Evidence)*.

- All stakeholders should publicly support those measures that promote healthy lifestyles and recommend them to their patients *(Strong Recommendation, Low Quality Evidence)*.

Achieving healthy lifestyles (increased physical activity, improved nutrition, decreased tobacco use and exposure, decreased hazardous and harmful drinking/alcohol use, increased practiced positive thinking and sleep hygiene) will require fully integrated and coordinated efforts of both clinical and community-based groups. Only these types of interventions are likely to have the needed impact to engage, motivate and support people to make needed improvements *(Brownson, 2006 [Low Quality Evidence])*.

Research focusing on how environmental changes may promote healthy lifestyles is still relatively new and faces challenges. Although it may be possible to randomize interventions to some extent, real control of the environment is usually not possible; there can be no parallel to the classic randomized placebo controlled double-blinded study. Many studies focusing on a single intervention show mixed results or significant differences but at a level that may have little impact in the long run. Multifaceted interventions generally have greater evidence of impact, yet it may be difficult to know which of those facets are most beneficial. Few studies have had sufficient time to show sustained effects.

There is no single or comprehensive vision of community interventions; many separate strategies have been proposed and evaluated. The Community Task Force (CTF), convened and supported by Centers for Disease Control and Prevention (CDC), outlines the following evidence-based preventive strategies, integrated with clinical preventive strategies, in community settings:

- Improvements in health care systems

- Education, policy and environmental changes

- Collaborative partnerships among the various stakeholders in communities

(Task Force on Community Preventive Services, 2005b [Guideline])

Individual clinicians

- Encourage patients to more effectively utilize community resources

- Publicly support new, evidence-based interventions to change the physical and social environment *(Woolf, 2007 [Low Quality Evidence]; Woolf, 2006 [Low Quality Evidence])*.

Employers and worksites, through coordinated health assessment and health education programs, can positively affect the health and well-being of employees *(Task Force on Community Preventive Services, 2005b [Guideline]; Ozminkowski, 2002 [Low Quality Evidence])*. Proper, et al. conducted a literature

search on the effectiveness of worksite physical activity programs. The article concluded that implementation of a worksite physical activity program does increase physical activity; however, cardiorespiratory fitness improvement could not be established *(Proper, 2003 [Systematic Review])*. A targeted intervention in the workplace of available fruits and vegetables has shown an increase in consumption if a framework is put in place *(Thorsen, 2010 [Low Quality Evidence])*.

Health plans and employers have provided health assessments, education programs and other interventions to their enrollees; the available evidence, while incomplete, is promising for certain conditions.

Educators and schools can promote healthy lifestyles through the availability of healthy food choices in cafeterias *(French, 2003 [Systematic Review])*, through tobacco and alcohol education, or requirements for physical education classes, among other initiatives.

Faith-based organizations (churches, synagogues and mosques) are, for many people and in many communities, an important focus of the social network, and they can provide support for healthy lifestyles as well as sites for screening and wellness outreach. They can be powerful voices for the necessary environmental and public policy changes, as well.

Other community collaborations may also include relationships with state and local agencies, non-profits and service organizations.

Changes in the physical environment include positive changes to promote healthy lifestyles: safe, accessible walking trails; and safe and well-lit parks and playgrounds *(Williams, 2007 [Systematic Review]; Sallis, 2006 [Low Quality Evidence])*. These may also include changes that remove barriers to healthy lifestyles. So-called point-of-service prompts include such things as nutritional information on menus or reminders prompting people to use stairs rather than elevators.

Changes in the social environment include positive changes to promote healthy lifestyles such as efforts to change public attitudes and social norms, and other types of education campaigns.

Public policy initiatives to support healthy lifestyles include such things as providing public funding for recreational facilities and walking trails, enacting clean indoor air laws, enforcing stricter driving under the influence (DUI) standards, or increasing cigarette taxes. Encouraging more nutritious food options in supplemental food programs may also be beneficial. Other examples include tax incentives and zoning codes to encourage grocery stores in low-income and underserved neighborhoods, or initiatives to provide safe, well-lit recreation areas in these same areas.

Evidence-based policy aimed at changing health policy is rarely systematically implemented or studied. Even if studied, questions remain about generalizability, ability to maintain benefit, and possible unintended consequences.

A system of evidence-based evaluation of policy changes includes:

- a framework for structured assessment of health policy changes needed to allow meaningful comparisons among policies while supporting innovative, local solutions;

- assurance that proposed changes are ethical;

- studies to determine if unintended consequences can be minimized;

- pilot projects or timely retrospective assessments to address benefits and harms for stakeholders; and

- feedback systems to maintain acceptable outcomes after policy changes *(Wharam, 2007 [Low Quality Evidence])*.

Return to Algorithm   *Return to Table of Contents*

More detailed examples of specific community-level interventions and programs, and supporting evidence are included under Annotation #7, "Community Interventions for Healthy Lifestyles."

Return to Algorithm   Return to Table of Contents

2. Redesign for Results (R4R): Patient-Centered Systems for Healthy Lifestyles

Employers, health plans, government and other payers are increasingly demanding that health care systems demonstrate measurable improvements in patient health.

There is little evidence that the current health care system, much less individual clinicians when they are acting alone, can reliably or consistently motivate or activate individual patients for healthy lifestyles. Rather, health care delivery systems should be designed and organized, based on best evidence, to support already motivated and activated individuals, and to effectively collaborate with other stakeholders.

Patient-centered systems, such as those redesigned to support the chronic care model, can have a positive impact on certain behaviors; the evidence is stronger for decreased tobacco use and decreased hazardous and harmful drinking/alcohol use, and less so for increased physical activity and improved nutrition (*Bodenheimer, 2002 [Low Quality Evidence]*). See Annotation #6, "Provide Support and Appropriate Interventions for Healthy Lifestyles," for more information.

A health care system redesigned for results and for productive interactions between patients and clinicians includes:

- Clinical information systems

    - timely information and feedback to patients (tailored treatment plans, tailored messaging for self-management)

    - timely information on populations and individual patients to clinicians

- Decision support systems

    - evidence-based guidelines and protocols

    - specialist expertise integrated into primary care

- Delivery system design

    - multidisciplinary team and partnerships, with all team members empowered and equipped with the necessary skills to work at the highest level of their licensure

    - use of systematic, proactive planned strategies

    - systematic follow-up

- Self-management support

    - patient-centered, collaborative process between patient and clinician

    - tailored education and psychosocial support

- Community resources

    - use of non-clinical resources – the maintenance of healthy lifestyles is strongly related to social support mechanisms

Informed, activated, engaged and empowered patients have better functional and clinical outcomes. Clinicians who are prepared and have access to supporting resources are more likely to meet patient needs and expectations.

Return to Algorithm   Return to Table of Contents

www.icsi.org

3. Complete Health Assessment, with Timely Feedback Provided

Recommendations:

- Annual or periodic health assessments identify health risk factors and provide feedback on the effectiveness of behavior changes already made *(Strong Recommendation, Moderate Quality Evidence)*.

- Health assessments are most effective when combined with timely feedback, education and other interventions as appropriate *(Strong Recommendation, High Quality Evidence)*.

- Health assessments can be administered in many settings *(Strong Recommendation, High Quality Evidence)*.

Health assessments are standardized surveys that can measure health status and readiness to change, as well as attitudes, skills and behaviors. Effective health assessments provide feedback and recommendations for change on short-term (next five years) modifiable risk factors.

Benefits of Health Assessments

There is some evidence that taking a health assessment is effective in changing attitudes of people who are already in a "precontemplative" state of change *(Coulter, 2007 [Low Quality Evidence]; Vasse, 1998 [Low Quality Evidence]; Kreuter, 1996 [High Quality Evidence])*.

There is good evidence that taking a health assessment that offers immediate feedback can be educational and that people report a heightened awareness of their risk factors *(Coulter, 2007 [Low Quality Evidence])*.

When health assessments are performed consistently, they are valuable for measuring the effect of various interventions on populations. The Community Task Force (CTF), in a recent draft recommendation, states that health assessments that include individualized feedback and health education show "strong evidence of effectiveness in improving one or more health behaviors or conditions in populations of workers" *(Task Force on Community Preventive Services, 2005a [Low Quality Evidence])*. These improvements include:

- improving measurements of physical activity,

- reducing dietary intake of fat,

- decreasing tobacco use,

- decreasing hazardous and harmful drinking/alcohol use,

- reducing overall (median) blood pressure measurements,

- reducing overall (median) cholesterol measurements,

- improving the summary health estimates of at-risk participants,

- reducing the number of days lost from work due to illness or disability, and

- improving a range of measures of use of health care services.

The Community Task Force found insufficient evidence to determine whether or not similar programs are effective in:

- increasing dietary intake of fruits and vegetables,

- altering body composition (body mass index and percentage of fat), and

- improving fitness.

(Task Force on Community Preventive Services, 2005a [Low Quality Evidence]; Sorensen, 1998 [High Quality Evidence]; Sorensen, 1996 [High Quality Evidence])

The optimal frequency for performing health assessments has not been determined, but there is some evidence, and growing experience, that more frequent contacts may maintain momentum and "critical mass" among populations. Consequently, many corporate health executives try to engage employees on an annual basis.

The optimal location for performing a health assessment is not known, although worksites are often most successful for a variety of reasons. Aldana et al. studied the Diabetes Prevention Program as a worksite intervention. The study showed improved diet, increased physical activity and improved clinical measures among study participants. The article found that coworkers and peers can offer social supports as they work together on interventions and that employers can most efficiently provide intensive health-related screening, education and interventions to large populations.

(Aldana, 2006 [Low Quality Evidence])

Goetzel et al. studied Johnson & Johnson's health and wellness program. This program offered employees a financial incentive to complete a health assessment and participate in a high-risk program, when appropriate. The study concluded that corporate investment in work health is important *(Goetzel, 2002 [Low Quality Evidence])*.

Worker privacy and concerns about confidentiality have been raised, but employers are required to de-identify and aggregate health assessment data. Nonetheless, some individuals may prefer to address certain topics (e.g., problem drinking, drug use) through their primary clinician, while others may prefer community-based interventions. See also Annotation #4, "Systematically Integrate Clinical and Community Interventions for Optimal Follow-Up."

Standardization and Content Validation of Health Assessments

There are many health assessments available, both proprietary and in the public domain. Specific, validated instruments are discussed in Appendix A, "Health Assessments." A sample Lifestyle Risk Screening Tool used in Minnesota for the Statewide Health Improvement Program (SHIP) can also be found in Appendix A.

The National Committee for Quality Assurance has an accreditation program for health appraisals: http://www.ncqa.org.

Provide Timely Feedback and Education; Recommend Next Steps

A health assessment must provide feedback tailored to the individual's level of risk.

- For low- or medium-risk individuals, recommend lifestyle changes and self-management, and offer education.

- For higher-risk individuals, also offer other appropriate resources and interventions.

Return to Algorithm   Return to Table of Contents

4. Systematically Integrate Clinical and Community Interventions for Optimal Follow-Up

Recommendations:

- Develop systems to convey approval and support of community-level interventions by the primary clinician *(Strong Recommendation, Moderate Quality Evidence)*.

Return to Algorithm   Return to Table of Contents   ***www.icsi.org***

- Develop seamless, patient-centered clinical information collection systems to minimize redundancy in collection of patient information, and to integrate health assessment information with other health and risk factor assessments and with decision support systems *(Weak Recommendation, Low Quality Evidence)*.

- Include and consistently document six lifestyle behaviors in medical record *(Strong Recommendation, Low Quality Evidence)*.

Although some individuals, following their health assessment, will initiate and sustain lifestyle changes on their own, most will require some degree of follow-up to achieve even modest improvements.

Much of the support, reinforcement and access to resources will be through community-based programs. In these situations, health care systems, medical groups and individual clinicians may have only a minimal, if any, role, except perhaps to suggest or coordinate community resources and programs.

However, some of the follow-up will be in the form of more traditional clinical activities; in these situations, health care systems, medical groups and individual clinicians must be prepared to respond with evidence-based and team-based interventions.

Health care systems should implement the following evidence-based, patient-centered systems changes in order to ensure consistent follow-up and support for healthy lifestyles.

Develop systems to convey primary clinician approval and support of community-level interventions

A clear, strong, personal message from the primary care clinician appears to be a very helpful intervention for establishing long-term behavior change, particularly when combined with personalized educational materials, follow-up and referral when appropriate *(Logue, 2005 [High Quality Evidence]; van Sluijs, 2004 [Low Quality Evidence]; Rensicow, 2003 [Low Quality Evidence])*. Patients whose primary care clinicians addressed these behaviors reported a higher likelihood to consider the information important and relevant, a greater likelihood that they would discuss the advice with others, and a greater likelihood that they would attempt the behavior change (quit smoking, cut down on fat, increase general activity) *(Logue, 2005 [High Quality Evidence]; Resnicow, 2003 [Low Quality Evidence])*.

Health care systems can implement various innovative methods, other than traditional one-on-one or face-to-face contacts, to convey to patients their primary clinician's support, endorsement and familiarity with community-level interventions. Examples might include:

- follow-up phone calls by office personnel,

- letters signed by the primary care clinician, and

- awareness of patient participation in specific programs (by chart reminders or other methods) at time of office visits or other contacts.

Develop systems for seamless, patient-centered clinical information collection

Ask once: Develop patient-centered systems for the collection of either clinical or demographic information that can be collected once and readily updated, rather than being collected anew.

Develop systems that are interoperable and that allow information (when and where appropriate and when patient has granted permission) to be shared among collaborators (e.g., worksite health risk assessment information incorporated into medical record). While paper-based systems can be very effective; Web-based systems will ultimately be the standard.

Return to Algorithm   *Return to Table of Contents*

Integrate health assessment information with other health and risk factor assessment: Many scales or instruments for risk stratification are also used in selected populations (Personal Health Questionnaire-9, etc.), and the collection of many other types of information is mandated by various quality improvement initiatives, regulatory bodies and other guidelines. Computerized systems, utilizing branching logic questions and algorithms, can most efficiently tailor the specific information collected on each individual *(Bachman, 2006 [Low Quality Evidence])*.

Integrate into decision support: Clinical information is being increasingly treated as inputs into other decision support systems; move beyond collecting "stand-alone" information.

Include documentation of lifestyle vital signs in medical record

Having a full understanding of the specific needs of each patient, as well as knowing which interventions have been offered and tried, is one characteristic of integrated, patient-centered systems.

Moreover, various accrediting bodies and quality initiatives mandate the documentation of this type of information as the current standard of care. In particular, specific documentation that people have been offered assistance with nutrition, exercise, tobacco use and problem drinking is often required.

There is good evidence that lifestyle-related screening – particularly for tobacco abuse, obesity and physical activity – is often incompletely represented in the medical record *(McBride, 2000 [Low Quality Evidence])*.

There is good evidence that demonstrates that clinicians are more likely to document management of risk factors and provide interventions when they are named in the medical record *(Rothemich, 2008 [High Quality Evidence]; McBride, 2000 [Low Quality Evidence])*.

While there is agreement (and ICD-9 codes) on diagnostic terminology for tobacco use, alcohol abuse or dependence, and obesity, there is currently no consensus regarding diagnostic terminology for inadequate physical activity and poor nutrition. In addition, although the ICD-10 introduced the term "harmful drinking," there is not a currently a corresponding code for hazardous drinking *(Babor, 2001 [Guideline])*.

While we encourage accurate documentation in general, for now be cautious in making (or coding) a specific diagnosis of "harmful" or "hazardous" drinking, particularly if the drinking pattern does not rise to the level of alcohol abuse or dependence. The implications of this degree of specificity of documentation, particularly for insurance and employment reasons, are not yet fully understood.

Nutritional status or a vital sign can be accomplished with simple screening tools like the 23-item Recommended Food Score (RFS) checklist *(Kant, 2000 [Low Quality Evidence])*.

5. Shared Decision-Making and Brief Interventions/Understand Patient's Views and Enhance Motivation/Provide Advice and Negotiate Individual Goals

Recommendations:

- Brief interventions are often effective in helping people make changes leading to healthy lifestyles *(Strong Recommendation, Low Quality Evidence)*.

- Individuals should not be discouraged from addressing multiple health behaviors simultaneously; combined interventions result in the greatest benefits *(Strong Recommendation, Moderate Quality Evidence)*.

- "Stage-based" interventions (interventions tailored to an individual's "readiness to change") are advisable *(Weak Recommendation, Low Quality Evidence)*.

Shared decision-making requires that all persons clarify their individual values and priorities, with help from their clinicians if they wish, so that they may decide on their desired goals and specific interventions. Shared decision-making is an approach that relies on a more structured process and specific tools to provide patients to encourage them to actively participate in decision-making. Patients and families should have the opportunity to understand the risks and benefits of various services. There is good evidence that well-designed decision aids can improve patient knowledge *(O'Connor, 2007 [Systematic Review])*.

Patience, insight and care are required to recognize different perspectives and to achieve a respectful and balanced discussion about making lifestyle changes for better health.

Please see Appendix F for additional information on Shared Decision-Making.

Brief interventions consist of feedback of screening data designed to increase motivation to change behaviors, simple advice, health education, skill building, and practical suggestions.

Specific elements of brief interventions include:

- present screening results;
- identify risks and discuss consequences;
- provide medical advice;
- identify and agree on short- and long-term measurable goals;
- solicit patient commitment;
- give advice and encouragement, assist with motivation, skills and supports; and
- arrange follow-up support and repeated counseling, including referral if needed.

Readiness to change (RTC), developed by Prochaska, has been applied to a wide range of specific behaviors such as smoking cessation, seat belt use, sunscreen use, physical activity, healthy eating and alcohol use. Sets of standardized questions have been developed for these specific behaviors and embedded in many health assessments *(Prochaska, 2005 [High Quality Evidence])*.

There is good evidence that the readiness-to-change stage is a strong predictor of subsequent improvement in some chronic diseases, but there is only weak evidence supporting the effectiveness of lifestyle interventions that are based on an individual's "stage of change" or "readiness to change" *(Riemsma, 2003 [Systematic Review])*.

A less-structured collaborative decision-making process – involving simply asking people about their individual priorities, goals and preferred areas of focus – seems to be sufficient. It may also be helpful to include periodic assessments as to how patients are feeling regarding self-efficacy, general optimism, motivation, volition, commitment to change, and viewed importance of change *(Tinker, 2007 [Low Quality Evidence]; Nothwehr, 2006 [Low Quality Evidence]; Armitage, 2004 [High Quality Evidence]; Resnicow, 2003 [Low Quality Evidence])*, as these may predict initiation of behavior change and continuation of the healthy behavior. In addition, describing a person as being in a "precontemplation" stage or someone as "not ready to change" may not be appropriate and may result in missed opportunities for positive change *(Nothwehr, 2006 [Low Quality Evidence]; van Sluijs, 2004 [Low Quality Evidence]; Verheijden, 2004 [Low Quality Evidence])*.

