Executable Content and Anticipatory Care Management

Krames Patient Education

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Why Anticipatory Care Management

The promise of engaging consumers in their care to improve outcomes, increase satisfaction and lower costs is at hand. Data analysis tools help us predict the future costs of ill people and people likely to become ill in the future. Actionable, behavior-based education is available to be dispensed at the time when your member needs to make a better health care decision. Anticipatory Care Management programs facilitate the use of available data to target high-risk people who can benefit from early intervention. And that can prevent high-cost events. Prevention that not only improves outcomes, but makes a real difference to your bottom line.

Current data collection and management capabilities give health plans the ability to segment their members into identifiable groups for targeted wellness and disease management programs and to assess the success of those programs over time. Yet, healthcare could do a great deal more to make the most of its data. Education interventions can be 'triggered' by moments in care. Low-cost interventions can reach entire populations at risk for a high-cost event by changing a behavior or causing an action that save dollars while ensuring better outcomes.

Consider the example of HealthPlus, a Michigan managed care company. HealthPlus identified patients who appeared not to have filled diabetic, high blood pressure and cholesterol medications and mailed personalized educational information to these patients about why they should take their medicines. After three years of tracking results, 77% of noncompliant patients with high blood pressure, 56% of noncompliant diabetic patients and 49% of noncompliant cholesterol patients were taking their medications.[i] While chronically ill patients might use several hundred dollars' worth of prescription medicines each month, the cost of a night in a Michigan hospital is nearly $4,000. A study from Cutting Edge Information states that as many as 125,000 deaths and up to 20% of all hospital and nursing home admissions result from patients failing to take their medications or not taking them properly.[ii]

The HealthPlus example demonstrates the power of *anticipating* high-cost events and *managing* a risk with cost-effective educational support in the area of medication compliance. Krames Anticipatory Care Management takes this concept further by building out comprehensive, easy-to-implement programs for Asthma, CAD, COPD, Heart Failure, Depression and Diabetes that can help you avoid events that are bad for patient health, costly to patients, and costly to you.

