



# Diabetes Prevention Program

2019 Update

This care process model (CPM) was created by the Prediabetes Development Team and the Office of Health Promotion and Wellness at Intermountain Healthcare. It summarizes current medical literature and, where clear evidence is lacking, provides expert advice on identifying prediabetes and preventing diabetes. In addition, this CPM outlines a systematic process for sharing accountability between clinicians, operational and clinic staff, dietitians, educators, and patients.

## ► WHY FOCUS ON DIABETES PREVENTION?

- **Prediabetes is common and underrecognized.** In 2015, approximately one in three U.S. adults, an estimated 84.1 million people, had prediabetes. **Fewer than 13% of those with prediabetes were aware of their condition,** regardless of education level, income, insurance coverage, or healthcare use.<sup>CDC</sup>
- **Up to one third of people with prediabetes will progress to diabetes in three to five years.** This will increase their risk of cardiovascular disease, stroke, high blood pressure, blindness, kidney disease, nerve disease, and amputation.<sup>ADA</sup> In addition, prediabetes itself is associated with early onset of neuropathy, retinopathy, microalbuminuria, and greater cardiovascular risk, suggesting that many patients with prediabetes may be already suffering adverse effects of abnormal glucose regulation.<sup>TAB</sup>
- **Progression to diabetes can be prevented or delayed.** In a U.S. Diabetes Prevention Program (DPP) study, patients in the **intensive lifestyle intervention** arm of the trial had a 58% reduction in the rate of conversion to type 2 diabetes over three years, and a 34% reduction at 10 years. Risk of reduction was even more pronounced among individuals age 60 and older (71% for a three-year reduction).<sup>ADA, KNO</sup>
- **Diabetes prevention is cost-effective.** The 10-year follow-up study of the DPP concluded that investment in lifestyle and metformin interventions for diabetes prevention in high-risk adults is very cost effective.<sup>HER</sup> With a 34% reduction in progression to diabetes, as seen in the study, healthcare systems and individuals would see significant cost savings.
- **Diabetes prevention is a shared responsibility.** Intermountain has the data collection and reporting tools, clinical decision support, and team coordination to identify and engage all patients with prediabetes in our system across all population groups.

### What's new in this update

- **New behavioral research** gives insights into the thoughts of local patients with prediabetes regarding their own motivations, quality interventions, and the role of clinicians in diabetes prevention services. See [page 5](#).
- **Messaging has been developed** and talking points are included for clinicians to use to improve patient engagement in diabetes prevention programs. See [page 5](#).