Motivational interviewing (MI) is defined as a patient-centered, directive counseling style for eliciting behavior change by helping patients to explore and resolve ambivalence. Rather than telling a patient what changes to make, the interviewer elicits "change talk" from them, taking into account an individual's priorities and values. There is considerable evidence to support the use of motivational interviewing as a brief intervention for treating substance abuse disorders *(Resnicow, 2002 [Low Quality Evidence]; Dunn, 2001 [Systematic Review])*. A recent observational study also found motivational interviewing during weight-loss discussions to be beneficial for weight loss *(Pollak, 2010 [Low Quality Evidence])*.

Applying motivational interviewing techniques to healthy behaviors related to alcohol and substance abuse is supported by evidence. Lifestyle behaviors requiring a change in behavior may respond to motivational interviewing techniques, as opposed to discontinuing or initiating a behavior that may not respond to these techniques *(Resnicow, 2002 [Low Quality Evidence])*. On the other hand, brief motivational interviewing to address an assortment of lifestyle changes has been found to have an effect *(Rubak, 2005 [Meta-analysis])*.

Motivational interviewing can be incorporated into an assortment of settings from health care to workplace with non-clinician clinicians conducting a large portion of the interventions *(Resnicow, 2002 [Low Quality Evidence])*. Familiarity with the principles of motivational interviewing will result in more effective interactions with patients.

Combined interventions – there is no trial evidence in the literature that directing the patient to address only a limited number of issues increases the probability of success. On the other hand, several trials, including randomized diabetes prevention trials in the U.S. *(Knowler, 2002 [High Quality Evidence])* and Finland *(Tuomilehto, 2001 [High Quality Evidence])*, and worksite interventions in the United States have been able to reduce chronic disease risk factor levels. Primary clinicians are discouraged from positioning themselves as barriers to positive change by unnecessarily narrowing patients' opportunities for change.

6. Provide Support and Appropriate Interventions for Healthy Lifestyles

Recommendations:

- There is good evidence supporting the benefits of increased physical activity *(Strong Recommendation, High Quality Evidence)*.

- There is good evidence supporting specific goals and benefits of improved nutrition, but limited evidence for the efficacy of most clinical interventions *(Strong Recommendation, High Quality Evidence)*.

- There is good evidence for the efficacy of systematically identifying and providing brief interventions to all individuals who use or are exposed to tobacco, and offering additional interventions and follow-up, as appropriate *(Strong Recommendation, High Quality Evidence)*.

- There is good evidence for the efficacy of systematically identifying and providing brief interventions to all individuals who engage in hazardous or harmful drinking, as well as those who meet the criteria for alcohol abuse or dependence, and offering additional interventions and follow-up, as appropriate *(Strong Recommendation, High Quality Evidence)*.

- Practicing positive thinking promotes well-being and good health *(Strong Recommendation, Low Quality Evidence)*.

- Sleep hygiene works to improve sleep *(Strong Recommendation, Moderate Quality Evidence)*.

Clinical interventions that reliably support healthy lifestyles must include the following components:

- Clear consistent goals and key messages

- Evidence-based, validated assessment instruments

- Advice and brief counseling to people identified as being likely to benefit

- More in-depth intervention or referral to people identified as needing additional services or support

- Well-developed relationships with community and employer stakeholders

Good mental health is needed to achieve and maintain healthy lifestyles, and depression plays a central role in limiting patient activation. Individuals with depressive symptoms are much less likely to gain in activation and to improve in their self-management behaviors, and treating the depression is a likely prerequisite to successful interventions aimed at stimulating activation *(Hibbard, 2007 [High Quality Evidence])*. Routinely screen for depression, but only when accurate diagnosis, effective treatment and follow-up are in place (ICSI Major Depression in Adults in Primary Care guideline, 2011).

Patient competency is also essential to achieving and maintaining healthy lifestyles. Individuals who are developmentally disabled, have early dementia, bipolar disorder or schizophrenia, among other conditions, are likely to require assistance from family members or care managers.

Self-management programs that are based on self-efficacy theory and an emphasis on problem solving, decision-making and confidence building *(Lorig, 2003 [Low Quality Evidence])* can improve health status *(Lorig, 2006 [High Quality Evidence]; Lorig, 1999 [High Quality Evidence])*.

Individualization of education and interventions can be helpful in assisting patients in the change process, and if face-to-face contact is not possible or feasible, then telephone counseling appears to be effective, as well *(Tinker, 2007 [Low Quality Evidence]; Nothwehr, 2006 [Low Quality Evidence]; Prochaska, 2005 [High Quality Evidence])*.

Follow-up visits/systems: the most effective intervention timetables appear to be weekly or biweekly visits with persons, individually or in groups, with individualized assistance and encouragement to continue to make these healthy behavior changes *(Tinker, 2007 [Low Quality Evidence]; van Sluijs, 2004 [Low Quality Evidence]; Verheijden, 2004 [Low Quality Evidence])*.

6a. Increased Physical Activity

The recommended amounts are in addition to routine activities of daily living of light intensity (self-care, cooking, casual walking or shopping) or lasting less than 10 minutes in duration (walking around the home or office, walking from the parking lot) *(Haskell, 2007 [Guideline])*.

Minimum goal (Any improvement is beneficial)

Individuals who do not meet optimal goals should get at least an additional 10 minutes of physical activity above what they are already doing each day.

Healthier goal

Moderate-intensity aerobic exercise for a minimum of 30 minutes per day, five days per week or vigorous intensity aerobic exercise for a minimum of 20 minutes per day, three days per week *(Haskell, 2007 [Guideline])*. A target of 150 minutes of activity may provide healthy benefits.

Strength training exercises (8-12 repetitions each of 8-10 different exercises) two or more non-consecutive days per week *(U.S. Department of Health and Human Services, 2008 [Guideline]; Haskell, 2007 [Guideline])*.

Optimal goal

Moderate-intensity aerobic exercise 45 minutes every day or 60 minutes most days of the week (300 minutes per week), or 10,000 steps per day, or equivalent.

Strength training exercises (8-12 repetitions each of 8-10 different exercises) two or more non-consecutive days per week *(U.S. Department of Health and Human Services, 2008 [Guideline]; Haskell, 2007 [Guideline]).*

- For information on how to measure intensity level, please see Appendix B, "Intensity Levels of Physical Activity."

Key messages for increased physical activity

- Positive benefits of increased physical activity include cardiorespiratory fitness, improved blood pressure values, improved lipid profile, increased insulin sensitivity, more effective weight management, improved glycemic control and help in alleviating symptoms of depression.

- Because the positive effects of increased physical activity diminish within days of the cessation of exercise, regular activity is necessary.

- Gradually increase levels of physical activity either by increasing duration or frequency.

- It is not true that only high-intensity exercise is beneficial; small but sustained improvements result in significant benefits.

- People who can maintain a regular regimen of longer and more intense activity are likely to derive the greatest benefit.

- Patients and families who cannot or do not reach the optimal goal will still benefit from 10 minutes of additional physical activity daily.

- Incorporate small increases in activity (taking stairs, parking farther away, exercising while watching television, and taking short activity breaks) into daily routines *(DeBusk, 1990 [High Quality Evidence]; Hardman, 1999 [Low Quality Evidence]).*

- Mild- to moderate-intensity physical activity (brisk walking), when combined with modest weight loss (5-10%), results in substantial risk factor modification.

- The use of a pedometer is associated with significant increases in physical activity and significant decreases in body mass index and blood pressure.

- Strength training is safe and effective for people of all ages. The benefits of strength training include increased muscle strength, increased bone density, increased flexibility and balance. All of these have a profound effect on reducing risk for falls. Strength training can also increase metabolic rate, which is helpful for weight loss and maintenance *(Nelson, 1994 [Moderate Quality Evidence]).*

- Incorporating several different forms of exercise in a physical activity program can be an excellent way to develop the various components of fitness. Numerous documented benefits of cross training include reduced risk of injury, enhanced weight loss, improved total fitness, and enhanced exercise adherence.

  One of the easiest ways to incorporate cross training is to alternate between activities (e.g., run one day, stair-climb the next, cycle the next). Cross training can offer you a refreshing physical and mental challenge.

- Decrease episodes of prolonged sitting and laying through frequent breaks (for example, walking away from desk).

- Consider use of a standing workstation; they have been shown to improve mood.

Return to Algorithm   Return to Table of Contents

Assessment of physical activity

Reliably measuring physical activity has proven to be challenging. Self-reports often overestimate amounts and duration of people's activities.

The International Physical Activity Questionnaire (IPAQ) is a seven-question, validated instrument that is easily administered in the clinical setting.

However, as a practical matter, precise quantification of physical activity is not necessarily essential for clinical interventions, as virtually all individuals would benefit from increasing their current levels of activity.

Efficacy of clinical interventions

The use of a pedometer is associated with significant increase in physical activity (approximately 1 mile of walking per day) and significant decrease in body mass index and blood pressure. Whether these changes are durable over the long-term is undetermined.

(Bravata, 2007 [Systematic Review])

There is insufficient evidence to determine whether counseling patients in primary care settings leads to sustained increases in physical activity among adults *(U.S. Preventive Services Task Force, 2003b [Guideline]; Eden, 2002 [Low Quality Evidence])*.

Interventions used to increase physical activity were effective in the short term (follow-up less than one year), but were not effective in changing behavior for the long term (longer than one year) *(Harland, 1999 [High Quality Evidence])*.

The more contacts made during the intervention or the more intense the intervention, the longer the adherence to the increase in physical activity *(Eakin, 2007 [Systematic Review])*.

Return to Algorithm   *Return to Table of Contents*

6b. Improved Nutrition

Minimum goal

- Eat a variety of fruits and vegetables every day.

Check out http://www.fruitsandveggiesmatter.gov for how many servings are needed.

Healthier goal

- Enjoy food but eat less.
- Avoid oversized portions.
- Make half of the plate fruits and vegetables.
- Switch to fat-free or low-fat (1%) milk.
- Compare sodium in foods like soup, bread and frozen meals, and choose the foods with lower sodium.
- Drink water instead of sugary drinks.
- Reduce or eliminate sugar-sweetened drinks (sugar-sweetened drinks includes regular soda, sweet tea, sports drinks and other beverages containing added sucrose, high fructose corn syrup, glucose or other caloric sweeteners) *(Chen, 2010 [Low Quality Evidence]; Malik, 2010 [Meta-analysis]; Brownell, 2009 [Low Quality Evidence]; Chen, 2009 [Low Quality Evidence]; Vartanian, 2007 [Meta-analysis]; Malik, 2006 [Systematic Review])*.
- Limit portions of 100% fruit juice.

(U.S. Department of Health and Human Services, 2010 [Guideline]; Centers for Disease Control and Prevention, 2007 [Low Quality Evidence])

Return to Algorithm   *Return to Table of Contents*

www.icsi.org

Optimal goal

There are a number of detailed diet plans that can optimize an individual's nutritional status. This guideline does not recommend one diet over another. Examples of evidence-based diet plans include the Mediterranean Diet, the Portfolio Diet and the DASH Diet. An optimal eating pattern should include:

Daily:

- Grains: six to eight servings with at least three servings of whole grains

- Vegetables: four to five servings

- Fruits: four to five servings

- Dairy: two to three servings of fat-free or low-fat

- Fats and oils: two to three servings

Weekly:

- Lean meat, poultry and fish: no more than six ounces

- Nuts, seeds and legumes: four to five servings per week

- Sweets: five or fewer servings per week

(Panagiotakos, 2007 [Low Quality Evidence]; Jenkins, 2006 [Low Quality Evidence]; Obarzanek, 2001 [High Quality Evidence])

Key messages for improved nutrition

An eating pattern associated with less-processed foods with emphasis on variety, moderation, portion control and gradual changes of improvement is more likely to incorporate the above components of a healthier eating pattern.

Daily to at least weekly, as appropriate weight checks are associated with overall lower body mass index values; individuals who consistently self-weighed were able to maintain weight loss by making necessary dietary changes when changes in weight were noticed *(Butryn, 2007 [Low Quality Evidence])*.

Self-monitoring behaviors (such as smoking, calorie intakes, physical activity) helps to change the behavior in moving to the desired outcome. Adults who track dietary intakes have a tendency to lose more weight than individuals who don't. When using smartphone applications for dietary tracking, there is improved dietary monitoring adherence as well as overall improvement in dietary choices and/or anthropometric measures. Consistent tracking of intakes (at least 75% of the time) resulted in more weight loss success for participants in weight-loss programs *(Lieffers, 2012 [Systematic Review]; Wang, 2012 [Moderate Quality Evidence]; Boutelle, 1998 [Low Quality Evidence])*.

How to measure serving sizes:

- Three ounces of meat is about the size and thickness of a deck of playing cards.

- A medium apple or peach is about the size of a tennis ball.

- One ounce of cheese is the size of four stacked dice.

- One-half cup of ice cream is about the size of a tennis ball.

- One cup of mashed potatoes or broccoli is about the size of a fist.

- One teaspoon of butter or peanut butter is about the size of a thumb.

- One ounce of nuts equals about one handful.

(U.S. Department of Health and Human Services, 2006 [Low Quality Evidence]; National Heart, Lung and Blood Institute, 2005 [Guideline])

- Modest weight loss (5-10%), when combined with mild- to moderate-intensity** physical activity (brisk walking, bicycling 5 to 9 mph, swimming), results in substantial risk-factor modification.

- It is not true that only significant weight loss is beneficial; small but sustained improvements result in significant benefits.

- There is no clear evidence that weight cycling is particularly hazardous to health: concerns about cycling should not prevent obese individuals from trying to lose weight *(Wannamethee, 2002 [Low Quality Evidence])*.

** See Appendix B, "Intensity Levels of Physical Activity," for further information on moderate-intensity physical activity.

Assessment of nutrition

The limited evidence that currently exists suggests that brief nutrition assessment tools are as reliable and valid as longer, more exhaustive tools *(Miller, 2005 [Low Quality Evidence])*. Validated tools include the REAP assessment, the Rate Your Plate assessment *(Gans, 2003 [Low Quality Evidence])* and the recommended food score (RFS) checklist *(Kant, 2000 [Low Quality Evidence])*.

A food/beverage frequency checklist, a three-day food/beverage record and weekly food/beverage diaries can be used to collect information about dietary habits in specific cases but are unnecessarily burdensome for use as tools for brief dietary screening.

Efficacy of clinical interventions

There is no conclusive evidence to recommend for or against routine behavioral counseling to promote a healthier diet in the general healthy population *(U.S. Preventive Services Task Force, 2003a [Guideline])*.

Identifying high-risk patients in the primary care setting and providing intensive behavioral dietary counseling by specially trained health care clinicians can produce medium to large changes in average daily intake of saturated fat, fiber, fruits and vegetables. There is a parallel relationship between individuals at high risk for a health condition and their ability to make dietary changes *(Pomerleau, 2005 [Systematic Review]; Lindström, 2003 [High Quality Evidence]; Pignone, 2003 [Systematic Review]; Ammerman, 2002 [Systematic Review])*. Pomerleau et al. conducted a literature search on interventions to increase fruit and vegetable intake. The article reviewed 44 articles and concluded that several interventions were effective in increasing fruit and vegetable intake *(Pomerleau, 2005 [Systematic Review])*.

Despite the lack of demonstrated effectiveness in the primary care setting, intervention is encouraged due to the numerous benefits associated with consumption of a healthy diet, physical activity and prevention of obesity. There are studies that indicate adequate or modified intake of specified dietary factors may help prevent or reduce the risk of certain diseases or conditions. Fiber intake from cereals, vegetables and fruits is associated with lower risk of cardiovascular disease and cancers *(Pereira, 2004 [Low Quality Evidence]; Mozaffarian, 2003 [Low Quality Evidence])*. Modest weight loss and increases in physical activity have been demonstrated to reduce cardiovascular risk factors such as hypertension, dyslipdemia and type 2 diabetes. Reduced caloric intake and increased physical activity has been shown to reduce the risk of diabetes and decrease insulin resistance *(Eyre, 2004 [Low Quality Evidence])*.

Following a tailored nutrition message delivered by means of written material, computer-generated reports or in individual counseling sessions on dietary behaviors, individuals report an intention to consume more fruit and vegetables and lower-fat foods *(Tessaro, 2007 [High Quality Evidence]; Fries, 2005 [High Quality Evidence]; Stevens, 2003 [Low Quality Evidence])*.

A number of randomized controlled trials have demonstrated a positive outcome in changing dietary behaviors by incorporating a variety of interventions. Stevens paired individual counseling with a computer-assisted assessment that produced a personalized printout and telephone call follow-up support. At 12 months post-intervention, participants had a significant reduction in dietary fat and greater intake of fruits and vegetables

Return to Algorithm   *Return to Table of Contents*

(Stevens, 2003 [Low Quality Evidence]). One randomized, controlled trial found a combination of clinician endorsement, brief telephone counseling and personalized feedback mailed to participants resulted in improved dietary knowledge and changes in dietary behavior *(Fries, 2005 [High Quality Evidence]).*

Telephone-based counseling is effective for promoting reduced dietary fat intake and increased consumption of fruits and vegetables. The following recommendations focus on high-risk individuals as they seem to respond more favorably to telephone-based counseling:

- Match the intensity of telephone-based counseling to the level of health risk.

- Focus on changing one or two eating behaviors at a time.

- A reasonable amount of time is 15 to 20 minutes per session of telephone-based counseling.

- Use a feedback loop to communicate with clinical clinicians, especially when a person's condition changes or adjustment in medications is needed.

- Use telephone counselors who are well trained in the theoretical bases of dietary behavior change.

(Vanwormer, 2006 [Systematic Review])

Computer-tailored education that is offered in settings ranging from the worksite to the primary care office to community organizations may offer a lower-cost and easier method for motivating people to make positive behavior changes, especially related to fat, fruit and vegetable intake *(Pomerleau, 2005 [Systematic Review]; Revere, 2001 [Systematic Review]).* Kypri, et al. conducted a randomized control trial on Web-based interventions for physical inactivity, low fruit and vegetable intake, hazardous alcohol consumption, and smoking. The study concluded that after a brief computerized intervention, fruit and vegetable intake and physical activity compliance increased. Differences in drinking levels were not significant, and the study was not able to assess for smoking.

(Kypri, 2005 [High Quality Evidence])

A computer-based interactive heart healthy cooking program was integrated into a local primary care clinic setting. Participants accessed the program during the waiting time prior to seeing a health care clinician. At a three-month telephone follow-up, participants were at a higher level of readiness to change and demonstrated greater knowledge about fat grams and calories. However, their reported consumption of fat, fruit and vegetables was no different than the control group *(Tessaro, 2007 [High Quality Evidence]).*

Please see the ICSI Prevention and Management of Obesity for Adults guideline for additional information on body mass index and weight management.

Return to Algorithm   *Return to Table of Contents*

6c. Decreased Tobacco Use and Exposure

Please note that no amount of smoking or secondhand smoke exposure is safe.

Minimum goal (Any improvement is beneficial)

Consider developing an action plan to quit smoking.