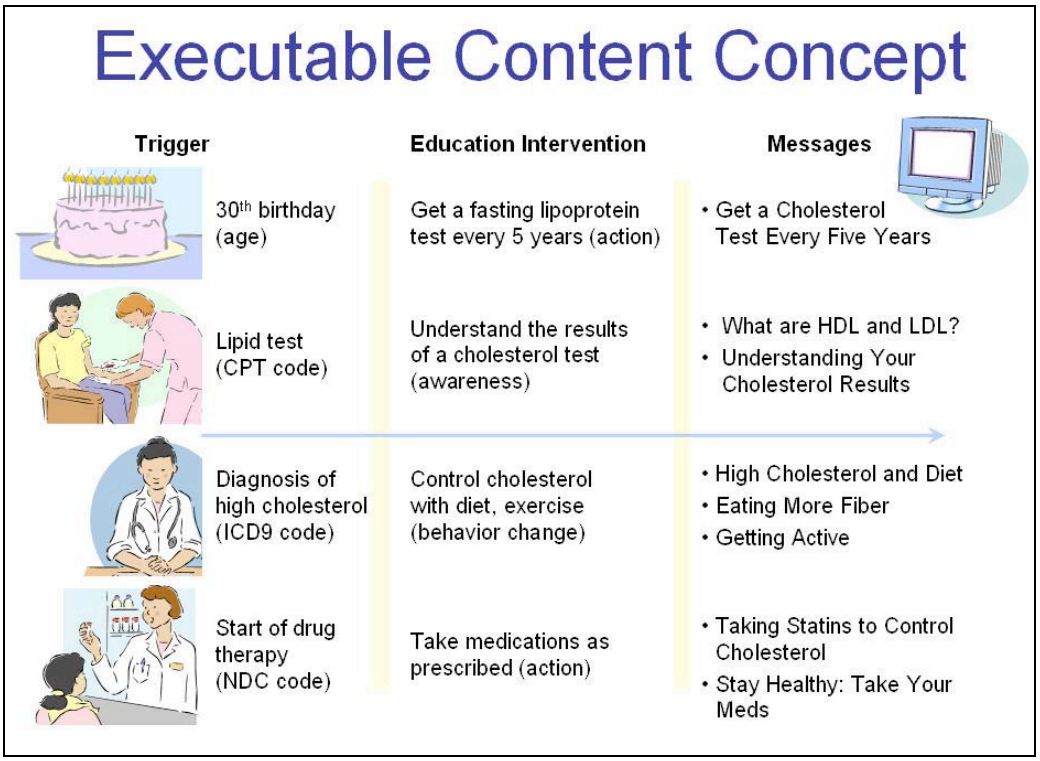
What is Anticipatory Care Management

- Uses member data already being collected to trigger a targeted, behavior-motivating message
- Targets those individuals at greatest risk for high-cost events
- Properly doses information as needed based on a moment in care not just the presence of a condition.
- Engages members earlier to avoid costs down the line.
- Influences decision-making that affects medical outcomes and costs
- Supports health behaviors

Anticipatory Care Management enables you to educate broad segments of people with individually targeted messages via "mass personalization" that effectively supports the self-care needs of individuals. This means that highly individualized education can be dispensed to high health care utilizers with target intervention illnesses. You can do this with Executable Content.

Executable content is granular, single-message, actionable chunks of education material related to a specific care event or behavior-change need. When this content is "executed", it is pushed programmatically at a trigger point to meet an intended educational objective.

For example, looking at claims data, you can identify all members with diabetes (mass audience) and send targeted messages so that the person who has no record of an annual foot exam receives one message, the person without an annual eye exam receives another message, and the person who missed his quarterly HbA1c test receive a third message (personalized.)



Triggers in the form of lab, biometric, pharmacy and medical claims data map to Education Interventions through a content-return rules engine, and these Interventions map in turn to Messages designed to create awareness, drive an action or change a behavior.

How Anticipatory Care Management Works: Program Design

We start with evidence-based guidelines published by leading medical organizations such as the American Heart Association or the Center for Disease Control. From these guidelines, we distill a set of care standards that become the basis for each Anticipatory Care Program. These standards of care are then editorially mapped to education interventions. These interventions have one of three specific objectives.

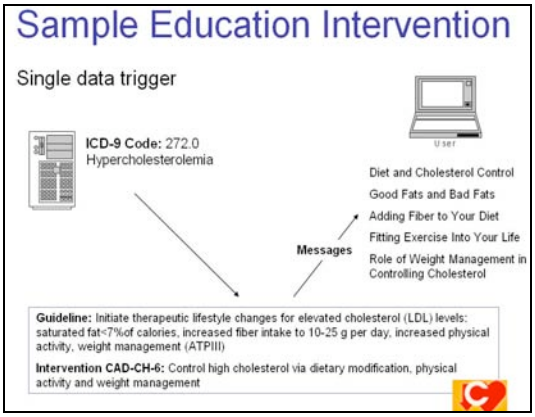
- Create Awareness
- Drive an Action
- Change a Behavior

Each intervention is, in turn, associated with one or more educational messages (or articles) that support the objective of the intervention.

Examples of education interventions are:

- Explain the results of and implications for a lipid panel test (awareness)
- Get a fasting lipoprotein test every 5 years (action)
- Control high cholesterol with diet and exercise (behavior change).

For example, the intervention mentioned above—control high cholesterol with diet and exercise---would have the following messages associated with it: Diet and Cholesterol Control, Good Fats versus Bad Fats, Eating More Fiber, and Fitting Exercise into your Life.



Education Interventions and the Rules Engine

Each education intervention is associated with one or more content-return rules. The content return rules are based on the associated standards of care and assumed availability of patient/member data. These rules recommend the combinations of data that should be present to appropriately execute, or trigger, an education intervention.

The content-return rules are if/then statements that refer to the presence or absence of multiple data triggers that can include:

- Personal Demographics (age, gender)
- Lab Data
- Biometric data
- Diagnoses (ICD-9 codes)
- Procedures (CPT codes)
- Medications (NDC codes)
- Claims Data

The output of each content return rule is an education intervention code. Each intervention code is associated programmatically with the mesages that support the intervention's objective.

For Example:

Logic and Inputs (IF)
Age > 19
And
Blood Pressure > 140/90 and/or ICD9 = 401.