## ► WHAT'S INSIDE?

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## MEASUREMENT & GOALS

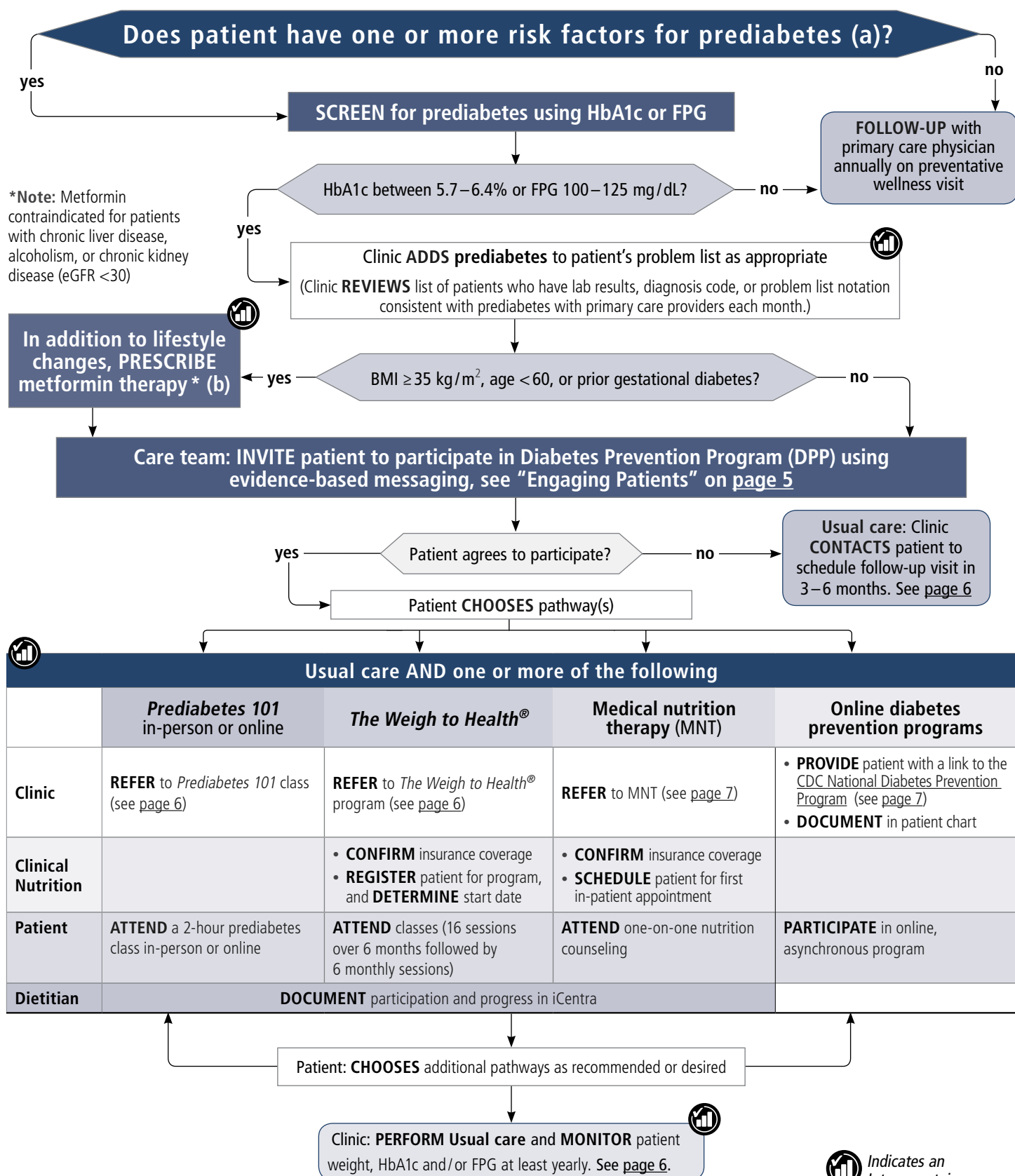
Intermountain is making a deliberate effort with this CPM to recommend and report on measurable outcomes that can be tied to process variations. These will provide a learning feedback loop by which process variations, outcomes results, and new research findings can be used for continuous improvement of the model.

See [page 8](#) for a discussion of measurement and evaluation and how they relate to diabetes prevention.



Indicates an Intermountain measure

## ► ALGORITHM: PREDIABETES PATIENT ENGAGEMENT AND TREATMENT



Abbreviations: HbA1c—hemoglobin A1c; FPG—fasting plasma glucose

## ALGORITHM NOTES

**(a) Risk factors for prediabetes**

- Patient age 40–70 years with a BMI  $\geq 25 \text{ kg/m}^2$  ( $\geq 23 \text{ kg/m}^2$  if of Asian descent).
- Patient age 18–39 years with a BMI  $\geq 25 \text{ kg/m}^2$  PLUS ONE additional risk factor (e.g., high-risk ethnicity, high blood pressure, hyperlipidemia, history of polycystic ovary syndrome, history of gestational diabetes or baby  $> 9 \text{ lbs}$ , sedentary lifestyle, first-degree relative with type 2 diabetes).
- Patients with HbA1c 5.7–6.4 % or a FPG result of 100–125 mg/dL in the previous three years. Consider two FPG screens if during initial screen patient wasn't fasting, was ill, or was taking medications that could influence blood sugar (e.g., steroids).<sup>ADA</sup>