Discuss the change process and pros and cons to tobacco use and exposure.

Healthier goal

Adopt and implement an action plan to quit smoking.

Optimal goal

Eliminate all tobacco use.

Eliminate all secondhand smoke exposure.

Return to Algorithm   *Return to Table of Contents*   *www.icsi.org*

Key messages to decrease tobacco use and exposure

- Smoking cessation significantly improves health outcomes.

- Advise all females of childbearing age of the harmful effects of smoking on a fetus and the need for cessation during pregnancy.

- Avoiding tobacco smoke improves health, and quitting smoking at any time improves health.

- Avoid any and all tobacco smoke, including thirdhand smoke *(Sleiman, 2010 [Low Quality Evidence])*.

- Do not allow smoking at home, in the family vehicles or in personal workspaces.

- Telephone quit lines, pharmacotherapy and other interventions are moderately effective in helping to quit smoking.

Assessment of tobacco use and exposure

It is essential that clinicians and health care delivery systems (including administrators, insurers and purchasers) institutionalize the consistent identification, documentation and treatment of every tobacco user seen in a health care setting *(Fiore, 2008 [Guideline])*.

Efficacy of clinical interventions

Tobacco dependence is a chronic condition that often requires repeated intervention. However, effective treatments exist that can produce long-term or even permanent abstinence.

Because effective tobacco dependence treatments are available, every patient who uses tobacco should be offered at least one of these treatments:

- Patients **willing** to try to quit tobacco use should be provided with treatments identified as effective in this guideline.

- Patients **unwilling** to try to quit tobacco use should be provided with a brief intervention designed to increase their motivation to quit.

There is a strong dose-response relation between the intensity of tobacco dependence counseling and its effectiveness. Treatments involving person-to-person contact (via individual, group or proactive telephone counseling) are consistently effective, and their effectiveness increases with treatment intensity (e.g., minutes of contact) *(Fiore, 2008 [Guideline])*.

Brief interventions

Brief interventions consist of feedback of screening data designed to increase motivation to change tobacco use behavior, simple advice, health education, goal-setting, practical suggestions, and follow-up, with referral when appropriate. See also Annotation #5, "Shared Decision-Making and Brief Interventions."

Brief tobacco dependence treatment is effective, and every patient who uses tobacco should be offered at least brief treatment *(Fiore, 2008 [Guideline])*.

Other interventions

Proactive telephone counseling increases cessation rates by 20%, and group counseling increases cessation rates by about 30% over no format. However, it is important to recognize that acceptability of group counseling is far less than proactive telephone counseling.

Tobacco telephone quit lines and proactive telephone counseling increase the odds of abstinence by about 20%.

Return to Algorithm   *Return to Table of Contents*

Three types of counseling and behavioral therapies were found to be especially effective and should be used with all patients attempting tobacco cessation:

- Provision of practical counseling (problem-solving/skills training)

- Provision of social support as part of treatment (intratreatment social support)

- Help in securing social support outside of treatment (extratreatment social support)

Numerous effective pharmacotherapies for smoking cessation now exist. These interventions should be offered to all patients attempting to quit smoking except in the presence of contraindications or populations for which there is insufficient evidence of effectiveness. The Department of Health and Human Services suggests that there is insufficient evidence to conclude efficacy of pharmacotherapy interventions for the following patient populations: pregnant women, light smokers, smokeless tobacco users, and adolescents.

Return to Algorithm   *Return to Table of Contents*

6d. Decreased Hazardous and Harmful Drinking/Alcohol Use

Minimum goal (Any improvement is beneficial)

Assess drinking status:

- Healthy men (less than 65 years): No more than 14 drinks per week and no more than four drinks per occasion.

- Healthy women (and healthy men over 65 years): No more than seven drinks per week and no more than three drinks per occasion *(U.S. Department of Health and Human Services, 2007 [Guideline])*.

Consider developing an action plan to reduce harmful and hazardous drinking.

Discuss the change process, and pros and cons to harmful and hazardous drinking.

Healthier goal

Adopt and implement an action plan to reduce harmful and hazardous drinking.

Optimal goal

Refrain from hazardous drinking (defined by the number of standard drinks any drink that contains 14 grams of pure alcohol – for example: 12 ounces of beer or 5 ounces of table wine – in a given time period).

Key messages to decrease hazardous and harmful drinking/alcohol use

- Several conditions or chronic diseases – including hypertension, trauma, certain cancers and mental health issues, among others – may be positively impacted by decreasing hazardous or harmful levels of drinking.

- Advise all females of childbearing age of the harmful effects of alcohol on a fetus and the need for cessation during pregnancy.

- Reinforce dangers of drinking and driving automobiles, motorcycles, snowmobiles, off-road vehicles and watercraft.

- Advise patients not to ride with anyone who is under the influence of alcohol and to discourage others from driving or operating watercraft while under the influence of alcohol.

Screening, Brief Intervention and Referral for Treatment (SBIRT)

Screening, Brief Intervention and Referral for Treatment (SBIRT) is a comprehensive and integrated approach for identifying and delivering early intervention for those experiencing or at risk for experiencing

Return to Algorithm   *Return to Table of Contents*

substance use disorders via universal screening and follow-up *(Babor, 2007 [Low Quality Evidence])*. The core components of SBIRT include the following:

Screening: SBIRT programs utilize systematic screening (such as the AUDIT tool) via normal routines at health care facilities. SBIRT programs are encouraged to consider accuracy, cost and efficiency, cultural sensitivity and which target group they are wishing to identify (e.g., looking for alcohol dependence versus those at risk of developing dependency) when choosing their screening instrument.

Brief intervention: SBIRT programs provide a time-limited intervention, which may be as little as one to two brief conversations between patients and clinicians at the time of screening, to provide information or advice, address motivation for change, and/or teach concrete behavior change skills with the goal of reducing substance use or the negative consequences of substance use. The goal of brief intervention is to enhance the patient's motivation for change. Research supports the finding that brief interventions that enhance the patient's motivation for treatment significantly increase patients' follow-up with treatment referrals and increase adherence to treatment.

Referral for treatment: This may include referral to brief treatment or other specialized substance abuse treatment.

Brief treatment: The goal of brief treatment is to assist patients in developing the skills and resources to change. Brief treatment often involves two to six sessions with a trained clinician utilizing a motivational enhancement approach or cognitive behavioral therapy approach.

Specialized substance abuse treatment: Brief treatment may not be sufficient for some severely dependent drinkers. For these individuals, SBIRT programs make referrals to more intensive treatment programs and support groups such as AA (Alcoholics Anonymous).

Integration and coordination activities: A key component of SBIRT includes developing a system to support the integration and coordination of the previously noted components (screening, brief intervention, and referral for treatment).

Assessment of Harmful and Hazardous Drinking

The AUDIT (the Alcohol Use Disorders Identification Test) tool is the screening instrument best validated for the effective assessment of hazardous and harmful drinking; it can help identify people who would benefit from reducing or ceasing drinking, and gives an indication of future alcohol-related problems *(Saunders, 1993 [Low Quality Evidence])*. The well-known CAGE questions, and others, are designed to screen for alcohol abuse and dependence but are too narrowly focused to detect individuals in earlier stages of excess alcohol use.

The AUDIT tool helps identify individuals in the following categories:

- Low-risk drinking or abstinence – no evidence of excessive alcohol use

- Hazardous drinking – pattern of alcohol use that increases the risk of harmful consequences for the user or others, despite the absence of any current alcohol use disorder

- Harmful drinking – high levels of daily drinking or drinking causing physical, mental or social consequences

- Alcohol dependence – including a strong desire to consume alcohol, impaired control over its use, persistent drinking despite harmful consequences, increased tolerance, and withdrawal symptoms

In addition to the screening done as part of a health assessment, screening for excessive drinking should also be routinely done for these patients.

- Hospitalized patients (especially those with disorders known to be associated with alcohol dependence – pancreatitis, cirrhosis, gastritis, tuberculosis, cardiomyopathy)

- Certain persons with psychiatric illness, particularly those who are depressed or who attempt suicide

- Trauma victims in emergency departments

- Homeless persons

- Prisoners

- Persons cited for legal offenses connected with drinking (DUI, public intoxication, etc.)

There are published guidelines available for the administration of the AUDIT, including appropriate settings, patient education about the screening, methods of administration, and scoring and interpretation *(Babor, 2001 [Guideline])*.

The benefits of screening and assessment include:

- educating patients about appropriate levels of alcohol use and the risks associated with excessive use;

- aiding in the understanding of a patient's presenting symptoms, diagnosis or lack of response to treatment; and

- alerting clinicians about alcohol-drug interactions.

Efficacy of clinical interventions

Most of the harm associated with alcohol use occurs among people who are not dependent and who do not have a specific diagnosis of alcoholism or alcohol dependence. Fortunately, people who are not dependent on alcohol may stop or reduce their consumption with appropriate assistance and effort.

The United States Preventive Service Task Force in 2004 found "good evidence that screening in primary care settings can accurately identify patients whose levels or patterns of alcohol consumption do not meet criteria for alcohol dependence but place them at risk for increased morbidity and mortality" *(Whitlock, 2002 [Low Quality Evidence])*.

The United States Preventive Service Task Force also found "good evidence that brief behavioral counseling interventions with follow-up produce small to moderate reductions in alcohol consumption that are sustained over 6- to 12-month periods or longer" *(Whitlock, 2002 [Low Quality Evidence])*. Bertholet et al. conducted a systematic review to look at brief alcohol interventions in primary care. The article reported that brief alcohol interventions in men and women were effective in reducing alcohol consumption at 6 and 12 months *(Bertholet, 2005 [Meta-analysis])*.

Brief interventions

One study demonstrated that problem-drinking screening and brief interventions in primary care are among the most effective and cost-effective clinical preventive services *(Solberg, 2008 [Systematic Review])*.

Brief interventions consist of feedback of screening data designed to increase motivation to change drinking behavior, simple advice, health education, goal-setting, practical suggestions, and follow-up, with referral when appropriate. See also Annotation #2, "Redesign for Results (R4R): Patient-Centered Systems for Healthy Lifestyles."

www.icsi.org

Interventions based on AUDIT scores are as follows:

- Low-risk drinking or abstinence (AUDIT score 0-7): alcohol education is recommended

- Hazardous drinking (AUDIT score 8-15): simple advice and patient education materials are recommended (see key messages)

- Harmful drinking (AUDIT score 16-19): simple advice plus brief counseling and continued monitoring are suggested

- Alcohol dependence (AUDIT score 20-40): a referral to a specialist for diagnostic evaluation and treatment should be initiated

(Babor, 2001 [Guideline])

Other interventions

A meta-analysis concluded that use of a single-session personalized feedback intervention, without therapeutic guidance, can reduce problem drinking in specific populations *(Riper, 2009 [Meta-analysis])*. Web-based screening tools and motivational interventions also appear to be effective *(Kypri, 2009 [High Quality Evidence])*.

For patients with a diagnosis of alcohol abuse or dependence, document the diagnosis and attempt to schedule a referral appointment while in the clinician's office. The behavioral case manager at the patient's insurance company, the local health department, employee assistance program and local hospitals can all assist with referrals.

Alcoholics Anonymous (AA) offers free, widely available groups of volunteers in recovery from alcohol dependence. Volunteers are often willing to work with professionals who refer patients.

There are many other self-help organizations and groups that offer a variety of approaches. See the "Implementation Tools and Resources Table" section for more information.

Please see Appendix C, "Alcohol Use Disorders Identification Test (AUDIT)," for an example of the AUDIT tool.

Return to Algorithm   Return to Table of Contents

6e. Practice Positive Thinking

Minimum goal

Write down three good things that happened at the end of each day and why they happened *(Gable, 2004 [Low Quality Evidence])*.

Healthier goal

Seek out others and share with them a positive event, and actively respond with constructive comments when others tell them about positive events that they have experienced.

Optimal goal

Identify signature strengths and use one of them in a new way.

In an effort to promote well-being and good health, the area of mental health also requires focus and attention to good practices. The area of positive psychology *(Gable, 2005 [Low Quality Evidence]; Fredrickson, 2001 [Low Quality Evidence])* looks to understand the factors that build psychological well-being and resilience. It currently looks at the role of positive experiences and emotions, and their role in physical health, subjective well-being and the functional successes of individuals. The hope is that this translates into well-being and functional success to groups and to the flourishing of institutions *(Gable, 2005 [Low Quality Evidence])*.

Return to Algorithm   Return to Table of Contents

Studies in these areas are increasingly robust but have not yet ascertained how practices around positive emotions will affect the rate of major depressive disorder or the adoption of lifestyle changes that will support individual physical health. Nonetheless, attention by individuals and institutions to mental health practices that promote positive emotions has shown short-term advantages to well-being. Dr. Barbara Fredrickson has put forward the Broaden and Build Theory *(Fredrickson, 2008 [Low Quality Evidence]; Fredrickson, 2001 [Low Quality Evidence])*, which stipulates that positive emotions allow the brain to be more open and creative, and to produce collaborative activities. Thus, positive emotions allow individuals to broaden their circle of support, and build emotional and physical resources that would then lead to greater life satisfaction and societal strength.

The World Health Organization (WHO) asserts, "There is no health without mental health." Health is defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity" (WHO 2001, p.1). According to the WHO, depression was the fourth largest contributor to the disease burden in 1990, with mental and behavioral disorders accounting for 11% of the total disease burden. Depression is expected to be the second largest contributor to the disease burden (after heart disease) by 2020. Mental health not only affects the psychological experience of an individual, it also affects behavior. Consequently, we cannot discuss the promotion of health behavior such as increased physical activity, improved nutrition, decreased harmful substance use, whether it involves alcohol or tobacco, without addressing the potential role of mental health with regard to these behaviors.

Cultivating Psychological Resilience

There is a small but growing body of research that shows that interventions aimed at preventing depression and increasing psychological resilience and wellness may be effective *(Cuijpers, 2008 [Meta-analysis])*. Prevention programs typically address cognitive-behavioral factors thought to contribute to the development of depression. One of the most well-studied models is the Penn Resiliency Program (PRP) developed at the University of Pennsylvania utilizing the principles of positive psychology and focusing on a subset of factors including optimism, problem solving, self-efficacy, self-regulation, emotional awareness, flexibility, empathy and strong relationships *(Reivich, 2011 [Low Quality Evidence])*. In a meta-analytic review of PRP, the investigators found that youth who participated in PRP programs reliably reported a modest reduction of depressive symptoms through a 12-month follow-up period, compared with youths who received no intervention *(Brunwasser, 2009 [Systematic Review])*. Soldiers are trained to use psychological resiliency techniques as part of the U.S. military's Comprehensive Soldier Fitness program *(Cornum, 2011 [Low Quality Evidence])*.

There is also a growing body of research linking mindfulness-based interventions to increased well-being *(Fledderus, 2010 [High Quality Evidence]; Shapiro, 2008 [Moderate Quality Evidence]; Grossman, 2004 [Systematic Review])*. Fledderus, et al. (2010) suggest that "psychological flexibility" is a psychological competence comprising the ability to accept experiences (rather than trying to avoid, alter or control negative experiences) and value-based behavior (committing to actions based on authentic individual values). Interventions that focus on enhancing psychological flexibility include acceptance and commitment therapy (ACT) and mindfulness-based interventions. When compared to a wait list control, a group that received a mindfulness and ACT-based intervention demonstrated more improvement in mental health (e.g., increased happiness, life satisfaction and meaningful life experience) at post-treatment and follow-up (three months after intervention ended) than did the control group (effect size similar to that of positive psychology trials). The intervention group also showed greater improvement on psychological flexibility compared with the control group.

A meta-analysis by Grossman, et al. (2004) also found evidence supportive of the usefulness of mindfulness-based stress reduction for a broad range of chronic disorders and problems. Authors concluded that mindfulness training might enhance general features of coping with distress and disability in everyday life as well as under conditions of serious disorder or stress. Improvements were consistently seen across a spectrum

of psychological dimensions of quality of life including depression, anxiety, coping style and other affective dimensions of disability and physical parameters of well-being such as medical symptoms, sensory pain, physical impairment, and functional quality-of-life estimates. Authors concluded that additional research is needed to investigate long-term benefits of mindfulness training and improved methodological quality of studies.

6f. Improved Sleep Hygiene

According to the National Sleep Foundation's 2011 annual poll, 43% of Americans report getting inadequate sleep. Shorter duration of sleep has been associated with cancer *(Thompson, 2012 [Low Quality Evidence])*, cardiovascular disease *(Krueger, 2009 [Low Quality Evidence])*, psychiatric disorders *(Park, 2010 [Low Quality Evidence])* and diabetes *(Krueger, 2009 [Low Quality Evidence])*. In addition to specific health conditions, lack of sleep can affect cognitive performance *(Lo, 2012 [Low Quality Evidence])*, memory, mood and metabolism *(Machi, 2012 [Low Quality Evidence])*.

A growing body of research suggests that sleep hygiene may improve the quality and quantity of sleep *(Knowlden, 2012 [Low Quality Evidence])*. Cognitive Behavioral Therapy, used to examine sleep-related beliefs, has also shown to be helpful *(Jansson-Fröjmark, 2008 [Moderate Quality Evidence])*. The use of non-pharmacological methods to improve sleep prevents negative side-effects and possible dependence.

Examples of sleep hygiene include *(Knowlden, 2012 [Low Quality Evidence])*:

- Avoid caffeine, alcohol and tobacco four hours prior to sleep

- Schedule sleep and wake times

- Use bed only for sleep

- Avoid intense physical activity close to sleep time

- Limit exposure to light and noise during sleep time

- Limit use of hand-held electronics

- Avoid naps during the day

7. Community Interventions for Healthy Lifestyles

Recommendations:

- Multifaceted interventions by multiple organizations that include clinical, public policy, environmental and system change generally have greater evidence of impact *(Strong Recommendation, Moderate Quality Evidence)*.

- Developing clinical-community partnerships to support and promote healthy lifestyles (workplace, school, social, family, community) is important to address these diverse issues *(Strong Recommendation, Low Quality Evidence)*.

- Health care clinicians recommending community partners to support healthy lifestyles may have an impact on patients *(Weak Recommendation, Low Quality Evidence)*.

7a. Community Interventions to Increase Physical Activity

Kahn, et al. summarize the overall effectiveness of interventions to increase physical activity, highlighting point-of-decision prompts, school-based physical education, social support in community settings, individually adapted behavior changes, and enhanced access to places for physical activity as effective approaches *(Kahn, 2002 [Systematic Review])*.

Employers and worksites

There is some evidence that telephone-based lifestyle intervention programs are able to successfully increase or maintain physical activity. These programs are suitable for delivery through employer groups and worksites, as well as through medical groups and health plans *(Pronk, 2004 [Low Quality Evidence])*.

The Community Guide's review of interventions creating or improving access to places for physical activity, including worksites (as well as coalitions, agencies and communities), finds strong evidence to recommend this approach. Many of the programs evaluated also included informational outreach *(Brownson, 2006 [Low Quality Evidence]; Aldana, 2005b [High Quality Evidence]; McCarty, 2005 [Low Quality Evidence]; Task Force on Community Preventive Services, 2005b [Guideline])*.

