



## Strategies to Increase Health System Referrals to Chronic Disease Prevention and Management Programs



### Process Change Strategies

Process Change strategies include:



**Decision Support**



**Bi-Directional Referral**



**Automatic Referral**



**Referral Letters**



**Electronic Referral**

Refer to [Key Takeaways](#) for more information



U.S. CENTERS FOR DISEASE  
CONTROL AND PREVENTION

National Center for Chronic Disease Prevention and Health Promotion  
Division of Diabetes Translation

# Purpose

This resource describes Process Change strategies that can be used to increase health system referrals to chronic disease prevention and management programs or preventive services. Health system referrals are a process by which a health care provider recommends that a patient receives a specific service or attends a specific program delivered by another entity (clinical or community based).

**PROCESS CHANGE** includes small-scale strategies that involve some aspect of the individual referral process, such as introducing electronic referral systems, bi-directional referrals, and automatic referrals.

## Who Is This For?

This resource is for organizations working to increase health system referrals to evidence-based chronic disease prevention and management programs and preventive services, such as the National Diabetes Prevention Program (National DPP) and diabetes self-management education and support (DSMES) services.

These organizations could include:

- State and local health departments
- Chronic disease programs
- Community-based organizations and health centers
- Health systems

## How to Use This Document

This resource:

- Contains specific strategies within the Process Change strategy type.
- Describes strategies that show promising or emerging evidence for effectiveness if they represent potentially valuable approaches for implementation.
- Links to additional documents that provide more details on the other specific strategy types, including strategy spotlights and implementation considerations.
- Categorizes the evidence for whether the specific strategy increased referrals. Categories include:

### ***Strong Evidence***

There was enough high-quality evidence to conclude that the strategies in this category increased health system referrals.

### ***Promising Evidence***

There was enough evidence to conclude that these strategies increased health system referrals despite potential weaknesses in the evidence.

### ***Emerging Evidence***

There was not enough evidence to conclude that these strategies increased health system referrals. Programs intending to use these strategies could evaluate their effectiveness within their respective health systems.

## Decision Support

This strategy involves using prompts, alerts, reminders, or screening and treatment algorithms to help health care providers make referrals.

### Strategy Spotlight #1

#### Computer Decision Support for Managing Familial Cancer Risk in Primary Care

##### PURPOSE

To evaluate a computer decision support system vs. current practice to manage familial cancer risk

##### PATIENT POPULATION

Patients who expressed concerns about their family history of breast or colorectal cancer (n = 303 patients in intervention practices, n = 84 patients in comparison practices)

##### PARTICIPATING STAFF

General practitioners or practice nurses

##### INTERVENTION

A computer decision support system, the Genetic Risk Assessment on the Internet with Decision Support (GRAIDS), was used.

##### PROGRAM OR SERVICE REFERRED TO

Genetic clinic for familial breast or colorectal cancer care

##### SETTING

Primary care practices, East Anglia, United Kingdom

##### INTERVENTION LENGTH

1 year

##### IMPACT ON REFERRALS



The intervention led to about twice as many referrals to the Regional Genetics Clinic compared to control practices (average of 6.2 referrals vs. 3.2 referrals per 10,000 registered patients per year; mean difference 3.0 referrals; 95% confidence interval [CI] = 1.2–4.8; p = 0.001).

Referrals from intervention practices were more likely to be consistent with referral guidelines (odds ratio = 5.2; 95% CI = 1.7–15.8; p = 0.006).

## Strategy Spotlight #2

### A Mobile Health Decision Support System for Screening and Management of Tobacco Use

#### PURPOSE

To describe predictors of nurse actions in response to a mobile health decision support system for guideline-based screening and management of tobacco use

#### PATIENT POPULATION

A dataset of 14,115 patient encounters

#### PARTICIPATING STAFF

Registered nurses enrolled in advanced practice nurse training

#### INTERVENTION

Nurses were prompted by a mobile health decision support system to screen patients for tobacco use and select guideline-based treatment recommendations for patients who said they were willing to stop smoking.

#### PROGRAM OR SERVICE REFERRED TO

Tobacco cessation services

#### SETTING

Acute and ambulatory care sites, New York, New York, USA

#### INTERVENTION LENGTH

3 years

#### IMPACT ON REFERRALS

The mobile health decision support system led to adherence to guideline-based recommendations for screening and referral for tobacco cessation services.