**Note:** Prediabetes should not be viewed as a clinical entity in its own right but as a risk factor for diabetes and cardiovascular disease.<sup>ADA</sup>

**(b) Metformin therapy**

The following are considerations when prescribing metformin:

- The ADA currently recommends metformin should be considered for patients with prediabetes, especially for patients age  $< 60$ , BMI  $\geq 35 \text{ kg/m}^2$ , or with a history of gestational diabetes.
- **Follow-up required.** Patients treated with metformin should be monitored twice a year with FPG and HbA1c testing.<sup>ADA</sup>
- For more information on metformin therapy, refer to the Intermountain [Adult Diabetes Mellitus CPM](#).
- **Contraindications:** Do not use for patients with chronic liver disease, alcoholism, or chronic kidney disease (eGFR  $< 30$ ).
- **Stop** therapy with: Acute illness, dehydration, IV contrast dyes, or risk of acidosis.

**Medication class—Biguanide**

(SelectHealth commercial formulary status)		Usual dosing	2019 AWP cost for 30-day supply* (MAC cost for generics)	Pros	Cons
generic	Brand				
<b>metformin</b> (Preferred generic)	Glucophage (Non-preferred brand)	500 mg twice daily (once a day to start) up to 1000 mg twice daily (max)  Most benefit obtained at 1500–1700 mg/day	<b>Generic:</b> (Preferred generic) 500 mg twice daily: \$4 850 mg twice daily: \$6 1000 mg twice daily: \$7  <b>Brand name:</b> (Non-preferred brand) 500 mg twice daily: \$71 850 mg twice daily: \$120 1000 mg twice daily: \$146	<ul style="list-style-type: none"> <li>• Extensive experience</li> <li>• No hypoglycemia</li> <li>• ↓ weight (preferred for obese patients—most patients with type 2 diabetes)</li> <li>• Favorable lipid effects</li> <li>• Maximum plasma glucose effects at 3–4 weeks</li> </ul>	<ul style="list-style-type: none"> <li>• GI distress (nausea/diarrhea)</li> <li>• B12 deficiency—suggest periodic testing</li> <li>• Chronic heart failure (CHF) patients should be stable</li> <li>• <b>Risk of acidosis:</b> STOP with acute illness, dehydration, or IV contrast dyes</li> <li>• <b>Multiple contraindications:</b> Do not use for patients with chronic liver disease, alcoholism, or chronic kidney disease (eGFR <math>&lt; 30</math>)</li> </ul>
<b>metformin ER</b> (Preferred generic)	Glucophage XR (Non-preferred brand)	500–1500 mg/day at dinner	<b>Generic:</b> (Preferred generic) 500 mg twice daily: \$8 750 mg twice daily: \$18 2000 mg (4 x 500 mg): \$16  <b>Brand name:</b> (Non-preferred brand) 500 mg twice daily: \$72 750 mg twice daily: \$109	<ul style="list-style-type: none"> <li>• ↓ insulin resistance</li> <li>• Consensus first-line agent</li> <li>• Very cost-effective</li> </ul>	

\*AWP = Average wholesale pricing; MAC = Maximum allowable cost

### ✓ KEY PRINCIPLES

Individual clinics may choose to arrange their processes slightly differently.

Any changes should be documented and communicated so all staff members remain clear on who is responsible for each activity.

## ► ROLES AND RESPONSIBILITIES

Diabetes prevention requires coordination of roles to ensure a systematic process for:

- Proactive identification of patients with suspected or confirmed prediabetes
- Team coordination and support
- Patient education, engagement, and self-management training
- Documentation and reporting
- Patient visits and follow up

Each staff member has an important role in establishing this process. The table below recommends responsibilities for each staff member to ensure the program's success.