Employers, health plans, government and other payers have implemented a variety of incentives and programs with which they hope to encourage healthy lifestyles.

Health plans and employee benefit managers

There is some evidence that telephone-based lifestyle intervention programs are able to successfully increase or maintain physical activity. These programs are suitable for delivery through health plans, as well as through medical groups and employers.

Educators and schools

The Community Guide reviewed 14 interventions aimed at increasing the amount of time students spend doing moderate or vigorous physical activity in physical education classes. Many interventions also included health education. The Community Guide found strong evidence to recommend such interventions *(Task Force on Community Preventive Services, 2005b [Guideline])*.

Other community collaborations

The Community Guide reviewed 10 multicomponent, large-scale, intense, highly visible community-wide campaigns to promote physical activity and found strong evidence to recommend this approach. Such interventions included media campaigns to large audiences through different types of media; strategies such as self-help groups, physical activity counseling, and community fairs; and policy changes such as the creation of walking trails *(Task Force on Community Preventive Services, 2005b [Guideline])*.

Sallis, et al. provide the background, framework, areas of current and directions for future direction in research for the concept of active living, an approach to the promotion of physical activity that draws from disciplines including urban planning, transportation, leisure, recreation and public policy. Evidence for supporting the advancement of active living as a way to increase physical activity is made on the basis of ecological studies, with support from theory *(Sallis, 2006 [Low Quality Evidence])*.

The Community Guide recommends street-scale design and land-use policies and practices to facilitate and increase physical activity levels, based on their review of six studies, which generally limited their interventions to a small geographic area of a few blocks. The design components include better street lighting, infrastructure projects to increase safety of street crossing, and use of traffic calming approaches *(Task Force on Community Preventive Services, 2005b [Guideline])*.

The Robert Wood Johnson Foundation reviewed the literature on built environment and summarized it as follows: "Many cross-sectional studies show that certain built environment features are associated with activity. These features include proximity to destinations, aesthetics, access to parks and open spaces and the 'walkabilty' of the community." The current body of evidence is relatively weak in showing that changes to the built environment will promote activity. Many communities are undertaking efforts to improve the built environment. These efforts provide important research opportunities to examine the impact of built environment on changes in activity *(Williams, 2007 [Systematic Review])*.

Active Living By Design, established by the Robert Wood Johnson Foundation, creates community-led change by working with local and national partners to build a culture of active living and healthy eating. For additional information, please visit http://www.activelivingbydesign.org.

7b. Community Interventions to Improve Nutrition

Employers and worksites

There is limited evidence that telephone-based lifestyle intervention programs are able to increase healthy eating. These programs are suitable for delivery through employer groups as well as through medical groups and health plans. In addition, there is considerable evidence that changes in food offerings at worksite cafeterias may affect food choices in a positive way.

A controlled trial of worksite environment-only intervention (informational sheets placed near food products to encourage healthier food choices) reported mixed results for psychosocial determinants of nutrition behavior (perceived social support and self-efficacy) and measures of cardiovascular risk (blood pressure, cholesterol and body fat) *(Engbers, 2007 [Low Quality Evidence]; Engbers, 2006 [Low Quality Evidence])*.

Thirty-eight adult nutritional environmental intervention studies were identified that influenced the environment through food availability, access, pricing or point-of-purchase information in worksites, universities, grocery stores and restaurants. No direct comparisons of studies across settings were possible, but results suggest that worksite and university interventions have the most potential, while grocery store interventions have the least potential for success *(Seymour, 2004 [Systematic Review])*.

Educators and schools

Food choices in schools come from a number of different sources. Foods sold as part of the National School Lunch Program – with federal guidelines specifying nutritional standards – may compete with the often less-healthy choices available from a la carte areas, snack bars, vending machines and fundraisers. Improving the nutritional quality of foods offered in school cafeterias is an obvious target for school-based interventions to improve nutrition for children, but it is important to consider how such interventions will be rolled out and maintained. In reviewing school-based interventions to promote fruit and vegetable consumption, there is a need for specific behavioral guidelines with food service staff and the need for training and ongoing support for food service staff; further research is needed to determine the school- or district-based factors that make some guidelines easier to implement than others *(French, 2003 [Systematic Review])*.

Studies examining the association between school environmental factors and fruit and vegetable consumption have found negative correlations between fruit and vegetable consumption and cafeteria a la carte dining programs and school-based snack vending machines *(French, 2003 [Systematic Review])*.

At the 2007 Action on Obesity Summit, a presentation described how several districts in Minnesota have implemented changes in school cafeteria and vending programs.

The Community Guide's review of interventions to improve nutrition is ongoing, but so far concludes that multicomponent school-based nutrition programs have insufficient evidence to recommend them *(Task Force on Community Preventative Services, 2005b [Guideline])*. However, structured literature reviews concluded

that multicomponent interventions in the school have been effective in promoting small but significant changes in fruit and vegetable consumption *(French, 2003 [Systematic Review]).* Further research is needed to establish long-term effectiveness of such programs.

Faith-based organizations

Two examples of faith-based programs to increase fruit and vegetable consumption are the Body and Soul health program developed for African-American churches and the Stewardship of Health.

Other community collaborations

A non-comprehensive review of a few studies of increasing fruit and vegetable consumption via interventions in grocery stores and other community settings was conducted. In general, while these studies have demonstrated feasibility, they have not been well controlled and therefore provide references for future research direction rather than solid evidence for efficacy *(Glanz, 2004 [Low Quality Evidence]).*

7c. Community Interventions to Decrease Tobacco Use and Exposure

Health plans and employee benefit managers

Tobacco dependence treatments are both clinically effective and cost effective relative to other medical and disease prevention interventions. As such, insurers and purchasers should ensure that:

- all insurance plans include as a reimbursed benefit counseling and pharmaco-therapeutic treatments identified as effective in this guideline,

- clinicians are reimbursed for providing tobacco dependence treatment just as they are reimbursed for treating other chronic conditions,

- smoking cessation campaigns are periodically sponsored in concert with mass media education programs and clinical interventions,

- there is support for clinician reminders and clinician education for smoking cessation advice,

- there is a reduction in patient out-of-pocket costs for effective treatments for tobacco use and dependence, and

- there is a sponsorship of patient telephone support (quit lines) when combined with other interventions.

Other community collaborations

The independent Task Force on Community Preventive Services has used explicit criteria to judge the effectiveness of community-based interventions within three strategic areas of tobacco use prevention and control: preventing tobacco product use initiation, increasing cessation, and reducing exposure to environmental tobacco smoke (ETS). They found strong evidence that the following interventions reduce exposure to environmental tobacco smoke: smoking bans and restrictions, increasing the unit price for tobacco products, and mass media education (campaigns) when combined with other interventions. They found strong evidence that the following strategies increase tobacco cessation: campaigns, when combined with other interventions; increasing the unit price for tobacco products; clinician reminder plus clinician education (with or without patient education); and patient telephone support (quit lines) when combined with other interventions *(Task Force on Community Preventive Services, 2005a [Low Quality Evidence]).*

Public policy initiatives

- support smoking bans and restrictions in all public areas, both indoors and outdoors, and

- support increases in the price of tobacco products.

While these interventions do help people quit smoking and reduce the prevalence of smoking in a population, the promotions of tobacco companies are very effective relative to smoking cessation interventions. Thus, the overall current smokers rate for Minnesota adults in 2010 was 16.1% but ranged from 21.8% for adults ages 18-24 to 5.4% for adults ages 65 and older *(Minnesota Adult Tobacco Survey, 2010 [NA])*. More effective clinical interventions are therefore needed. Implementing smoke-free policies in all public areas – including parks and beaches, recreational facilities like athletic fields, and multiunit housing complexes (apartment buildings) – would reduce both the burden of tobacco and the prevalence of smoking.

The goals of these tobacco-free public areas are to prevent uptake of tobacco use, help tobacco users who want to quit, and eliminate involuntary exposure to environmental tobacco smoke.

Risk from tobacco can be assessed by a health assessment – a simple questionnaire using standard questions – which is a validated instrument. For more information, see Annotation #3, "Complete Health Assessment, with Timely Feedback Provided."

Heath care system interventions that were found to be effective include clinician reminder systems alone or in combination with clinician education. The task force found sufficient evidence to recommend reducing patient out-of-pocket costs for treatments and strong evidence to support patients with quit lines *(U.S. Department of Health and Human Services, 2000 [Low Quality Evidence])*.

Strategies to Reduce Exposure to Environmental Tobacco Smoke (ETS)	
Smoking bans and restrictions	Recommended (strong evidence)
Community education to reduce ETS exposure in the home environment	Insufficient evidence to determine effectiveness
Strategies to Reduce Tobacco Use Initiation by Young Adults	
Increasing the unit price for tobacco products	Recommended (strong evidence)
Mass media education (campaigns) when combined with other interventions	Recommended (strong evidence)
Strategies to Increase Tobacco Cessation	
Increasing the unit price for tobacco products	Recommended (strong evidence)
Mass Media Education to Increase Tobacco Cessation	
Campaigns when combined with other interventions	Recommended (strong evidence)
Smoking cessation series	Insufficient evidence to determine effectiveness
Smoking cessation contests	Insufficient evidence to determine effectiveness
Health Care Systems Interventions to Increase Tobacco Cessation	
Provider reminder systems (alone)	Recommended (sufficient evidence)
Provider education programs (alone)	Insufficient evidence to determine effectiveness
Provider reminder + provider education (with or without patient education)	Recommended (strong evidence)
Provider feedback system	Insufficient evidence to determine effectiveness
Reducing patient out-of-pocket costs for effective treatments for tobacco use and dependence	Recommended (sufficient evidence)
Patient telephone support (quit lines) when combined with other interventions	Recommended (strong evidence)

Return to Algorithm   *Return to Table of Contents*

7d. Community Interventions to Decrease Hazardous and Harmful Drinking/Alcohol Use

Broad, evidence-based community strategies to permit low-risk drinking while minimizing alcohol-related threats to public health and safety include media campaigns, speeding and drunk driving awareness days, "speedwatch" telephone hotlines, police training, beer keg registration, increased surveillance of liquor outlets and training for staff at hospitals and prenatal clinics *(Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Prevention, 2007 [Low Quality Evidence]).*

Employers and worksites

There are sporadic case reports of employers who have attempted to identify alcohol overuse and refer to appropriate management programs. However, there are few clinical trials or controlled studies that address this domain.

Health plans and employee benefit managers

There is little evidence that health plans have effectively addressed the issue of alcohol overuse.

Other community collaborations

There is strong evidence that community-based prevention activities can result in decreases in alcohol consumption. There is suggestive but insufficient evidence that these programs can diminish driving after drinking, traffic death and injury, and speeding *(Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Prevention, 2007 [Low Quality Evidence]).*

There is strong evidence that changes in the social environment and public policy (increased drinking age, higher alcohol taxes, increased enforcement of driving under the influence and underage drinking, etc.) can result in decreases in alcohol consumption *(Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Prevention, 2007 [Low Quality Evidence]).*

There is good evidence that systemic follow-up of all individuals is a vital part of any patient-centered delivery system. See Annotation #3, "Complete Health Assessment, with Timely Feedback Provided," which recommends annual health risk assessments.

Follow-up is designed to:

- update health and risk factor assessment,

- reinforce patient self-management and positive behaviors,

- maintain ongoing clinical interventions, and

- decrease relapse prevention.

In addition, various clinical and community-level interventions are being systematically studied and evaluated, which will require an awareness of developing innovative programs and resources for promoting healthy lifestyles.

Return to Algorithm   *Return to Table of Contents*

The Aims and Measures section is intended to provide protocol users with a menu of measures for multiple purposes that may include the following:

- population health improvement measures,

- quality improvement measures for delivery systems,

- measures from regulatory organizations such as Joint Commission,

- measures that are currently required for public reporting,

- measures that are part of Center for Medicare Services Clinician Quality Reporting initiative, and

- other measures from local and national organizations aimed at measuring population health and improvement of care delivery.

This section provides resources, strategies and measurement for use in closing the gap between current clinical practice and the recommendations set forth in the guideline.

The subdivisions of this section are:

- Aims and Measures

- Implementation Recommendations

- Implementation Tools and Resources

- Implementation Tools and Resources Table

Aims and Measures

1. Increase the percentage of population age 18 years and older screened for presence of the six healthy lifestyle behaviors and who have screening results discussed. *(Annotations #6a-f)*

    Measures for accomplishing this aim:

    a. Percentage of population screened for physical activity levels, nutrition, tobacco use and exposure and hazardous and harmful drinking/alcohol use.

    b. Percentage of population who have the screening results discussed.

2. Increase the percentage of population age 18 years and older who are not at a recommended optimal goal with regards to six healthy lifestyle behaviors and who set goals toward reaching recommended levels. *(Annotations #6a-f)*

    Measures for accomplishing this aim:

    a. Percentage of population not at healthy goal for physical activity who set either a minimum, healthy or optimal goal for increased physical activity.

    b. Percentage of population not at healthy goal for nutrition who set either a minimum, healthy or optimal goal for improved nutrition.

    c. Percentage of population who are tobacco users who set either a minimum, healthy or optimal goal toward decreased tobacco use.

    d. Percentage of population not at healthy goal in alcohol use who set either a minimum, healthy or optimal goal toward decreased alcohol use.

3. Increase the percentage of health plans, public health organizations, fitness programs and worksite wellness programs offering resources that address six healthy lifestyle behaviors.

    Measures for accomplishing this aim:

    a. Percentage of health plans statewide or for a defined geographic region offering resources that address six healthy lifestyle behaviors.

    b. Percentage of public health organizations for a defined geographic region offering resources that address six healthy lifestyle behaviors.

    c. Percentage of fitness programs (i.e., parks and recreation activities, walking/biking paths, community education programs) statewide or for a defined geographic region.

    d. Percentage of employers statewide or for a defined geographic region who provide worksite healthy behavior options to employees (i.e., healthy vending options, hall walking programs, worksite exercise areas, group exercise programs).

    e. Percentage of employers statewide or for a defined geographic region providing incentives to employees who are able to participate in active transportation alternatives (i.e., mass transit, biking or walking to work).

4. Increase the percentage of population who are aware of one or more community resources that are available to address each of the six healthy lifestyles.

   Measure for accomplishing this aim:

   a. Percentage of population in the community who can name one or more community resources in each of the six healthy lifestyle behaviors areas.

Note: At this point, there are no specifications written measures listed above since these measures apply not only to medical organizations, but also to other types of organizations concerned with public health in the communities. The measurement specifications will depend on the type of organizations that are implementing these measures, and therefore will need to be specified in that context.

Return to Table of Contents

Implementation Recommendations

Prior to implementation, it is important to consider current organizational infrastructure that address the following:

- System and process design

- Training and education

- Culture and the need to shift values, beliefs and behaviors of the organization.

The following system changes were identified by the guideline work group as examples to incorporate in support of the implementation of this guideline:

- Develop a plan for educating all clinicians and staff about the organizational goals for the promotion of healthy lifestyles and their role in delivering effective team-based care.

- Develop a process for obtaining a height and weight, and then calculating a body mass index on patients.

- Develop scripting and brief counseling that promotes a healthy lifestyle and that can be utilized by all members of the health care team.

- Develop decision support processes in electronic medical records to support clinicians and staff in delivering specific components of the guideline.

- Develop a process to promote worksite wellness programs and the completion of health assessments, and to support behavioral changes intended to promote healthy lifestyles.

- Seek leadership support for the implementation of an internal worksite wellness program in order to "lead by example."

- Build a collaborative relationship between health care clinicians and employer leadership to support healthy lifestyles. Create communication processes to share initiatives such as wellness programs, health assessments, educational opportunities and other support programs.

- Place education materials that focus on healthy lifestyle throughout the facility to include but not be limited to posters, pamphlets, videos, available Web sites, support groups and promotion of health assessments by informing individuals about the benefits and subsequent assistance with adopting and maintaining healthy lifestyles.

- Build relationships between clinic/medical group leadership and community leaders in the area to learn about what kinds of wellness program(s) they provide or would like to provide for their citizens.

Return to Table of Contents

Implementation Tools and Resources

Criteria for Selecting Resources

The following tools and resources specific to the topic of the guideline were selected by the work group. Each item was reviewed thoroughly by at least one work group member. It is expected that users of these tools will establish the proper copyright prior to their use. The types of criteria the work group used are:

- The content supports the clinical and the implementation recommendations.

- Where possible, the content is supported by evidence-based research.

- The author, source and revision dates for the content are included where possible.

- The content is clear about potential biases and when appropriate conflicts of interests and/or disclaimers are noted where appropriate.