 **84%** 

of patients were screened for tobacco use (n = 11,792).

 **38%** 

of patients using tobacco reported a willingness to quit (n = 779 of 2,022).

 **99%** 

of patients who reported a willingness to quit were referred to tobacco cessation resources (n = 775 of 779).

## Automatic Referral

This strategy involves adopting a process that triggers a referral based on specific patient criteria without the health care provider needing to make the decision to refer.

### Strategy Spotlight

#### Cardiac Rehabilitation Enrollment Following Automatic Referrals

##### PURPOSE

To compare verified cardiac rehabilitation enrollment after automatic referrals with those resulting from the usual referral system

##### PATIENT POPULATION

Adult patients with acute coronary syndrome (myocardial infarction, unstable angina, ischemic congestive heart failure, percutaneous coronary intervention, or acute coronary bypass) (n = 661)

##### PARTICIPATING STAFF

Cardiologists, family physicians, cardiac surgeons, and nurses

##### INTERVENTION

The automatic referral model uses hospital patient electronic records to prompt a standard order for a cardiac rehabilitation referral for all eligible patients with cardiac diseases. Patients receive a mailed information packet with a letter from the referring physician, a program brochure, a schedule of classes, and a request that the patient call to book an appointment.

##### PROGRAM OR SERVICE REFERRED TO

Cardiac rehabilitation services

##### SETTING

Tertiary care facility in Toronto, Ontario, Canada

##### INTERVENTION LENGTH

1 year

##### IMPACT ON REFERRALS

The intervention led to an increase in referrals to and enrollment in cardiac rehabilitation.

 **2x** 

About twice as many patients received an automatic referral to cardiac rehabilitation services (n = 171, 71%) compared to patients who received the usual referral (n = 91, 34%).

 **52%** 

of patients who received an automatic referral enrolled in cardiac rehabilitation (n = 124), compared to 32% (n = 84) of patients who received the usual referral (p < 0.001).

## Electronic Referral

This strategy involves referrals that are electronically transmitted (e.g., through email or electronic health record [EHR]).

### Strategy Spotlight

#### Electronic Health Records to Connect Patients to a Tobacco Quitline

##### PURPOSE

To develop and evaluate a secure, closed-loop EHR referral (eReferral) system linking patients visiting health care clinics with a state tobacco quitline

##### PATIENT POPULATION

Adults who use tobacco (n = 1,429)

##### PARTICIPATING STAFF

Medical assistants

##### INTERVENTION

This EHR system automatically populates and sends eReferral orders for tobacco users interested in cessation services to the state tobacco quitline.

##### PROGRAM OR SERVICE REFERRED TO

Tobacco quitline services

##### SETTING

A primary care clinic and specialty clinic, Madison, Wisconsin, USA

##### INTERVENTION LENGTH

6 months

##### IMPACT ON REFERRALS

Compared to fax referrals, the eReferral system increased referrals of tobacco users to quitline services.

 **14%** 

of tobacco users visiting the clinics (199 of 1,429) were referred to the quitline, compared to 0.3% of tobacco users (8 of 2,692) who were referred before eReferral implementation.

 **4.9%** 

of tobacco users seen during the eReferral study period accepted the referral to the quitline, compared to 0.15% of tobacco users who accepted a referral before the intervention.

## Bi-Directional Referral

This strategy involves a process where a referral goes from the health care provider to the program or service and feedback goes from the program or service back to the health care provider.

### Strategy Spotlight

#### Integrating Tobacco Cessation Quitlines Into Health Care

##### PURPOSE

To better understand referral patterns and factors that affect referrals made through a bi-directional referral program

##### PATIENT POPULATION

Adults in Massachusetts who use tobacco (n = 3,909)

##### PARTICIPATING STAFF

Providers and staff in health care facilities, health plans, human service organizations, worksites/unions, and professional or health care associations across the state

##### INTERVENTION

QuitWorks, a fax-referral tobacco cessation program, links health care organizations, providers, and patients to the state's quitline and provides feedback reporting.