**TABLE 1: OVERVIEW OF ROLES AND RESPONSIBILITIES**

Role	Responsibility
<b>Primary Care Clinic</b>	
<b>Primary Care Practice Manager</b> Direct reports: Primary Care Provider (PCP), Care Manager (CM), Medical Assistant (MA), Care Guide (CG), Patient Service Representative (PSR)	<ul style="list-style-type: none"> <li>• <b>DEFINE</b> owner/contact for each step of prediabetes prevention program process in their clinic (i.e., understand the process and importance of implementation).</li> <li>• <b>TRACK</b> and <b>ASSESS</b> compliance and effectiveness of the DPP within their clinic (e.g., referral process and quality outcomes).</li> </ul>
<b>Primary Care Provider (PCP)</b>	<ul style="list-style-type: none"> <li>• <b>FOLLOW</b> guidelines for screening and diagnosing patients with prediabetes.</li> <li>• <b>ADD</b> prediabetes to patient's problem list in iCentra.</li> <li>• <b>REVIEW</b> prediabetes reports.</li> <li>• <b>ORDER/REFER</b> to diabetes prevention programs.</li> <li>• <b>PREPARE</b> patient for readiness to change.</li> <li>• <b>ENGAGE</b> in shared decision making with patient to help choose and later adjust diabetes prevention pathways.</li> <li>• <b>MONITOR</b> patient's improvement, and schedule follow-up appointments.</li> </ul>
<b>Care Management Team</b>	<b>INVITE</b> patient to participate in DPP class if a relationship is established with the patient.
<b>Medical Assistant (MA)</b>	<b>REVIEW</b> schedule for incoming patients who meet criteria for prediabetes screening or who may need DPP referral.
<b>Patient Services Representative (PSR)</b>	<b>REVIEW</b> schedule for incoming patients who meet criteria for prediabetes screening or who may need DPP referral.
<b>Diabetes Clinic</b>	
<b>Diabetes Clinic Manager</b>	<ul style="list-style-type: none"> <li>• <b>COLLABORATE</b> with clinical nutrition services on creating DPP classes for participants.</li> <li>• <b>ARRANGE</b> schedule to provide DPP training for instructors.</li> <li>• <b>COMMUNICATE</b> with clinic managers, if necessary, to schedule rooms/availability of instructors.</li> </ul>
<b>Diabetes Clinic Patient Service Representative</b>	<ul style="list-style-type: none"> <li>• <b>MONITOR</b> DPP referrals daily.</li> <li>• <b>CALL</b> patients to schedule for DPP activities.</li> <li>• <b>CHECK IN</b> patients for classes, if applicable.</li> </ul>
<b>Registered Dietitian Nutritionist (RDN) or Certified Diabetes Educator (CDE)</b>	<ul style="list-style-type: none"> <li>• <b>FOLLOW</b> curriculum for teaching two-hour prediabetes class.</li> <li>• <b>EDUCATE</b> patients about prediabetes using standardized slide set.</li> <li>• <b>ENSURE</b> patients fill out forms according to prediabetes flow process.</li> <li>• <b>ENCOURAGE</b> selection of <i>The Weigh to Health</i>® intensive lifestyle intervention.</li> <li>• <b>REPORT</b> patient's attendance, lifestyle goals, and next step selection to PCP.</li> <li>• <b>DOCUMENT</b> participation in DPP when possible.</li> </ul>

## TALKING POINTS TO USE WITH PATIENTS <sup>HEA</sup>

- Verbalize immediate or tangible benefit to patient such as:
  - Feel healthier
  - Have more energy
  - Get sick less often
  - Sleep better
  - Have sharper focus
  - Avoid chronic diseases
  - Improve physical abilities
- Emphasize emotional benefits:
  - Be more productive
  - Have less stress and anxiety
  - Spend more time with family
  - Live life to the fullest
  - Take care of others better
  - Have higher quality of life
  - Take care of self better
- Words to use:
  - Feeling fit; eating right; physical activity; energy; healthy food choices; fresh foods; healthy eating; active lifestyles
- Words to avoid:
  - Exercise; diet; get moving; obesity