Return to Table of Contents

Implemenation Tools and Resources Table

Author/Organization	Title/Description	Audience	Web Sites/Order Information
Activity			
America on the Move	**America On the Move:** A national movement that encourages everyone to take steps towards a healthier way of life.	Patients and Families	http://www.americaonthemove.org
American College of Sports Medicine	**American College of Sports Medicine:** The Web site promotes and integrates scientific research, education and practical applications of sports medicine and exercise science to maintain and enhance physical performance, fitness, healthy and quality of life.	Health Care Professionals	http://www.acsm.org
American College of Sports Medicine	This Web site from the American College of Sports Medicine identifies the engagement of the individual, the clinician, community groups, and health and fitness professionals in improving the activity level of patients.	Patients and Families, Health Care Professionals	http://www.exerciseismedicine.org
Centers for Disease Control and Prevention	**Growing Stronger – Strength Training for Older Adults:** Describes the benefits and provides resources for motivation, preparation and sample exercises.	Health Care Professionals; Patients and Families	http://www.cdc.gov/physicalactivity/growingstronger/index.html
Department of Health and Human Services	**President's Council on Physical Fitness and Sports.** This is the health, physical activity, fitness and sports information Web site.	Health Care Professionals; Patients and Families	http://www.fitness.gov
International Physical Activity & the Environment Network (IPEN)	**International Physical Activity Questionnaires (IPAQ):** Comprises a set of 4 questionnaires. Long and short versions for use by either telephone or self-administered methods are available. The purpose of the questionnaires is to provide common instruments that can be used to obtain internationally comparable data on health-related physical activity.	Health Care Professionals	http://www.ipenproject.org Click on links for the questionnaire.
U.S. Department of Health and Human Services	**Steps to a Healthier MN:** The Web site provides current news and links to general information about Steps focus areas and the settings in which we work.	Health Care Professionals; Patients and Families	http://www.stepstoahealthiermn.org

Return to Table of Contents

Author/Organization	Title/Description	Audience	Web Sites/Order Information
General			
American Association of Diabetes	**Diabetes Prevention Program**	Health Care Professionals	http://www.bsc.gwu.edu/dpp/index.htmlvdoc
American Cancer Society	**American Cancer Society:** Can you prevent cancer or reduce your cancer risk? How can you detect cancer early? What are the risk factors for different types of cancer? Concerned about cancer because it runs in your family? Frequently exposed to tobacco or environmental hazards? Just want to stay healthy? You can find answers to these questions and more using the resources in this area.	Health Care Professionals; Patients and Families	http://www.cancer.org/docroot/PED/content/PED_10_13X_Guide_for_Quitting_Smoking.asp
American Heart Association	**American Heart Association:** A national voluntary health agency whose mission is "Building healthier lives, free of cardiovascular diseases and stroke."	Health Care Professionals; Patients and Families	http://www.americanheart.org
Centers for Disease Control and Prevention	**The Community Guide** Web site offers evidence-based recommendations for programs and policies to promote population health.	Health Care Professionals	http://www.thecommunityguide.org
Dartmouth Medical School	**How's Your Health:** The Web site has information that is designed and tested to help individuals take better care of themselves and help them get better health care. It also offers resources for health care clinicians.	Health Care Professionals; Patients and Families	http://www.howsyourhealth.com
Department of Community Health, Brown University	**Institute for Community Health Promotion:** The Web site promotes health improvement, especially in underserved populations, by conducting interdisciplinary research and education to empower individuals, clinicians, organizations and communities to practice and promote healthier behaviors and environments.	Health Care Professionals	http://www.brown.edu/Research/ICHP/
Healthy Minnesota Workplace Initiative	**Healthy Minnesota Workplace Initiatives:** The Web site promotes building employer support and capacity to implement successful worksite health promotion programs that increase healthy behavior, improve the overall health status of Minnesota workers and their families, and reduce health care costs across the state. A "Healthy Minnesota Workplace Toolkit" is available.	Health Care Professionals; Patients and Families	http://www.health.state.mn.us

Return to Table of Contents

Author/Organization	Title/Description	Audience	Web Sites/Order Information
General (Continued)			
Minnesota Medical Association and seven non-profit Minnesota health plans	**Minnesota Community Measurement:** MN Community Measurement is Minnesota's source for information on health care quality.	Health Care Professionals; Patients and Families	http://www.mnhealthcare.org
Motivational Interviewing	**Motivational Interviewing.** The Web site includes general information about the approach, as well as links, training resources, and information on reprints and recent research.	Health Care Professionals	http://www. motivationalinterviewing.org
National Cancer Institute and National Institutes of Health (NIH)	**National Cancer Institute:** The National Cancer Institute coordinates the National Cancer Program, which conducts and supports research, training, health information dissemination, and other programs with respect to the cause, diagnosis, prevention and treatment of cancer, rehabilitation from cancer, and the continuing care of cancer patients and the families of cancer patients.	Health Care Professionals	http://rtips.cancer.gov/rtips/index.do
National Institute of Diabetes and Digestive and Kidney Diseases, and the American Diabetes Association	**American Diabetes Association:** Research has shown that if you take action to manage your blood glucose when you have pre-diabetes, you can delay or prevent type 2 diabetes from ever developing.	Health Care Professionals; Patients and Families	http://www.diabetes.org
Office of Disease Prevention and Health Promotion, U.S. Department of Health and Human	**Healthy People 2020** challenges individuals, communities and professionals to take specific steps to ensure that good health, as well as long life, are enjoyed by all.	Health Care Professionals; Patients and Families	http:// www.healthypeople.gov
Robert Wood Johnson Foundation	The **Active Living By Design** Web site offers innovative approaches to increase physical activity through community design, public policies and communications strategies.	Health Care Professionals; Patients and Families	http://www.activelivingbydesign.org
State of South Dakota	**Healthy South Dakota:** This Web site was created to help South Dakotans become more physically active and eat healthier foods.	Health Care Professionals; Patients and Families	http://www.healthysd.gov/

Return to Table of Contents

Author/Organization	Title/Description	Audience	Web Sites/Order Information
General (Continued)			
U.S. National Library of Medicine	**U.S. National Library of Medicine and National Institute of Health.** The Web site offers visitors the opportunity to click on a wide range of health topics and then navigate further to find resources in their local communities to address those health issues. This Web site is part of a national project coordinated by the U.S. National Library of Medicine and National Institutes of Health.	Health Care Professionals; Patients and Families	http://www.nlm.nih.gov
Harmful/Hazardous Drinking			
Alcoholics Anonymous	**Alcoholics Anonymous:** The Web site offers information about this fellowship of men and women who share their experience, strength and hope with each other to stay sober and help other alcoholics to achieve sobriety.	Health Care Professionals; Patients and Families	http://www.aa.org
Nutrition			
American Association of Diabetes Educators	WAVE Assessment: The WAVE nutrition pocket guide.	Health Care Professionals	http://tde.sagepub.com/cgi/content/citation/27/3/352
American Heart Association	**Alliance for a Healthier Generation:** Offers a toolkit for middle and high school students who want to make changes to their school's snack and/or beverage choices but don't know where to begin.	Patients and Families	http://www.healthiergeneration.org/
Centers for Disease Control and Prevention	**Fruits and Veggies Matter:** Web site offers many things that will help you learn more about the National Fruit & Vegetable Program and help you encourage others to eat a colorful variety of fruits and vegetables.	Health Care Professionals; Patients and Families	http://www.fruitsandveggiesmatter.gov
Institute of Community Health Promotion, Brown University, Providence, RI	**REAP Assessment:** Rapid Eating Assessment for Patients	Patients and Families	http://med.brown.edu/nutrition/acrobat/REAP%206.pdf
Institute of Medicine of the National Academies	**Institute of Medicine:** Features links to current projects, events, and reports concerning food, nutrition and diet. Food safety, dietary supplements, adequate nutrition and guidelines for nutrient intake are among issues addressed.	Health Care Professionals	http://www.iom.edu

Return to Table of Contents

Author/Organization	Title/Description	Audience	Web Sites/Order Information
Nutrition (Continued)			
U.S. Dept. of Agriculture	**Daily Food Plan:** The Web site offers a personal eating plan with the foods and amounts that are right for you. **Supertracker:** Offers a detailed assessment of your food intake and physical activity level.	Health Care Professionals; Patients and Families	http://www.choosemyplate.gov/
University of Minnesota: School of Public Health	Guidelines for Offering Healthy Foods at Meetings, Seminars, and Catered Events	Health Care Professionals; Patients and Families	http://www.ahc.umn.edu/ahc_content/Colleges/SPH/sph_news/Nutrition.pdf
Tobacco			
Centers for Disease Control and Prevention	Resources for tobacco control program,	Health Care Professionals	http://www.cdc.gov/tobacco/state-andcommunity/
Minnesota Department of Health	Tobacco news and resources.	Health Care Professionals	http://www.health.state.mn.us/divs/hpcd/tpc/
Public Health Law Center at William Mitchell Law Center	Public health topics: tobacco control.	Health Care Professionals	http://www.publichealthlawcenter.org/topics/tobacco-control/smoke-free-tobacco-free-places/resources
Smoking Cessesation Leadership Center	The Web site offers tools and resources to implement cessation programs.	Health Care Professionals; Patients and Families	http://smokingcessationleadership.ucsf.edu/index.htm

Return to Table of Contents

The subdivisions of this section are:

- References
- Appendices

References

Links are provided for those new references added to this edition (author name is highlighted in blue).

Aldana S, Barlow M, Smith R, et al. A worksite diabetes prevention program: two-year impact on employee health. *AAOHN J* 2006;54:389-95. (Low Quality Evidence)

Aldana SG, Greenlaw RL, Diehl HA, et al. Effects of an intensive diet and physical activity modification program on the health risks of adults. *J Am Diet Assoc* 2005a;105:371-81. (High Quality Evidence)

Aldana SG, Greenlaw RL, Diehl HA, et al. The effects of a worksite chronic disease prevention program. *J Occup Environ Med* 2005b;47:558-64. (High Quality Evidence)

Ammerman AS, Lindquist CH, Lohr KN, Hersey J. The efficacy of behavioral interventions to modify dietary fat and fruit and vegetable intake: a review of the evidence. *Prev Med* 2002;35:25-41. (Systematic Review)

Armitage CJ. Evidence that implementation intentions reduce dietary fat intake: a randomized trial. *Health Psychol* 2004;23:319-23. (High Quality Evidence)

Babor TF, Higgins-Biddle JC. Brief intervention for hazardous and harmful drinking: a manual for use in primary care. 2001. (Guideline)

Babor TF, McRee BG, Kassebaum PA, et al. Screening, brief intervention, and referral to treatment (SBIRT): toward a public health approach to the management of substance abuse. *Subst Abus* 2007;28:7-30. (Low Quality Evidence)

Bachman J, Pincus HA, Houtsinger JK, Unützer J. Funding mechanisms for depression care management: opportunities and challenges. *Gen Hosp Psychiatry* 2006;28:278-88. (Low Quality Evidence)

Bertholet N, Daeppen JB, Wietlisbach V, et al. Reduction by alcohol consumption by brief alcohol intervention in primary care: systematic review and meta-analysis. *Arch Intern Med* 2005;165:986-95. (Meta-analysis)

Bodenheimer T, Wagner EH, Grumbach K. Improving primary care for patients with chronic illness. *JAMA* 2002;288:1775-79. (Low Quality Evidence)

Boutelle KN, Kirschenbaum DS. Further support for consistent self-monitoring as a vital component of successful weight control. *Obes Res* 1998;6:219-24. (Low Quality Evidence)

Bravata DM, Smith-Spangler C, Sundaram V, et al. Using pedometers to increase physical activity and improve health: a systematic review. *JAMA* 2007;298:2296-2304. (Systematic Review)

Brownell KD, Farley T, Willett WC, et al. The public health and economic benefits of taxing sugar-sweetened beverages. *N Engl J Med* 2009;361:1599-1605. (Low Quality Evidence)

Brownson RC, Haire-Joshu D, Luke DA. Shaping the context of health: a review of environmental and policy approaches in the prevention of chronic diseases. *Ann Rev Public Health* 2006;27:341-70. (Low Quality Evidence)

Brunwasser SM, Gillham JE, Kim ES. A meta-analytic review of the Penn resiliency program's effect on depressive symptoms. *J Consult Clin Psychol* 2009;77:1042-54. (Systematic Review)

Butryn ML, Phelan S, Hill JO, Wing RR. Consistent self-monitoring of weight: a key component of successful weight loss maintenance. *Obesity* 2007;15:3091-96. (Low Quality Evidence)

Chen L, Appel LJ, Loria C, et al. Reduction in consumption of sugar-sweetened beverages is associated with weight loss: the PREMIER trial. *Am J Clin Nutr* 2009;89:1299-306. (Low Quality Evidence)

Chen L, Caballero B, Mitchell DC, et al. Reducing consumption of sugar-sweetened beverages is associated with reduced blood pressure: a prospective study among United States adults. *Circulation* 2010;121:2398-2406. (Low Quality Evidence)

Cornum R, Matthews MD, Seligman ME, et al. Comprehensive soldier fitness: building resilience in a challenging institutional context. *Am Psychol* 2011;66:4-9. (Low Quality Evidence)

Coulter A, Ellins J. Effectiveness of strategies for informing, educating, and involving patients. BMJ 2007;335:24-27. (Low Quality Evidence)

Cuijpers P, van Straten A, Smit F, et al. Preventing the onset of depressive disorders: a meta-analytic review of psychological interventions. *Am J Psychiatry* 2008;165:1272-80. (Meta-analysis)

Daviglus ML, Stamler J, Pirzada A, et al. Favorable cardiovascular risk profile in young women and long-term risk of cardiovascular and all-cause mortality. *JAMA* 2004;292:1588-92. (Low Quality Evidence)

DeBusk RF, Stenestrand U, Sheehan M, Haskell WL. Training effects of long versus short bouts of exercise in healthy subjects. *Am J Cardiol* 1990;65:1010-13. (High Quality Evidence)

Dunn C, Deroo L, Rivara F. The use of brief interventions adapted from motivational interviewing across behavioral domains: a systematic review. *Addiction* 2001;96:1725-42. (Systematic Review)

Eakin EG, Lawler SP, Vandelanotte C, Owen N. Telephone interventions for physical activity and dietary behavior change: a systematic review. *Am J Prev Med* 2007;32:419-34. (Systematic Review)

Eden KB, Orleans CT, Mulrow CD, et al. Does counseling by clinicians improve physical activity? A summary of the evidence for the U.S. preventive services task force. *Ann Intern Med* 2002;137:208-15. (Low Quality Evidence)

Edye BV, Mandryk JA, Frommer MS, et al. Evaluation of a worksite programme for the modification of cardiovascular risk factors. *Med J Aust* 1989;150:544-81. (High Quality Evidence)

Engbers LH, van Poppel MNM, Paw MCA, van Mechelen W. The effects of a controlled worksite environmental intervention on determinants of dietary behavior and self-reported fruit, vegetable and fat intake. *BMC Public Health* 2006;6:253. (Low Quality Evidence)

Engbers LH, van Poppel MNM, van Mechelen W. Modest effects of a controlled worksite environmental intervention on cardiovascular risk in office workers. *Prev Med* 2007; 44:356-62. (Low Quality Evidence)

Eyre H, Kahn R, Robertson RM, ACS/ADA/AHA Collaborative Writing Committee, The. Preventing cancer, cardiovascular disease, and diabetes: a common agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association. *CA Cancer J Clin* 2004;54:190-207. (Low Quality Evidence)

Fiore MC, Jaén CR, Baker TB, et al. Treating tobacco use and dependence: 2008 update. Available at:http://www.ncbi.nim.nih.gov/books/bv.fcgi?rid=hstat2.chapter.28163. Accessed March 10, 2009. (Guideline)

Fledderus M, Bohlmeijer ET, Smit F, Westerhof GJ. Mental health promotion is a new goal in public mental health care: a randomized controlled trial of an intervention enhancing psychological flexibility. *Am J Public Health* 2010;100:2372-78. (High Quality Evidence)

Fredrickson BL. The role of positive emotions in positive psychology: the broaden-and-build theory of positive emotions. *Am Psychol* 2001;56:218-26. (Low Quality Evidence)

Fredrickson BL, Cohn MA, Coffey KA, et al. Open hearts build lives: positive emotions, induced through loving-kindness meditation, build consequential personal resources. *J Pers Soc Psychol* 2008;95:1045-62. (Low Quality Evidence)

French SA, Stables G. Environmental interventions to promote vegetable and fruit consumption among youth in school settings. *Prev Med* 2003;37:593-610. (Systematic Review)

Fries E, Edinboro P, McClish D, et al. Randomized trial of a low-intensity dietary intervention in rural residents: the rural clinician cancer prevention project. *Am J Prev Med* 2005;28:162-68. (High Quality Evidence)

Gable SL, Haidt J. What (and why) is positive psychology? *Gen Psychol* 2005;9:103-10. (Low Quality Evidence)

Gable SL, Reis HT, Impett EA, Asher ER. What do you do when things go right? The intrapersonal and interpersonal benefits of sharing positive events. *J Pers Soc Psychol* 2004;87:228-45. (Low Quality Evidence)

Gans KM, Ross E, Barner CW, et al. REAP and WAVE: new tools to rapidly assess/discuss nutrition with patients. *J Nutr* 2003;133:556S-62S. (Low Quality Evidence)

Glanz K, Yaroch AL. Strategies for increasing fruit and vegetable intake in grocery stores and communities: policy, pricing, and environmental change. *Prev Med* 2004;39:S75-S80. (Low Quality Evidence)

Goetzel RZ, Anderson DR, Whitmer RW, et al. The relationship between modifiable health risks and health care expenditures: an analysis of the multi-employer HERO health risk and cost database. *J Occup & Environ Med* 1998;40:843-54. (Low Quality Evidence)

Goetzel RZ, Ozminkowski RJ, Bruno JA, et al. The long-term impact of Johnson & Johnson's health & wellness program on employee health risks. *J Occup Environ Med* 2002;44:417-24. (Low Quality Evidence)

Gold D, Grossmeier J. Using an HRA as an evaluation tool. *Wellness Management* 2005;20:1-5. (Low Quality Evidence)

Gomel M, Oldenburg B, Simpson JM, Owen N. Work-site cardiovascular risk reduction: a randomized trial of health risk assessment, education, counseling, and incentives. *Am J Public Health* 1993;83:1231-38. (High Quality Evidence)

Grossman P, Niemann L, Schmidt S, Walach H. Mindfulness-based stress reduction and health benefits: a meta-analysis. *J Psychosom Res* 2004;57:35-43. (Systematic Review)

Hardman AE. Accumulation of physical activity for health gains: what is the evidence? *Br J Sports Med* 1999;33:87-92. (Low Quality Evidence)

Harland J, White M, Drinkwater C, et al. The Newcastle exercise project: a randomised controlled trial of methods to promote physical activity in primary care. *BMJ* 1999:319:828-32. (High Quality Evidence)

Haskell WL, Lee IM, Pate RR, et al. Physical activity and public health: updated recommendation for adults from the American college of sports medicine and the American heart association. *Med Sci Exerc* 2007;39:1423-34. (Guideline)

Hibbard JH, Mahoney ER, Stock R, Tusler M. Do increases in patient activation result in improved self-management behaviors? *Health Serv Res* 2007;42:1443-63. (High Quality Evidence)

Jansson-Fröjmark M, Linton SJ. The role of sleep-related beliefs to improvement in early cognitive behavioral therapy for insomnia. *Cogn Behav Ther* 2008;37:5-13. (Moderate Quality Evidence)

Jenkins DJA, Kendall CWC, Faulkner DA, et al. Assessment of the longer-term effects of a dietary portfolio of cholesterol-lowering foods in hypercholesterolemia. *Am J Clin Nutr* 2006;83:582-91. (Low Quality Evidence)

Jordan CO, Slater M, Kottke TE. Preventing chronic disease risk factors: rationale and feasibility. *Medicina* 2008;44:745-49. (Low Quality Evidence)

Kahn EB, Ramsey LT, Brownson RC, et al. The effectiveness of interventions to increase physical activity: a systematic review. *Am J Prev Med* 2002;22:73-107. (Systematic Review)

Kant AK, Schatzkin A, Graubard BI, Schairer C. A prospective study of diet quality and mortality in women. *JAMA* 2000;283:2109-15. (Low Quality Evidence)

King DE, Mainous III AG, Geesey ME. Turning back the clock: adopting a healthy lifestyle in middle age. *Am J Med* 2007;120:598-603. (Low Quality Evidence)

Knowlden AP, Sharma M, Bernard AL. Sleep hygiene of a sample of undergraduate students at a midwestern university. *Am J Health Studies* 2012;27:23-31. (Low Quality Evidence)

Knowler WC, Barrett-Connor E, Fowler SE, et al. Reduction in the incidence of type 2 diabetes with lifestyle intervention of metformin. *N Engl J Med* 2002;346:393-403. (High Quality Evidence)

Kottke TE, Faith DA, Jordan CO, et al. The comparative effectiveness of heart disease prevention and treatment strategies. *Am J Prev Med* 2009;36:82-88. (Low Quality Evidence)