##### PROGRAM OR SERVICE REFERRED TO

Tobacco cessation services

##### SETTING

Hospitals, outpatient clinics, community health centers, and provider practices, Massachusetts, USA

##### INTERVENTION LENGTH

9 years, 2002–2011

#### IMPACT ON REFERRALS

Over time, the intervention increased referrals to the state tobacco quitline.

 **38%** 

annual increase in referrals from 2002 to 2005 using the QuitWorks intervention. During this time, monthly referrals increased from about 100 to about 325 ( $p < 0.001$ ).

 **69%** 

annual increase in referrals from 2009 to 2011. During this time, there was a substantial increase in referrals (n = 3,909,  $p < 0.001$ ), with consistent increases each year through the end of the evaluation period.

## Referral Letters

This strategy involves a process where patients receive a mailed letter from their health care provider referring them to a program or service.

### Strategy Spotlight

#### A Family Physician Model to Recruit Women for Breast Cancer Screening

##### PURPOSE

To determine whether family physicians would participate in the Family Physician Model recruitment strategy for mammography screening and whether the strategy would recruit at least 70% of eligible women for mammograms

##### PATIENT POPULATION

Women ages 50 to 69 (n = 10,857)

##### PARTICIPATING STAFF

Family physicians (n = 76)

##### INTERVENTION

Eligible women in participating family medicine practices were sent personalized letters on physician letterhead recommending mammography screening, along with fact sheets and maps to the clinic.

##### PROGRAM OR SERVICE REFERRED TO

Mammography screening

##### SETTING

Family medicine practices, Dundas, Ancaster, and Hamilton, Ontario, Canada

##### INTERVENTION LENGTH

2 years

##### IMPACT ON REFERRALS

Referral letters improved mammography screening rates.

 **54%** 

of eligible women (n = 10,857) who received a referral letter completed a mammogram screening, an increase from a 14% screening rate before the intervention.



## Implementation Considerations for Process Change Strategies

**Overall, decision support strategies demonstrate increases in referrals, though stronger evidence is needed.**

- **Collaborate with staff and partners, such as EHR vendors, who have working knowledge of the relevant technologies and how to implement changes.** Many Process Change strategies use health IT, such as EHR systems.
- **Primary care settings were most common** for Process Change strategies. Other settings may work as well, but less is known about them.
- **Tailor Process Change strategies to the referral practices and providers in your specific implementation setting.** Most strategies involved physicians and nurses as the referring providers. Other health care team members and staff (including nonclinical staff) may be able to refer patients, but less is known about these situations.
- **Implementing multiple Process Change strategies may be an effective approach for increasing referrals.** Some studies included multiple Process Change strategies. For example, one study used both Decision Support and Automatic Referrals.
- **Evaluate the effectiveness of Process Change strategies for increasing referrals in specific populations.** Most studies did not report on patient characteristics, and therefore the effectiveness of Process Change strategies for increasing referrals for specific populations is not known.
- **Consider additional opportunities to evaluate Automatic Referrals, Electronic Referrals, or Referral Letters as strategies,** as less is known about whether these strategies will increase referrals.

## Related Resources

For a high-level overview of all the referral strategies, refer to [Strategies to Increase Health System Referrals to Chronic Disease Prevention and Management Programs: Key Takeaways from a Systematic Review](#).

For detailed findings on all the referral strategies from a systematic review of the literature, refer to [Strategies to Increase Health System Referrals to Chronic Disease Prevention and Management Programs](#).

# References

[Learn more about study characteristics of Process Change strategy references.](#)

## NOTE

\* References with an asterisk indicate studies that were included in determinations of whether specific strategies had evidence of increasing health system referrals. Noncomparative studies were excluded from the effectiveness analysis.



## Decision Support

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## Automatic Referral

\* Grace SL, Russell KL, Reid RD, Oh P, Anand S, Rush J, et al. [Effect of cardiac rehabilitation referral strategies on utilization rates: A prospective, controlled study](#). Archives of Internal Medicine. 2011, 171(3), 235–241.

\* Grace SL, Scholey P, Suskin N, Arthur HM, Brooks D, Jaglal S, et al. [A prospective comparison of cardiac rehabilitation enrollment following automatic versus usual referral](#). Journal of Rehabilitation Medicine. 2007, 39(3), 239–245.



## Electronic Referral

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## Bi-Directional Referral

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## Referral Letters

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