## ►ENGAGING PATIENTS

### A Patient's Perspective

Intermountain Healthcare researchers have assessed the local patient perspective on DPPs. Care teams that use messaging based on underlying values of local populations can have high success. The research indicated that:

- **Patients are more motivated to begin a DPP if:**
  - Focus is kept on short-term benefits rather than long-term gains.
  - Conversations about nutrition are kept simple.
  - Their current understanding of healthy behavior is treated respectfully. Patients are sensitive to feeling 'forced' into behavior change.
  - They feel support from family and friends.
- **Patients are motivated to continue participation in a DPP if:**
  - The program has been tailored to their needs and is exciting.
  - Clinicians are not directly involved in the program but remain behind the scenes.
  - The program consists of several streams of support. Patients found ongoing coaching, social networking, incentives, and reminders, particularly helpful.
  - Instructors within the program are relatable.
- **Patient's perceptions are often contrary to common assumption.**
  - Patients worry less about the expense of DPP interventions (cost and time needed).
  - Credentials of provider or statistics are often less motivating than seeing changes in their own body.
  - Seeing the consequences of diabetes in others, even close relatives, is often not enough to provoke change.

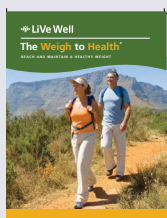
## ✓ KEY RECOMMENDATIONS

- All patients should participate in usual care with their primary care provider.
- Encourage all patients to participate in Intermountain's intensive lifestyle intervention, *The Weigh to Health*®.
- For patients who are not able or willing to do an intensive lifestyle intervention, recommend medical nutrition therapy.

## PREDIABETES 101: WHAT IS IT AND WHAT CAN I DO ABOUT IT?



- [Prediabetes 101 online videos \(English\) / \(Spanish\)](#)
- [Prediabetes 101 In-person class](#)
- [Prediabetes 101: presentation slides \(Spanish\)](#)
- [Prediabetes 101- Class outline \(English and Spanish\)](#)



## THE WEIGH TO HEALTH®

- [The Weigh to Health® booklet \(English\) / \(Spanish\)](#)
- [The Weigh to Health® program information and sign-up](#)

## ► ONGOING FOLLOW-UP AND SUPPORT

### American Diabetes Association recommendations for usual care

The ADA recommends the following ongoing support for all patients with prediabetes:

- Counsel all patients to increase physical activity. Most should aim for 30 minutes of moderately intense exercise (such as a brisk walk) most days of the week, for a minimum of 150 minutes (2.5 hours) of total physical activity per week.
- For overweight or obese patients, advise weight loss of 5 –7 % of body weight. For a 200-pound person, this means a weight loss of 10–14 pounds.
- Recommend metformin therapy for some patients, as outlined in box (b) on [page 3](#).
- Follow up at least annually with HbA1c and/or FPG testing. For patients taking metformin, follow up every six months.
- Screen and treat to reduce cardiovascular risk factors, including high blood pressure, dyslipidemia, and tobacco use.
- Manage sleep and stress issues. Intermountain's [Lifestyle and Weight Management CPM](#) provides guidance in this area.
- Refer to an effective ongoing support program targeting lifestyle change. All four support programs below target lifestyle change.

### Prediabetes 101: What is it and what can I do about it?

This is a two-hour Intermountain course offered online and in-person at no cost to participants. It covers topics that are of concern to patients, such as:

- What is prediabetes—and what is diabetes?
- Why is diabetes such a big concern?
- What is my risk of getting diabetes?
- What can I do to prevent diabetes?
- What am I ready to do? (Patient will be encouraged to set a small lifestyle goal.)
- What's my next step? (Patient can choose to continue with the preferred *Weigh to Health*® intensive lifestyle intervention, MNT, or the online DPP.)