Kreuter MW, Strecher VJ. Do tailored behavior change measures enhance the effectiveness of health risk appraisal? Results from a randomized trial. *Theory & Prac* 1996;11:97-105. (High Quality Evidence)

Krueger PM, Friedman EM. Sleep duration in the United States: a cross-sectional population-based study. *Am J Epidemoil* 2009;169:1052-63. (Low Quality Evidence)

Kypri K, Hallett J, Howat P, et al. Randomized controlled trial of proactive web-based alcohol screening and brief intervention for university students. *Arch Intern Med* 2009;169:1508-14. (High Quality Evidence)

Kypri K, McAnally HM. Randomized controlled trial of web-based primary care intervention for multiple health risk behaviors. *Prev Med* 2005;41:761-66. (High Quality Evidence)

Lauer MS. Primary prevention of atherosclerotic cardiovascular disease: the high public burden of low individual risk. *JAMA* 2007;297:1376-78. (Low Quality Evidence)

Lavizzo-Mourey R. Childhood obesity: what it means for clinicians. *JAMA* 2007;298:920-22. (Low Quality Evidence)

Lieffers JR, Hanning RM. Dietary assessment and self-monitoring with nutrition applications for mobile devices. *Can J Diet Pract Res* 2012;73:e253-60. (Systematic Review)

Lindström J, Louheranta A, Mannelin M, et al. The Finnish diabetes prevention study (DPS): lifestyle intervention and 3-year results on diet and physical activity. *Diabetes Care* 2003;26:3230-36. (High Quality Evidence)

Lo JC, Groeger JA, Santhi N, et al. Effects of partial and acute total sleep deprivation on performance across cognitive domains, individuals and circadian phase. *PLoS One* 2012;7:e45987. (Low Quality Evidence)

Logue E, Sutton K, Jarjoura D, et al. Transtheoretical model-chronic disease care for obesity in primary care: a randomized trial. *Obes Res* 2005;13:917-27. (High Quality Evidence)

Lorig KR, Holman HR. Self-management education: history, definition, outcomes, and mechanisms. *Ann Behav Med* 2003;26:1-7. (Low Quality Evidence)

Lorig KR, Ritter PL, Laurent DD, Plant K. Internet-based chronic disease self-management: a randomized trial. *Med Care* 2006;44:964-71. (High Quality Evidence)

Lorig KR, Sobel DS, Stewart AL, et al. Evidence suggesting that a chronic disease self-management program can improve health status while reducing hospitalization: a randomized trial. *Med Care* 1999;37:5-14. (High Quality Evidence)

Machi MS, Staum M, Callaway CW, et al. The relationship between shift work, sleep, and cognition in career emergency clinicians. *Acad Emerg Med* 2012;19:85-91. (Low Quality Evidence)

Maciosek MV, Coffield AB, Flottemesch TJ, et al. Greater use of preventive services in the U.S. health care could save lives at little or no cost. *Health Affairs* 2010;29:1656-60. (Systematic Review)

Maes S, Verhoeven C, Kittel F, Scholten H. Effects of a Dutch work-site wellness-health program: the Brabantia project. *Am J Public Health* 1998;88:1037-41. (Low Quality Evidence)

Malik VS, Popkin BM, Bray GA, et al. Sugar-sweetened beverages and risk of metabolic syndrome and type 2 diabetes: a meta-analysis. *Diabetes Care* 2010;33:2477-83. (Meta-analysis)

Malik VS, Schulze MB, Hu FB. Intake of sugar-sweetened beverages and weight gain: a systematic review. *Am J Clin Nutr* 2006;84:274-88. (Systematic Review)

McBride P, Underbakke G, Plane MB, et al. Improving prevention systems in primary care practices: the Health Education and Research Trial (HEART). *J Fam Pract* 2000;49:126-29. (Low Quality Evidence)

McCarty CA, Scheuer D. Lessons learned from employee fitness programs at the Marshfield clinic. *WMJ* 2005;104:61-65. (Low Quality Evidence)

Miller MP. Best questions and tools for quickly assessing your patient's dietary health: towards evidence-based determination of nutritional counseling need in the general medical interview. *Nutrition Noteworthy* 2005;7:1-14. (Low Quality Evidence)

Minnesota Adult Tobacco Survey. Tobacco use in Minnesota: 2010 update. February 2011. (Class Not Assignable)

Mokdad AH, Marks JS, Stroup DF, Gerberding JL. Actual causes of death in the United States, 2000. *JAMA* 2004;291:1238-45. (Systematic Review)

Mozaffarian D, Kumanyika SK, Lemaitre RN, et al. Cereal, fruit, and vegetable fiber intake and the risk of cardiovascular disease in elderly individuals. *JAMA* 2003;289:1659-66. (Low Quality Evidence)

National Heart, Lung and Blood Institute. Your guide to lowering cholesterol with therapeutic lifestyle changes (TLC). NIH publication 06-5235. December 2005. (Low Quality Evidence)

Nelson ME, Fiatarone MA, Morganti CM, et al. Effects of high-intensity strength training on multiple risk factors for osteoporotic fractures: a randomized controlled trial. *JAMA* 1994;272;1909-14. (Moderate Quality Evidence)

Nothwehr F, Snetselaar L, Yang J, Wu H. Stage of change for healthful eating and use of behavioral strategies. *J Am Diet Assoc* 2006;106:1035-41. (Low Quality Evidence)

Obarzanek E, Sacks FM, Vollmer WM, et al. Effects on blood lipids of a blood pressure-lowering diet: the dietary approaches to stop hypertension (DASH) trial. *Am J Clin Nutr* 2001;74:80-89. (High Quality Evidence)

O'Connor AM, Stacey D, Barry MJ, et al. Do patient decision aids meet effectiveness criteria of the international patient decision aid standards collaboration? A systematic review and meta-analysis. *Med Decis Making* 2007;27:554-74. (Systematic Review)

Ozminkowski RJ, Goetzel RZ, Smith MW, et al. The impact of the citibank, na, health management program on changes in employee health risks over time. *J Occup Environ Med* 2000;42:502-11. (Low Quality Evidence)

Ozminkowski RJ, Ling D, Goetzel RZ, et al. Long-term impact of Johnson & Johnson's health and wellness program on health care utilization and expenditures. *J Occup Environ Med* 2002;44:21-29. (Low Quality Evidence)

Panagiotakos DB, Pitsavos C, Skoumas Y, Stefanadis C. The association between food patterns and the metabolic syndrome using principal components analysis: the ATTICA Study. *J Am Diet Assoc* 2007;107:979-87. (Low Quality Evidence)

Park S, Cho MJ, Chang SM, et al. Relationships of sleep duration with sociodemographic and health-related factors, psychiatric disorders and sleep disturbances in a community sample of Korean adults. *J Sleep Res* 2010;19:567-77. (Low Quality Evidence)

Pereira MA, O'Reilly E, Augustsson K, et al. Dietary fiber and risk of coronary heart disease: a pooled analysis of cohort studies. *Arch Intern Med* 2004;164:370-76. (Low Quality Evidence)

Pignone MP, Ammerman A, Fernandez L, et al.   Counseling to promote a healthy diet in adults: a summary of the evidence for the U.S. preventive services task force. *Am J Prev Med* 2003;24:75-92. (Systematic Review)

Pollak KI, Alexander SC, Coffman CJ, et al. Physician communication techniques and weight loss in adults: project CHAT. *Am J Prev Med* 2010;39:321-28. (Low Quality Evidence)

Pomerleau J, Lock K, Knai C, McKee M. Interventions designed to increase adult fruit and vegetable intake can be effective: a systematic review of the literature. *J Nutr* 2005;135:2486-95. (Systematic Review)

Prochaska JO, Velicer WF, Redding C, et al. Stage-based expert systems to guide a population of primary care patients to quit smoking, eat healthier, prevent skin cancer, and receive regular mammograms. *Prev Med* 2005;41:406-16. (High Quality Evidence)

Pronk NP, Peek CJ, Goldstein MG. Addressing multiple behavior risk factors in primary care: a synthesis of current knowledge and stakeholder dialogue sessions. *Am J Prev Med* 2004;27:4-17. (Low Quality Evidence)

Proper KI, Koning M, van der Beek AJ, et al. The effectiveness of worksite physical activity programs on physical activity, physical fitness, and health. *Clin J Sport Med* 2003;13:106-17. (Systematic Review)

Reivich KJ, Seligman MEP, McBride S. Master resilience training in the U.S. army.   *Amer Psychologist* 2011;66:25-34. (Low Quality Evidence)

Resnicow K, DiIorio C, Soet JE, et al. Motivational interviewing in health promotion: it sounds like something is changing. *Health Psych* 2002;21:444-51. (Low Quality Evidence)

Resnicow K, McCarty F, Baranowski T. Are precontemplators less likely to change their dietary behavior? A prospective analysis. *Health Educ Res* 2003;18:693-705. (Low Quality Evidence)

Revere D, Dunbar PJ. Review of computer-generated outpatient health behavior interventions: clinical encounters "in absentia." *J Am Med Inform Assoc* 2001;8:62-79. (Systematic Review)

Richmond RL, Kehoe L, Hailstone S, et al. Quantitative and qualitative evaluations of brief interventions to change excessive drinking, smoking and stress in the police force. *Addiction* 1999;94:1509-21. (Low Quality Evidence)

Riemsma RP, Pattenden J, Bridle C, et al. Systematic review of the effectiveness of stage based interventions to promote smoking cessation. *BMJ* 2003;326:1175. (Systematic Review)

Riper H, van Straten A, Keuken M, et al. Curbing problem drinking with personalized-feedback interventions: a meta-analysis. *Am J Prev Med* 2009;36:247-55. (Meta-analysis)

Rose G. Sick individuals and sick populations. *Intl J of Epidemiology* 1985;14:32-38. (Low Quality Evidence)

Rothemich SF, Woolf SH, Johnson RE, et al. Effect on cessation counseling of documenting smoking status as a routine vital sign: an ACORN study. *Ann Fam Med* 2008;6:60-68. (High Quality Evidence)

Rubak S, Sandboek A, Lauritzen T, Christensen B. Motivational interviewing: a systematic review and meta-analysis. *Brit J Gen Pract* 2005;55:513:305-12. (Meta-analysis)

Sallis JF, Cervero RB, Ascher W, et al. An ecological approach to creating active living communities. *Annu Rev Public Health* 2006;27:297-322. (Low Quality Evidence)

Saunders JB, Aasland OG, Babor TF, et al. Development of the alcohol use disorders identification test (AUDIT): WHO collaborative project on early detection of persons with harmful alcohol consumption – II. *Addiction* 1993;88:791-804. (Low Quality Evidence)

Seligman MEP, Steen TA, Park N, Peterson C. Positive psychology progress: empirical validation of interventions. *Amer Psychologist* 2005;60:410-21. (High Quality Evidence)

Seymour JD, Yaroch AL, Serdula M, et al. Impact of nutrition environmental interventions on point-of-purchase behavior in adults: a review. *Prev Med* 2004;39:S108-S36. (Systematic Review)

Shapiro SL, Oman D, Thoresen CE, et al. Cultivating mindfulness: effects on well-being. *J Clin Psychol* 2008;64:840-62. (Moderate Quality Evidence)

Sleiman M, Gundel LA, Pankow JF, et al. Formation of carcinogens indoors by surface-mediated reactions of nicotine with nitrous acid, leading to potential *thirdhand* smoke hazards. *Proc Natl Acad Sci USA* 2010;107:6576-81. (Low Quality Evidence)

Solberg LI, Maciosek MV, Edwards NM. Primary care intervention to reduce alcohol misuse: ranking its health impact and cost effectiveness. *Am J Prev Med* 2008;34:143-52. (Systematic Review)

Sorensen G, Stoddard A, Hunt MK, et al. The effects of a health promotion – health protection intervention on behavior change: the WellWorks study. *Am J Public Health* 1998;88:1685-90. (High Quality Evidence)

Sorensen G, Thompson B, Glanz K, et al. Work site-based cancer prevention: primary results from the Working Well trial. *Am J Public Health* 1996;86:939-47. (High Quality Evidence)

Stevens VJ, Glasgow RE, Toobert DJ, et al. One-year results from a brief, computer assisted intervention to decrease consumption of fat and increase consumption of fruit and vegetables. *Prev Med* 2003;36:594-600. (Low Quality Evidence)

Substance Abuse and Mental Health Services Administration's Center for Substance Abuse Prevention (SAMHSA/CSAP), The. Preventing problems related to alcohol availability: environmental approaches. DHHS Publication No. (SMA)99-3298. Accessed October 10, 2007. (Low Quality Evidence)

Task Force on Community Preventive Services. Preventive services: what works to promote health? Oxford University Press. 2005a. (Low Quality Evidence)

Task Force on Community Preventive Services. The Guide to Community Preventive Services. 2005b. (Guideline)

Tessaro I, Rye S, Parker L, et al. Effectiveness of a nutrition intervention with rural low-income women. *Am J Health Behav* 2007;31:35-43. (High Quality Evidence)

Thompson CL. Association of sleep duration and breast cancer oncotypeDX recurrence score. *Breast Cancer Res Treat* 2012;134:1291-95. (Low Quality Evidence)

Thorsen AV, Lassen AD, Tetens I, et al. Long-term sustainability of a worksite canteen intervention of serving more fruit and vegetables. *Public Health Nutr* 2010;13:1647-52. (Low Quality Evidence)

Tinker LF, Rosal MC, Young AF, et al. Predictors of dietary change and maintenance in the women's health initiative dietary modification trial. *J Am Diet Assoc* 2007;107:1155-65. (Low Quality Evidence)

Tuomilehto J, Lindström J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. *N Engl J Med* 2001;344:1343-50. (High Quality Evidence)

U.S. Department of Health and Human Services. 2008 physical activity guidelines for Americans. 2008. (Guideline)

U.S. Department of Health and Human Services. DASH eating plan. Available at: http://www.nhlbi.nih.gov/health/public/heart/hbp/dash/how_plan.html. 2006. (Low Quality Evidence)

U.S. Department of Health and Human Services. Dietary guidelines for Americans 2010. Available at: http://www.dietaryguidelines.gov. 2010. (Guideline)

U.S. Department of Health and Human Services. Helping patients who drink too much: a clinician's guide. 2007. (Guideline)

U.S. Department of Health and Human Services. *In* Treating Tobacco Use and Dependence. June 2000. (Low Quality Evidence)

U.S. Preventive Services Task Force. Behavioral counseling in primary care to promote a healthy diet. *Am J Prev Med* 2003a;24:93-100. (Guideline)

U.S. Preventive Services Task Force. Behavioral counseling in primary care to promote physical activity: recommendation and rationale. *AJN* 2003b;103:101-07. (Guideline)

van Sluijs EMF, van Poppel MNM, van Mechelen W. Stage-based lifestyle interventions in primary care: are they effective? *Am J Prev Med* 2004;26:330-43. (Low Quality Evidence)

Vanwormer JJ, Boucher JL, Pronk NP. Telephone-based counseling improves dietary fat, fruit, and vegetable consumption: a best-evidence synthesis. *J Am Diet Assoc* 2006;106:1434-44. (Systematic Review)

Vartanian LR, Schwartz MB, Brownell KD. Effects of soft drink consumption on nutrition and health: a systematic review and meta-analysis. *Am J Public Health* 2007;97:667-75. (Meta-analysis)

Vasse R, Nijhuis F, Kok G. Effectiveness of a personalized health profile for blue-collar workers. *J Occup Environ Med* 1998;40:69-75. (Low Quality Evidence)

Verheijden MW, Van der Veen JE, Bakx JC, et al. Stage-matched nutrition guidance: stages of change and fat consumption in Dutch patients at elevated cardiovascular risk. *J Nutr Educ Behav* 2004;36:228-37. (Low Quality Evidence)

Wang CJ, Fetzer SJ, Yang YC, Wang WL. The efficacy of using self-monitoring diaries in a weight loss program for chronically ill obese adults in a rural area. *J Nurs Res* 2012;20:181-88. (Moderate Quality Evidence)

Wannamethee SG, Shaper AG, Walker M. Weight change, weight fluctuation, and mortality. *Arch Intern Med* 2002;162:2575-80. (Low Quality Evidence)

Wharam JF, Daniels N. Toward evidence-based policy making and standarized assessment of health policy reform. *JAMA* 2007;298:676-79. (Low Quality Evidence)

Whitlock EP, Orleans CT, Pender N, Allan J. Evaluating primary care behavioral counseling interventions: an evidence-based approach. *J Prev Med* 2002;22:267-84. (Low Quality Evidence)

Williams CH. The built environment and physical activity: what is the relationship? Research Synthesis Report No. 11. April 2007. (Systematic Review)

Woolf SH, Krist AH, Johnson RE, et al. A practice-sponsored web site to help patients pursue healthy behaviors: an ACORN study. *Ann Fam Med* 2006;4:148-52. (Low Quality Evidence)

Woolf SH, Krist AH, Rothemich SF. Joining hands: partnerships between clinicians and the community in the delivery of preventive care. 2007. (Low Quality Evidence)

Return to Table of Contents

Appendix A – Health Assessments

Benefits/Role or Function of Health Assessments

Health assessments are standardized surveys that can measure changes in attitudes, skills and behaviors, as well as health status and impacts on health care utilization and readiness to change. Health assessments were first used in the United States in the 1950s to help family doctors educate patients about risks of premature death. Today they not only predict mortality, but also focus heavily on morbidity and its impact on function and quality of life.

A health assessment can be educational. If it offers immediate feedback, a health assessment will heighten awareness of one's risk factors, as well as give appropriate advice on decreasing those factors. But this heightened awareness alone is usually unsuccessful in changing behaviors *(Coulter, 2007 [Low Quality Evidence])*. If health assessments results are shared and discussed with a health care clinician, they can open communication for interventions that can improve identified risks.

There is strong evidence (randomized, controlled trial) that just taking a health assessment will not show an improvement in modifiable risk factors if it is merely repeated at a later date and no counseling or interventions take place. There is some evidence that health assessments combined with counseling sessions can be an effective health promotion tool to motivate behavioral changes. Delaying or preventing the onset of chronic disease by identifying risk factors and developing interventions has been proven to be effective in many studies *(Aldana, 2005a [High Quality Evidence]; Sorenson, 1998 [High Quality Evidence]; Sorenson, 1996 [High Quality Evidence]; Edye, 1989 [High Quality Evidence])*.

There is some evidence that taking an health assessment is effective in changing attitudes of people who are already in a "precontemplative" state of change *(Coulter, 2007 [Low Quality Evidence]; Vasse, 1998 [Low Quality Evidence]; Kreuter, 1996 [High Quality Evidence])*. To modify behavior, the belief structure (attitude, social norm, perceived behavioral control, intention) must be changed. Regular and repeated interventions and messages are suggested for success.

There is no evidence that taking a health assessment improves motivation.

Patient health assessments can assist clinicians in evaluating their practice. Some existing health risk assessments have the ability to be linked directly with their clinician's practice.