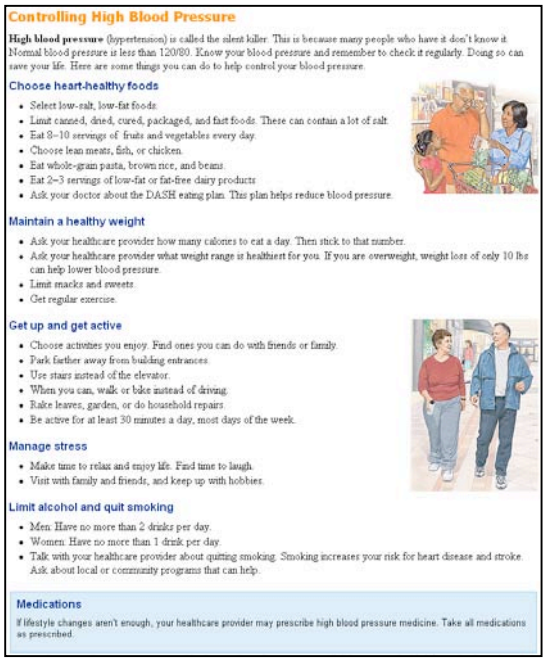
And Not

ICD9 =250. (diabetes)ICD = 410. 411. 412. 413. 414.0 , 414.8, 414.9 or 440.0 (Coronary Artery Disease [CAD])
ICD9 = 585 (chronic kidney disease)

Output: (Then)
Intervention CAD-BP-12: Control high blood pressure with lifestyle modifications (weight loss, DASH diet, aerobic activity, moderate alcohol consumption).

The logic above is for an individual who has hypertension, based on either blood pressure reading or a previous diagnosis, but who does not have diabetes, CAD, or kidney disease.

The message below would be associated with this particular intervention.



Controlling High Blood Pressure

High blood pressure (hypertension) is called the silent killer. This is because many people who have it don't know it. Normal blood pressure is less than 120/80. Know your blood pressure and remember to check it regularly. Doing so can save your life. Here are some things you can do to help control your blood pressure.

Choose heart-healthy foods

- Select low-salt, low-fat foods.
- Limit canned, dried, cured, packaged, and fast foods. These can contain a lot of salt.
- Eat 8–10 servings of fruits and vegetables every day.
- Choose lean meats, fish, or chicken.
- Eat whole-grain pasta, brown rice, and beans.
- Eat 2–3 servings of low-fat or fat-free dairy products.
- Ask your doctor about the DASH eating plan. This plan helps reduce blood pressure.

Maintain a healthy weight

- Ask your healthcare provider how many calories to eat a day. Then stick to that number.
- Ask your healthcare provider what weight range is healthiest for you. If you are overweight, weight loss of only 10 lbs can help lower blood pressure.
- Limit snacks and sweets.
- Get regular exercise.

Get up and get active

- Choose activities you enjoy. Find ones you can do with friends or family.
- Park farther away from building entrances.
- Use stairs instead of the elevator.
- When you can, walk or bike instead of driving.
- Rake leaves, garden, or do household repairs.
- Be active for at least 30 minutes a day, most days of the week.

Manage stress

- Make time to relax and enjoy life. Find time to laugh.
- Visit with family and friends, and keep up with hobbies.

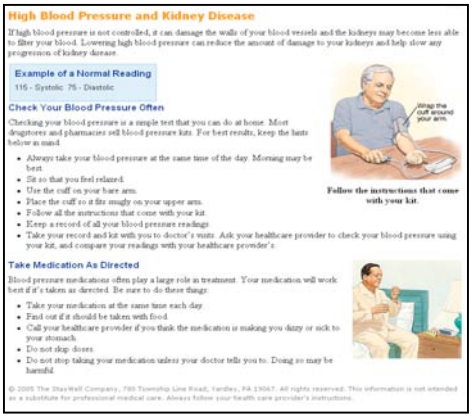
Limit alcohol and quit smoking

- Men: Have no more than 2 drinks per day.
- Women: Have no more than 1 drink per day.
- Talk with your healthcare provider about quitting smoking. Smoking increases your risk for heart disease and stroke. Ask about local or community programs that can help.

Medications

If lifestyle changes aren't enough, your healthcare provider may prescribe high blood pressure medicine. Take all medications as prescribed.