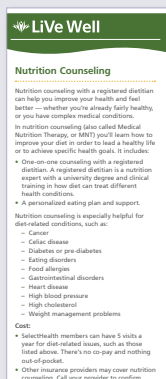
### The Weigh to Health® program

Outcome studies of this DPP showed that a 16-week intensive lifestyle intervention reduced incidence of type 2 diabetes by 58 % at two years.<sup>KNO</sup> The *Weigh to Health*® program is an in-person, accredited DPP for overweight adults who want to lose weight. The program uses evidence-based methods to increase physical activity, improve nutrition, and address health concerns like prediabetes and other weight-related conditions. The program consists of:

- Group classes facilitated by registered dietitian nutritionists (RDNs) with guest instructors, such as exercise specialists, behavior specialists, and chefs.
- 16 sessions over 6 months, followed by 6 monthly sessions, including:
  - An orientation class, focused on goal setting.
  - Four 60-minute one-on-one sessions with an RDN trained in weight management.
  - Eighteen 90-minute group sessions. Topics include physical activity, behavior change, meal planning, emotional eating, label reading, body image, intuitive eating, stress management, healthy cooking, and eating out.

Medicare reimburses for this program. Check with the patient's insurance provider to determine coverage.

## MEDICAL NUTRITION THERAPY (MNT)



- [Nutritional counseling brochure \(English\) / \(Spanish\)](#)
- [Nutrition counseling information](#)

## CDC NATIONAL DIABETES PREVENTION PROGRAM

[Online diabetes prevention programs recommended by the CDC](#)

## Medical nutrition therapy (MNT)

- MNT consists of one-on-one nutrition counseling sessions with an RDN. Patients will learn nutrition strategies to prevent diabetes and develop a personalized eating plan.
- Some insurance providers, including SelectHealth, cover up to five visits per calendar year for diet-related issues, including prediabetes. No referral is necessary.

## Online Diabetes Prevention Programs

Several online DPPs exist. Insurance coverage for online programs varies. Patients interested in participating in online programs should check with their insurance provider and/or employer regarding benefit availability and coverage.

- Online programs allow for asynchronous learning at the convenience of the participant.
- Most programs include an online coach, social support, digital bluetooth scale, and physical activity trackers.
- Beginning in 2019, Intermountain employees and their dependents are eligible for the [Omada Health online diabetes prevention program](#) that will be provided free-of-charge to those that qualify.

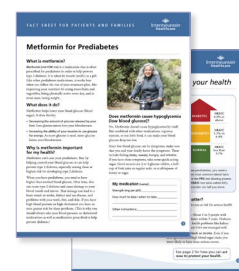
## ► PATIENT EDUCATION

Intermountain produces other education materials that are designed to support clinician efforts to educate and engage patients and families. They complement and reinforce prediabetes team interventions by providing a means for patients to reflect and learn in another mode and at their own pace. To access these materials:

- In **iCentra** search for **Intermountain items** in the patient education module.
- **Search Intermountain Patient Handouts** at [Intermountain.org](#).
- **Use Print It!** Intermountain's online library and print store for all Intermountain patient education booklets and fact sheets for distribution to patients.

## Prediabetes fact sheets

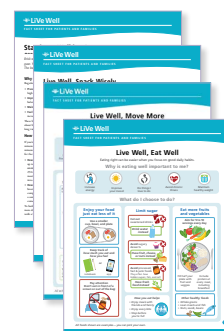
- [Prediabetes: Act Now to Protect Your Health \(English\) / \(Spanish\)](#)
- [Metformin for Prediabetes \(English\) / \(Spanish\)](#)



## Lifestyle materials

An array of patient handouts in the form of fact sheets and trackers to support lifestyle change are available at [Intermountainhealthcare.org](#) including:

- [Starting a Walking Program \(English\) / \(Spanish\)](#)
- [LiVe Well, Eat Well \(English\) / \(Spanish\)](#)
- [LiVe Well, Move More \(English\) / \(Spanish\)](#)
- [LiVe Well, Stress Less \(English\) / \(Spanish\)](#)
- [LiVe Well, Sleep Well \(English\) / \(Spanish\)](#)
- [LiVe Well, Snack Wisely \(English\) / \(Spanish\)](#)
- [1-Week Habit Tracker \(English\) / \(Spanish\)](#)
- [6-Week Habit Tracker](#)



## PATIENT EDUCATION MATERIALS FOCUSED ON BEHAVIORAL CHANGE



- [LiVe Well Lifestyle and Health Risk Questionnaire](#)
- [LiVe Well Readiness Worksheet](#)
- [LiVe Well Action Plan](#)
- [LiVe Well Rx to LiVe Well](#)

## Provider Resources

- [Intermountain prediabetes and diabetes prevention information \(Public Access\)](#)
- [Intermountain prediabetes and diabetes prevention program \(Intermountain access only\)](#)
  - Links to patient education and program information
  - Referral order tip sheet
  - Prediabetes class documentation
  - Link to prediabetes report center

## ► EVALUATION

The goal of Intermountain Healthcare's Diabetes Prevention Program is to facilitate weight loss leading to prevention and/or delay of type 2 diabetes through a consistent clinical process, team-based care, and rigorous evaluation, including reports for the clinical teams. These processes are designed to increase patient activation and engagement while providing evidence-based support for lifestyle change and healthy living.

The **RE-AIM evaluation framework** measures whether the program is effective in achieving its goals, determines which factors are contributing to the program's success, and recommends program changes. Of the five dimensions in the RE-AIM framework:

- **Reach** is measured with data on patient eligibility, referral, and participation.
- **Effectiveness** is measured with percentage of patients that achieve a 5 % weight loss and incidence of type 2 diabetes.
- **Adoption** is measured with organizational diabetes prevention diffusion among providers / clinics.
- **Implementation** is evaluated by measuring adherence to the program.
- **Maintenance** is gauged by measuring outcome sustainability over time.



**To enable this evaluation, Intermountain tracks the following:**

### Reach

- Number of patients identified with prediabetes
- Number of identified patients invited to participate in the DPP and the number that actually attended

### Effectiveness

- Percent weight loss (at 6 months and 12 months)
- Annual incidence of conversion to type 2 diabetes
- Percent of individuals who converted from prediabetes to diabetes in less than three years
- Change in weight, HbA1c, fasting blood glucose, blood pressure, BMI, and lipids

### Adoption

Number of providers and clinics enrolling participants into the DPP

### Implementation

Number of sessions that participants attend in *The Weigh to Health*® program

### Maintenance

Measurement over time

## CPM DEVELOPMENT TEAM

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## REFERENCES

The following are the primary references used in this CPM:

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- HER Herman WH, Edelstein SL, Ratner RE, et al; Diabetes Prevention Program Research Group. The 10-year cost-effectiveness of lifestyle intervention or metformin for diabetes prevention: An intent-to-treat analysis of the DPP/DPPOS. *Diabetes Care* 2012;35:723-730.
- TAB Tabák AG, Herder C, Rathmann W, Brunner EJ, Kivimäki M. Prediabetes: A high-risk state for developing diabetes. *Lancet* 2012;379(9833):2279–2290.

This CPM presents a model of best care based on the best available scientific evidence at the time of publication. It is not a prescription for every physician or every patient, nor does it replace clinical judgment. All statements, protocols, and recommendations herein are viewed as transitory and iterative. Although physicians are encouraged to follow the CPM to help focus on and measure quality, deviations are a means for discovering improvements in patient care and expanding the knowledge base. Send feedback to Trevor Smith, Intermountain Healthcare, Health Promotion/Wellness Executive Director, [Trevor.Smith@imail.org](mailto:Trevor.Smith@imail.org).