Health assessments can be:

- educational (however, they do not change behavior when used alone);
- used as a communication tool with your primary clinician;
- used by clinicians to evaluate their practices;
- used by health plans to develop and implement strategies to improve the health of their members,
- used by employers in the worksite to identify and intervene with modifiable risk factors in their employees;
- used to develop and implement strategies to target the low-risk employee/member to maintain his or her current health status as he or she ages;
- used with special populations, like geriatrics, to assess present status and maintain functionality; and
- a valuable tool when used in the context of a plan to improve population health.

(Goetzel, 2002 [Low Quality Evidence]; Richmond, 1999 [Low Quality Evidence]; Maes, 1998 [Low Quality Evidence]; Gomel, 1993 [High Quality Evidence])

Return to Table of Contents

Standardization/Content Validation of Health Assessment

Utilization of a reliable tool can confirm that variation over time or between groups is not from instrument inconsistencies, but is due in fact, to true differences *(Gold, 2007 [Low Quality Evidence])*. Health assessments should be able to:

- stratify the population into those with more and those with fewer risk factors,

- give feedback and recommendations on the same day that they are completed,

- assure confidentiality (utilizing a third party may be helpful),

- incorporate both qualitative and quantitative questions,

- identify the stage of change through the questions, and

- provide culturally sensitive health risk assessments.

Other desirable health assessments attributes include user friendliness, research based, price affordability, appropriateness for companies/practices of all sizes, availability online as well as in hard copy format, and ability to be customized by the employer.

There are health assessments available that are age-specific for teens, and geriatrics – as well as gender – and risk-specific (cardiovascular disease).

Return to Table of Contents

Lifestyle Risk Screening Tool

Category	Score		0	1	2	3	4	For Office Use Only
Physical Activity	1. **How many days a week** do you exercise enough to make your heart beat faster?		5 or more	3-4	1-2	0	X	Physical Activity Score
Physical Activity	2. **How many minutes a day** do you exercise enough to make your heart beat faster?		30 or more	20 – 29	11 – 19	1 – 10	0	
Nutrition	3. **How many times a day** do you eat sweets, fatty foods, or sugared drinks?		0 – 1	2	3	4	5 or more	Nutrition Score
Nutrition	4. **How many servings** of fruit and vegetables do you eat a day?		7 or more	5-6	3-4	1-2	0	
Tobacco Use	5. How often are you around others who are smoking?		Never/no exposure	Rarely	Monthly	Weekly	Daily	Tobacco Use Score
Tobacco Use	6. How often do you use tobacco products of any kind?		Never	Rarely	Monthly	Weekly	Daily	
Alcohol	7. How many alcoholic drinks do you have in one week?	Male	0 – 14	15 – 28	29 – 42	43 - 56	57 or more	Alcohol Score
Alcohol		Female	0 - 7	8 – 14	15 – 21	22 -29	30 or more	
Alcohol	8. How many alcoholic drinks do you have in one day?	Male	0 – 2	3	4	5	6 or more	
Alcohol		Female	0 – 1	2	3	4	5 or more	
	How would you rate your physical health compared to other people your age?		Excellent	Very Good	Good	Fair	Poor	Total Score

Readiness Questions:

	1	2	3	4	5
On a scale of 1-5, how much support would you receive from your family and friends if they knew you were trying to increase your physical activity and eat healthier?	No Support				Very much Support
On a scale of 1-5, how likely are you to consider small lifestyle changes to increase physical activity, eat healthier, and improve your health?	Not Ready to make a change			Ready to make a change	
On a scale of 1-5, how much support would you like to receive from your physician should you choose to increase your physical activity and eat healthier?	No Support				Very much Support

MINNESOTA'S VISION
A Better State of Health
Statewide Health Improvement Program | SHIP

Medical Staff Key

For Office Use Only

Patient's Weight: _____

Patient's Height: _____

Patient's BMI: _____

Lifestyle Risk Assessment Tool Key for Providers

	Score	0	1	2	3	4	For Office Use Only
Physical Activity	1. **How many days a week** do you exercise enough to make your heart beat faster?	5 or more	3-4	1-2	0	X	Physical Activity Score
	2. **How many minutes a day** do you exercise enough to make your heart beat faster?	30 or more	20 – 29	11 – 19	1 – 10	0	
Nutrition	3. **How many times a day** do you eat sweets, fatty foods, or sugared drinks?	0 – 1	2	3	4	5 or more	Nutrition Score
	4. **How many servings** of fruit and vegetables do you eat a day?	7 or more	5-6	3-4	1-2	0	
Tobacco Use	5. How often are you around others who are smoking?	Never/no exposure	Rarely	Monthly	Weekly	Daily	Tobacco Use Score
	6. How often do you use tobacco products of any kind?	Never	Rarely	Monthly	Weekly	Daily	
Alcohol	7. How many alcoholic drinks do you have in one week? Male	0 – 14	15 – 28	29 – 42	43 -56	57 or more	Alcohol Score
	Female	0-7	8 – 14	15 – 21	22 – 29	30 or more	
	8. How many alcoholic drinks do you have in one day? Male	0 – 2	3	4	5	6 or more	
	Female	0 – 1	2	3	4	5 or more	
	How would you rate your physical health compared to other people your age?	Excellent	Very Good	Good	Fair	Poor	Total Score

Suggested Next Steps	Congratulate on Healthful Behaviors	• Provide brief counseling and support • Identify and suggest community and/or clinical resources • Provide patient education materials

Blue cell = meeting the ICSI guidelines for lifestyle factor

Appendix B – Intensity Levels of Physical Activity

Moderate-intensity physical activity means working hard enough to raise your heart rate and break a sweat, yet still be able to carry on a conversation (examples: brisk walking, bicycling 5 to 9 mph, swimming).

Intensity: four ways to measure

- Heart rate – maximum heart rate = 220 - age

  Get to 75% of maximum (i.e., 50 year old get to 128 beats per minute)

- Exertion scale – (Borg Rating of Perceived Exertion)

  Get to 13 (Moderately Hard)

- Calories – women 4-6 kilo calorie/minutes (200 minutes/week=1,000 kilo calorie)

  Men 9-11 kilo calorie/minutes (200 minutes/week=2,000 kilo calorie)

- Breathing – should gasp if talking

Perceived Exertion (Borg Rating of Perceived Exertion Scale)

One method of determining physical activity intensity is the Borg Rating of Perceived Exertion (RPE). Perceived exertion is how hard you feel like your body is working. It is based on the physical sensations a person experiences during physical activity, including increased heart rate, increased respiration or breathing rate, increased sweating, and muscle fatigue. Although this is a subjective measure, a person's exertion rating may provide a fairly good estimate of the actual heart rate during physical activity*.

Practitioners generally agree that perceived exertion ratings between 12 to 14 on the Borg Scale suggests that physical activity is being performed at a moderate level of intensity. During activity, use the Borg Scale to assign numbers to how you feel (see instructions below). Self-monitoring how hard your body is working can help you adjust the intensity of the activity by speeding up or slowing down your movements.

Through experience of monitoring how your body feels, it will become easier to know when to adjust your intensity. For example, a walker who wants to engage in moderate-intensity activity would aim for a Borg Scale level of "somewhat hard" (12-14). If he describes his muscle fatigue and breathing as "very light" (9 on the Borg Scale), he would want to increase his intensity. On the other hand, if he felt his exertion was "extremely hard" (19 on the Borg Scale), he would need to slow down his movements to achieve the moderate-intensity range.

*A high correlation exists between a person's perceived exertion rating times 10 and the actual heart rate during physical activity, so a person's exertion rating may provide a fairly good estimate of the actual heart rate during activity. For example, if a person's rating of perceived exertion (RPE) is 12, then 12 x 10 = 120; the heart rate should be approximately 120 beats per minute. Note that this calculation is only an approximation of heart rate, and the actual heart rate can vary quite a bit depending on age and physical condition. The Borg Rating of Perceived Exertion is also the preferred method to assess intensity among those individuals who take medications that affect heart rate or pulse.

Instructions for Borg Rating of Perceived Exertion (RPE) Scale

While doing physical activity, we want you to rate your perception of exertion. This feeling should reflect how heavy and strenuous the exercise feels to you, combining all sensations and feelings of physical stress, effort and fatigue. Do not concern yourself with any one factor such as leg pain or shortness of breath, but try to focus on your total feeling of exertion.

Look at the rating scale below while you are engaging in an activity; it ranges from 6 to 20, where 6 means "no exertion at all" and 20 means "maximal exertion." Choose the number below that best describes your level of exertion. This will give you a good idea of the intensity level of your activity, and you can use this information to speed up or slow down your movements to reach your desired range.

Try to appraise your feeling of exertion as honestly as possible, without thinking about what the actual physical load is. Your own feeling of effort and exertion is important, not how it compares to other people's. Look at the scales and the expressions and then give a number.

Borg Rating of Perceived Exertion Scale

6	No exertion at all
7	Extremely light (7.5)
8	
9	Very light; for a healthy person, it is like walking slowly at his/her pace for some minutes
10	
11	Light
12	
13	Somewhat hard, but feels okay to continue
14	
15	Hard (heavy)
16	
17	Very hard, very strenuous. A healthy person can still go on, but he/she really has to push. This feels very heavy and the person is very tired.
18	
19	Extremely hard; for most people this is the most strenuous exercise they have ever experienced
20	Maximal exertion

Source: http://www.cdc.gov/nccdphp/dnpa/physical/measuring/perceived_exertion.htm

Return to Table of Contents

Appendix C – Alcohol Use Disorders Identification Test (AUDIT)

	Score				
Question	0	1	2	3	4
How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times/ month	2-3 times/ week	4 or more times/week
How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7-9	10 or more
How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
How often during the last year have you found that you were unable to stop drinking once you had started?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
How often during the last year have you failed to do what was normally expected from you because of drinking?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
How often during the last year have you been unable to remember what happened the night before because you had been drinking?	Never	Less than monthly	Monthly	Two to three times per week	Four or more times a week
Have you or someone else been injured as a result of your drinking?	Never	Yes, but not in the last year (2 points)		Yes, during the last year (4 points)	
Has a relative or friend, doctor, or other health worker been concerned about your drinking or suggested you cut down?	Never	Yes, but not in the last year (2 points)		Yes, during the last year (4 points)	

The minimum score (for non-drinkers) is 0 and the maximum score is 40. A score of 8 or more indicates a strong likelihood of a hazardous or harmful alcohol consumption.

Source: National Institute on Alcohol Abuse and Alcoholism

(Saunders, 1993 [Low Quality Evidence])

Return to Table of Contents **BACK**

Appendix D – Implementation Summary Sheet

Implementation Summary Sheet	Doctors & Clinics	Health Plans	Work Sites	Community		Other
				Government Policy	Schools	
Smoking cessation	• 5-A approach */** • Pharmacologic support */**	• Telephone contact */** • Financial incentives/financial disincentives	• Smoke-free worksites * • Financial incentives	• Tobacco taxes */** • Public smoking bans* • Regulate tobacco products	• Education on smoking risks	• Accurate Internet information and support
Healthy eating	• Brief assessment • Brief counseling */intervention	• Telephone coach • Payers cover nutrition counseling	• Healthy food options on-site • High prices for unhealthy food • Healthy vending food options • Encourage occupational assessment	• Tax unhealthy foods • Subsidize healthy foods	• Healthy food choices promoted • Unhealthy food choices (pop) limited	• Accurate Internet information and support
Physical activity	• Brief assessment • Brief office intervention	• Telephone coach */financial incentives	• Exercise facilities on-site • Time for activity during workday	• Consumer exercise facilities	• Effective physical activity programs	• Accurate Internet information and support
Alcohol use	• Brief assessment • Brief office * intervention	• Member education • Provider education	• Policy for social events • Education • Facilitate referral and counseling • Encourage AA	• Public education • Taxes • Marketing and availability	• Education • Management of social events • Individual assessment and counseling	• Accurate Internet information and support

* = Evidence of effectiveness
** = Evidence of cost effectiveness

See the Resource Table in the Quality Improvement Support section for more resources.

Appendix E – Guideline Implementation Tool

This tool is to be used to foster discussion around the components of the guideline (physical activity, nutrition, tobacco use, and hazardous and harmful drinking/alcohol) and as a means to measure patient success/barriers around these components.

Individual Guideline Component Survey

Name: _____

Date of birth: _____

Date of office visit: _____

1. I routinely eat fruits, vegetables, whole grains and low-fat dairy products

    _____ YES   _____ NO

2. I routinely limit total fat, especially saturated fat, trans fats and cholesterol

    _____ YES   _____ NO

3. I limit foods with added sugars and caloric carbonated beverages

    _____ YES   _____ NO

4. I participate in moderate-intensity aerobic exercise 30 minutes per day/5 days a week or vigorous intensity 20 minutes per day/3 days a week

    _____ YES   _____ NO

5. I am a smoker

    _____YES   _____NO

6. I consume alcohol

    _____ YES   _____ NO

    If you answered, "YES" (to #6) please answer the following:
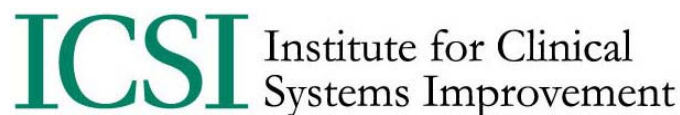
    I consume _____ drinks per week.
             (# of drinks here)

I would like to talk more with my clinician/care team member **and** receive education materials:

_____ **Today**

_____ **I would like to wait until my next clinic visit**

_____ **I would like education materials only, today**

Return to Table of Contents

Appendix F – ICSI Shared Decision-Making Model

ICSI Institute for Clinical Systems Improvement

The technical aspects of Shared Decision-Making are widely discussed and understood.

- **Decisional conflict** occurs when a patient is presented with options where no single option satisfies all the patient's objectives, where there is an inherent difficulty in making a decision, or where external influencers act to make the choice more difficult.

- **Decision support** clarifies the decision that needs to be made, clarifies the patient's values and preferences, provides facts and probabilities, guides the deliberation and communication and monitors the progress.

- **Decision aids** are evidence-based tools that outline the benefits, harms, probabilities and scientific uncertainties of specific health care options available to the patient.

However, before decision support and decision aids can be most advantageously utilized, a Collaborative Conversation™ should be undertaken between the clinician and the patient to provide a supportive framework for Shared Decision-Making.

Collaborative Conversation™

A collaborative approach toward decision-making is a fundamental tenet of Shared Decision-Making (SDM). The Collaborative Conversation™ is an inter-professional approach that nurtures relationships, enhances patients' knowledge, skills and confidence as vital participants in their health, and encourages them to manage their health care.

Within a Collaborative Conversation™ , the perspective is that both the patient and the clinician play key roles in the decision-making process. The patient knows which course of action is most consistent with his/her values and preferences, and the clinician contributes knowledge of medical evidence and best practices. Use of Collaborative Conversation™ elements and tools is even more necessary to support patient, care clinician and team relationships when patients and families are dealing with high stakes or highly charged issues, such as diagnosis of a life-limiting illness.

The overall framework for the Collaborative Conversation™ approach is to create an environment in which the patient, family and care team work collaboratively to reach and carry out a decision that is consistent with the patient's values and preferences. A rote script or a completed form or checklist does not constitute this approach. Rather it is a set of skills employed appropriately for the specific situation. These skills need to be used artfully to address all aspects involved in making a decision: cognitive, affective, social and spiritual.

Key communication skills help build the Collaborative Conversation™ approach. These skills include many elements, but in this appendix only the questioning skills will be described. (For complete instruction, see O'Connor, Jacobsen "Decisional Conflict: Supporting People Experiencing Uncertainty about Options Affecting Their Health" [2007], and Bunn H, O'Connor AM, Jacobsen MJ "Analyzing decision support and related communication" [1998, 2003].)

1. **Listening skills:**

   Encourage patient to talk by providing prompts to continue such as "*go on, and then?, uh huh,*" or by repeating the last thing a person said, "*It's confusing.*"

Paraphrase content of messages shared by patient to promote exploration, clarify content and to communicate that the person's unique perspective has been heard. The clinician should use his/her own words rather than just parroting what he/she heard.

Reflection of feelings usually can be done effectively once trust has been established. Until the clinician feels that trust has been established, short reflections at the same level of intensity expressed by the patient without omitting any of the message's meaning are appropriate. Reflection in this manner communicates that the clinician understands the patient's feelings and may work as a catalyst for further problem solving. For example, the clinician identifies what the person is feeling and responds back in his/her own words like this: *"So, you're unsure which choice is the best for you."*

Summarize the person's key comments and reflect them back to the patient. The clinician should condense several key comments made by the patient and provide a summary of the situation. This assists the patient in gaining a broader understanding of the situations rather than getting mired down in the details. The most effective times to do this are midway through and at the end of the conversation. An example of this is, *"You and your family have read the information together, discussed the pros and cons, but are having a hard time making a decision because of the risks."*

Perception checks ensure that the clinician accurately understands a patient or family member, and may be used as a summary or reflection. They are used to verify that the clinician is interpreting the message correctly. The clinician can say *"So you are saying that you're not ready to make a decision at this time. Am I understanding you correctly?"*

2. **Questioning Skills**

   Open and closed questions are both used, with the emphasis on open questions. Open questions ask for clarification or elaboration and cannot have a yes or no answer. An example would be *"What else would influence you to choose this?"* Closed questions are appropriate if specific information is required such as *"Does your daughter support your decision?"*

   Other skills such as summarizing, paraphrasing and reflection of feeling can be used in the questioning process so that the patient doesn't feel pressured by questions.

   Verbal tracking, referring back to a topic the patient mentioned earlier, is an important foundational skill (Ivey & Bradford-Ivey). An example of this is the clinician saying, *"You mentioned earlier…"*

3. **Information-Giving Skills**

   Providing information and **providing feedback** are two methods of information giving. The distinction between providing information and giving advice is important. Information giving allows a clinician to supplement the patient's knowledge and helps to keep the conversation patient centered. Giving advice, on the other hand, takes the attention away from the patient's unique goals and values, and places it on those of the clinician.

   Providing information can be sharing facts or responding to questions. An example is *"If we look at the evidence, the risk is…"* Providing feedback gives the patient the clinician's view of the patient's reaction. For instance, the clinician can say, *"You seem to understand the facts and value your daughter's advice."*

Additional Communication Components

Other elements that can impact the effectiveness of a Collaborative Conversation™ include:

- Eye contact
- Body language consistent with message
- Respect

- Empathy

- Partnerships

Self-examination by the clinician involved in the Collaborative Conversation™ can be instructive. Some questions to ask oneself include:

- Do I have a clear understanding of the likely outcomes?

- Do I fully understand the patient's values?

- Have I framed the options in comprehensible ways?

- Have I helped the decision-makers recognize that preferences may change over time?

- Am I willing and able to assist the patient in reaching a decision based on his/her values, even when his/her values and ultimate decision may differ from my values and decisions in similar circumstances?

When to Initiate a Collaborative Conversation™

A Collaborative Conversation™ can support decisions that vary widely in complexity. It can range from a straightforward discussion concerning routine immunizations to the morass of navigating care for a life-limiting illness. Table 1 represents one health care event. This event can be simple like a 12 year-old coming to the clinic for routine immunizations, or something much more complex like an individual receiving a diagnosis of congestive heart failure. In either case, the event is the catalyst that starts the process represented in this table. There are cues for clinicians and patient needs that exert influence on this process. They are described below. The heart of the process is the Collaborative Conversation™. The time the patient spends within this health care event will vary according to the decision complexity and the patient's readiness to make a decision.
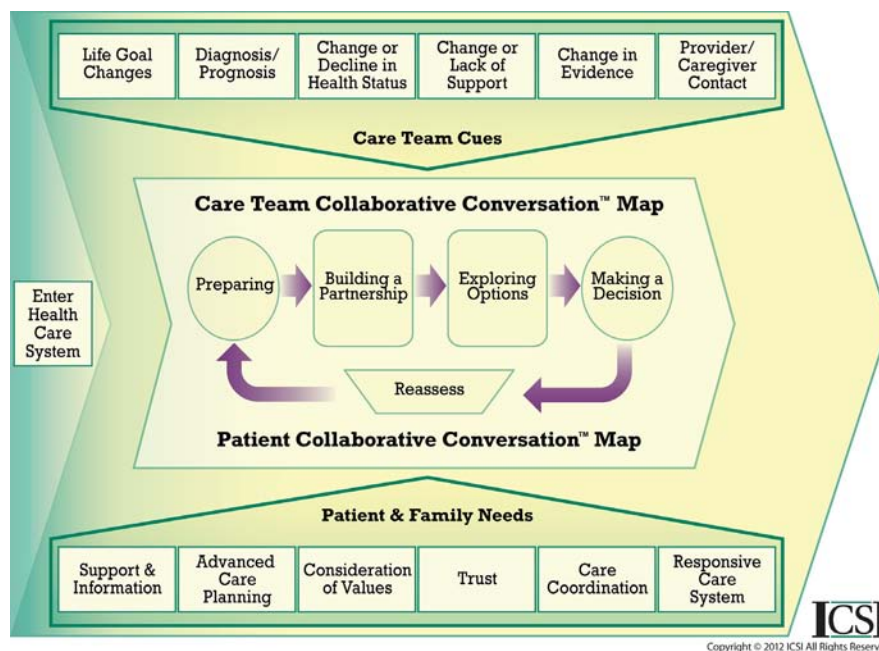
Regardless of the decision complexity there are cues applicable to all situations that indicate an opportune time for a Collaborative Conversation™. These cues can occur singularly or in conjunction with other cues.

Cues for the Care Team to Initiate a Collaborative Conversation™

- **Life goal changes:** Patient's priorities change related to things the patient values such as activities, relationships, possessions, goals and hopes, or things that contribute to the patient's emotional and spiritual well-being.

- **Diagnosis/prognosis changes:** Additional diagnoses, improved or worsening prognosis.

- **Change or decline in health status:** Improving or worsening symptoms, change in performance status or psychological distress.

- **Change or lack of support:** Increase or decrease in caregiver support, change in caregiver, or caregiver status, change in financial standing, difference between patient and family wishes.

- **Change in medical evidence or interpretation of medical evidence:** Clinicians can clarify the change and help the patient understand its impact.

- **Clinician/caregiver contact:** Each contact between the clinician/caregiver and the patient presents an opportunity to reaffirm with the patient that his/her care plan and the care the patient is receiving are consistent with his/her values.

Patients and families have a role to play as decision-making partners, as well. The needs and influencers brought to the process by patients and families impact the decision-making process. These are described below.

Patient and Family Needs within a Collaborative Conversation™

- **Request for support and information:** Decisional conflict is indicated by, among other things, the patient verbalizing uncertainty or concern about undesired outcomes, expressing concern about choice consistency with personal values and/or exhibiting behavior such as wavering, delay, preoccupation, distress or tension. Generational and cultural influencers may act to inhibit the patient from actively participating in care discussions, often patients need to be given "permission" to participate as partners in making decisions about his/her care.

  Support resources may include health care professionals, family, friends, support groups, clergy and social workers. When the patient expresses a need for information regarding options and his/her potential outcomes, the patient should understand the key facts about options, risks and benefits, and have realistic expectations. The method and pace with which this information is provided to the patient should be appropriate for the patient's capacity at that moment.
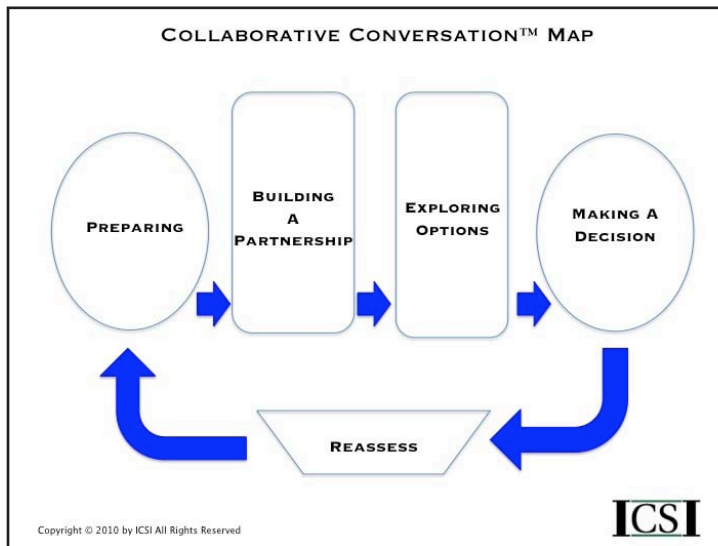
- **Advance Care Planning:** With the diagnosis of a life-limiting illness, conversations around advance care planning open up. This is an opportune time to expand the scope of the conversation to other types of decisions that will need to be made as a consequence of the diagnosis.

- **Consideration of Values:** The personal importance a patient assigns potential outcomes must be respected. If the patient is unclear how to prioritize the preferences, value clarification can be achieved through a Collaborative Conversation™ and by the use of decision aids that detail the benefits and harms of potential outcomes in terms the patient can understand.

- **Trust:** The patient must feel confident that his/her preferences will be communicated and respected by all caregivers.

- **Care Coordination:** Should the patient require care coordination, this is an opportune time to discuss the other types of care-related decisions that need to be made. These decisions will most likely need to be revisited often. Furthermore, the care delivery system must be able to provide coordinated care throughout the continuum of care.

- **Responsive Care System:** The care system needs to support the components of patient- and family-centered care so the patient's values and preferences are incorporated into the care he/she receives throughout the care continuum.

The Collaborative Conversation™ Map is the heart of this process. The Collaborative Conversation™ Map can be used as a stand-alone tool that is equally applicable to clinicians and patients as shown in Table 2. Clinicians use the map as a clinical workflow. It helps get the Shared Decision-Making process initiated and provides navigation for the process. Care teams can used the Collaborative Conversation™ to document team best practices and to formalize a common lexicon. Organizations can build fields from the Collaborative Conversation™ Map in electronic medical records to encourage process normalization. Patients use the map to prepare for decision-making, to help guide them through the process and to share critical information with their loved ones.

COLLABORATIVE CONVERSATION™ MAP

PREPARING → BUILDING A PARTNERSHIP → EXPLORING OPTIONS → MAKING A DECISION → REASSESS

Copyright © 2010 by ICSI All Rights Reserved

ICSI

Evaluating the Decision Quality

Adapted from O'Connor, Jacobsen "Decisional Conflict: Supporting People Experiencing Uncertainty about Options Affecting Their Health" [2007].

When the patient and family understand the key facts about the condition and his/her options, a good decision can be made. Additionally, the patient should have realistic expectations about the probable benefits and harms. A good indicator of the decision quality is whether or not the patient follows through with his/her chosen option. There may be implications of the decision on patient's emotional state such as regret or blame, and there may be utilization consequences.

Decision quality can be determined by the extent to which the patient's chosen option best matches his/her values and preferences as revealed through the Collaborative Conversation™ process.

ICSI Institute for Clinical Systems Improvement

8009 34th Ave. South, Suite 1200 • Bloomington, MN 55425 • Phone: 952-814-7060 • www.icsi.org

ICSI has long had a policy of transparency in declaring potential conflicting and competing interests of all individuals who participate in the development, revision and approval of ICSI guidelines and protocols.

In 2010, the ICSI Conflict of Interest Review Committee was established by the Board of Directors to review all disclosures and make recommendations to the board when steps should be taken to mitigate potential conflicts of interest, including recommendations regarding removal of work group members. This committee has adopted the Institute of Medicine Conflict of Interest standards as outlined in the report, Clinical Practice Guidelines We Can Trust (2011).

Where there are work group members with identified potential conflicts, these are disclosed and discussed at the initial work group meeting. These members are expected to recuse themselves from related discussions or authorship of related recommendations, as directed by the Conflict of Interest committee or requested by the work group.

The complete ICSI policy regarding Conflicts of Interest is available at http://bit.ly/ICSICOI.

Funding Source

The Institute for Clinical Systems Improvement provided the funding for this guideline revision. ICSI is a not-for-profit, quality improvement organization based in Bloomington, Minnesota. ICSI's work is funded by the annual dues of the member medical groups and five sponsoring health plans in Minnesota and Wisconsin. Individuals on the work group are not paid by ICSI but are supported by their medical group for this work.

The only exception to this, patient and public members of a work group, are provided with a small stipend to cover meeting attendance.

ICSI facilitates and coordinates the guideline development and revision process. ICSI, member medical groups and sponsoring health plans review and provide feedback but do not have editorial control over the work group. All recommendations are based on the work group's independent evaluation of the evidence.

Return to Table of Contents

Disclosure of Potential Conflicts of Interest

Courtney Jordan Baechler, MD, MS (Work Group Member)
Vice-President of Penny George Institute for Health and Healing
Medical Director of Healthy Communities Partnership
Medical Director of Cardiac Preventive Services, United Heart and Vascular Center Allina Health
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

Marna Canterbury, MS, RD (Work Group Member)
Director, Community Health and Wellness
Lakeview Health
National, Regional, Local Committee Affiliations: United Way of Washington County East
Guideline-Related Activities: None
Research Grants: PowerUp Initiative
Financial/Non-Financial Conflicts of Interest: Consultant with General Mills Foundation on Champions for Healthy Kids

Christine Danner, PhD, LP (Work Group Member)
Behavioral Health Coordinator, University of Minnesota Clinicians
National, Regional, Local Committee Affiliations: UMP CSU Board of Governors
Guideline-Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

Kristin Erickson, RN, BSN, PHN: (Work Group Member)
HealthCare Intervention Coordinator, Otter Tail County Public Health
National, Regional, Local Committee Affiliations: MN Omaha System Users Group Steering Committee Member
Guideline-Related Activities: None
Research Grants: Community Transformation and Statewide Health Improvement Program
Financial/Non-Financial Conflicts of Interest: None

Thomas Kottke, MD, MSPH (Work Group Leader)
Medical Director, Population Health; Cardiologist, HealthPartners Medical Group
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: ICSI Lipid Management Guideline
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

Patrick O'Connor, MD, MPH (Work Group Member)
Senior Clinical Investigator; family medicine and geriatrics, HealthPartners Medical Group
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: ICSI Diagnosis and Treatment of Hypertension, ICSI Lipid Management Guideline, ICSI Prevention and Diagnosis of Obesity Guideline, ICSI Childhood Obesity Guideline
Research Grants: NIH grant
Financial/Non-Financial Conflicts of Interest: None

Scott Shimotsu, PhD, MPH, CPHQ (Work Group Member)
Health Care Analyst, Hennepin County Medical Center
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: Honoraria on how to conduct research, diabetes care

Rebecca Straub, RD, LD (Work Group Member)
Clinical Dietician, HealthPartners Medical Group
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

Martha Sanford, MD (Work Group Member)
Medical Director of Quality, Stillwater Medical Group
National, Regional, Local Committee Affiliations: Board membership for Lakeview System and Health Partners Quality Board
Guideline-Related Activities: None
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

Michael Schoenleber, MD (Work Group Member)
Family Medicine, HealthPartners Medical Group
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: ICSI Diagnosis and Treatment of Hypertension Guideline
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

John Wilkinson, MD (Work Group Member)
Consultant Department of Family Medicine, Mayo Healthy System
National, Regional, Local Committee Affiliations: None
Guideline-Related Activities: ICSI Preventive Services Guideline
Research Grants: None
Financial/Non-Financial Conflicts of Interest: None

All ICSI documents are available for review during the revision process by member medical groups and sponsors. In addition, all members commit to reviewing specific documents each year. This comprehensive review provides information to the work group for such issues as content update, improving clarity of recommendations, implementation suggestions and more. The specific reviewer comments and the work group responses are available to ICSI members at http://www.HealthyLifestyles.

The ICSI Patient Advisory Council meets regularly to respond to any scientific document review requests put forth by ICSI facilitators and work groups. Patient advisors who serve on the council consistently share their experiences and perspectives in either a comprehensive or partial review of a document, and engaging in discussion and answering questions. In alignment with the Institute of Medicine's triple aims, ICSI and its member groups are committed to improving the patient experience when developing health care recommendations.

Return to Table of Contents

Acknowledgements

ICSI Patient Advisory Council

The work group would like to acknowledge the work done by the ICSI Patient Advisory Council in reviewing the Healthy Lifestyles guideline.

The ICSI Patient Advisory Council meets regularly to respond to any scientific document review requests put forth by ICSI facilitators and work groups. Patient advisors who serve on the council consistently share their experiences and perspectives in either a comprehensive or partial review of a document, and engaging in discussion and answering questions. In alignment with the Institute of Medicine's triple aims, ICSI and its member groups are committed to improving the patient experience when developing health care recommendations.

Invited Reviewers

During this revision, the following groups reviewed this document. The work group would like to thank them for their comments and feedback.

Allina Medical Clinic, Minneapolis, MN
CentraCare, St. Cloud, MN
North Memorial Health Care, Robbinsdale, MN

Return to Table of Contents

ICSI
Institute for Clinical Systems Improvement

Document History and Development:
Healthy Lifestyles

Document Drafted   **May – Oct 2007**
Critical Review   **Nov – Dec 2007**
First Edition   **Apr 2008**
Second Edition   **Jun 2009**
Third Edition   **Jun 2010**
Fourth Edition   **Jun 2011**
Fifth Edition   **Begins Jun 2013**

Released in May 2013 for Fifth Edition.
The next scheduled revision will occur within 24 months.

Original Work Group Members

Penny Fredrickson
Implementation/Measurement Advisor
ICSI

Trina Ford, RD, MSN
Health Education
Marshfield Clinic

Courtney Jordan, MD
PhD Candidate in Public Health
University of Minnesota

Aaron Kelly, PhD
Cardiology
St. Paul Heart Clinic

Stephen L. Kopecky, MD
Cardiology
Mayo Clinic

Thomas E. Kottke, MD
Cardiology, Work Group Leader
HealthPartners Medical Group

Ann-Marie Landin, BS, RHIT
Facilitator
ICSI

Melissa Magstadt, MS, CNP
Nursing
Sanford Health

Charles Montreuil
Employer
Carlson Companies

Patrick O'Connor, MD
Family Medicine
HealthPartners Medical Group

Martha Sanford, MD
General Internist
Stillwater Medical Group

Michael Schoenleber, MD
Family Medicine
HealthPartners Medical Group

Kim Seibert, CES, RCEP
Exercise Physiology
St. Paul Heart Clinic

Megan Slater
MS Candidate in Public Health
University of Minnesota

Molly Soeby, MPA, MT
Health Education
Altru Health System

Cally Vinz, RN
Facilitator
ICSI

John Wilkinson, MD
Family Medicine
Mayo Clinic

Mary Winnett, MD, MPH
Family Medicine
Minnesota Department of Health
Epidemiology

Document History

In 2009, the Minnesota Department of Health selected the ICSI guideline on Healthy Lifestyles as an intervention for organizations to implement as part of the Statewide Health Improvement Program (SHIP).

Return to Table of Contents

Contact ICSI at:
8009 34th Avenue South, Suite 1200; Bloomington, MN 55425; (952) 814-7060; (952) 858-9675 (fax)
Online at http://www.ICSI.org

ICSI Document Development and Revision Process

Overview

Since 1993, the Institute for Clinical Systems Improvement (ICSI) has developed more than 60 evidence-based health care documents that support best practices for the prevention, diagnosis, treatment or management of a given symptom, disease or condition for patients.

Audience and Intended Use

The information contained in this ICSI Health Care Guideline is intended primarily for health professionals and other expert audiences.

This ICSI Health Care Guideline should not be construed as medical advice or medical opinion related to any specific facts or circumstances. Patients and families are urged to consult a health care professional regarding their own situation and any specific medical questions they may have. In addition, they should seek assistance from a health care professional in interpreting this ICSI Health Care Guideline and applying it in their individual case.

This ICSI Health Care Guideline is designed to assist clinicians by providing an analytical framework for the evaluation and treatment of patients, and is not intended either to replace a clinician's judgment or to establish a protocol for all patients with a particular condition.

Document Development and Revision Process

The development process is based on a number of long-proven approaches and is continually being revised based on changing community standards. The ICSI staff, in consultation with the work group and a medical librarian, conduct a literature search to identify systematic reviews, randomized clinical trials, meta-analysis, other guidelines, regulatory statements and other pertinent literature. This literature is evaluated based on the GRADE methodology by work group members. When needed, an outside methodologist is consulted.

The work group uses this information to develop or revise clinical flows and algorithms, write recommendations, and identify gaps in the literature. The work group gives consideration to the importance of many issues as they develop the guideline. These considerations include the systems of care in our community and how resources vary, the balance between benefits and harms of interventions, patient and community values, the autonomy of clinicians and patients and more. All decisions made by the work group are done using a consensus process.

ICSI's medical group members and sponsors review each guideline as part of the revision process. They provide comment on the scientific content, recommendations, implementation strategies and barriers to implementation. This feedback is used by and responded to by the work group as part of their revision work. Final review and approval of the guideline is done by ICSI's Committee on Evidence-Based Practice. This committee is made up of practicing clinicians and nurses, drawn from ICSI member medical groups.

Implementation Recommendations and Measures

These are provided to assist medical groups and others to implement the recommendations in the guidelines. Where possible, implementation strategies are included that have been formally evaluated and tested. Measures are included that may be used for quality improvement as well as for outcome reporting. When available, regulatory or publicly reported measures are included.

Document Revision Cycle

Scientific documents are revised every 12-24 months as indicated by changes in clinical practice and literature. ICSI staff monitors major peer-reviewed journals every month for the guidelines for which they are responsible. Work group members are also asked to provide any pertinent literature through check-ins with the work group midcycle and annually to determine if there have been changes in the evidence significant enough to warrant document revision earlier than scheduled. This process complements the exhaustive literature search that is done on the subject prior to development of the first version of a guideline.