However, the logic would be different for an individual with high blood pressure and kidney disease. In that case, the trigger point might be a blood pressure reading of 130/80 and the education intervention would be: control high blood pressure with lifestyle modification and drug therapy. A different message, shown below, would be associated with this intervention.



High Blood Pressure and Kidney Disease

If high blood pressure is not controlled, it can damage the walls of your blood vessels and the kidneys may become less able to filter your blood. Lowering high blood pressure can reduce the amount of damage to your kidneys and help slow any progression of kidney disease.

Example of a Normal Reading

115 - Systolic 75 - Diastolic

Check Your Blood Pressure Often

Checking your blood pressure is a simple test that you can do at home. Most drugstores and pharmacies sell blood pressure kits. For best results, keep the hints below in mind:

- Always take your blood pressure at the same time of the day. Morning may be best.
- Sit so that you feel relaxed.
- Use the cuff on your bare arm.
- Place the cuff so it fits snugly on your upper arm.
- Follow all the instructions that come with your kit.
- Keep a record of all your blood pressure readings.
- Take your record and kit with you to doctor's visits. Ask your healthcare provider to check your blood pressure using your kit, and compare your readings with your healthcare provider's.

Wrap the cuff around your arm.

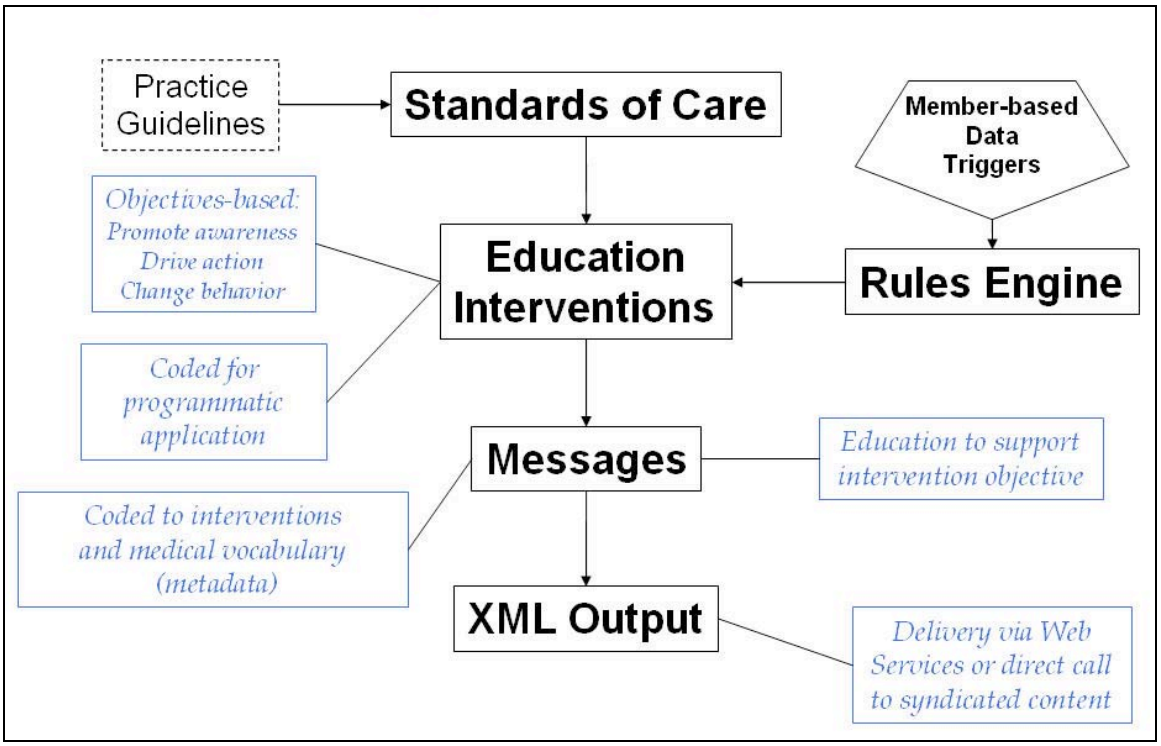
Follow the instructions that come with your kit.

Take Medication As Directed

Blood pressure medications often play a large role in treatment. Your medication will work best if it's taken as directed. Be sure to do these things:

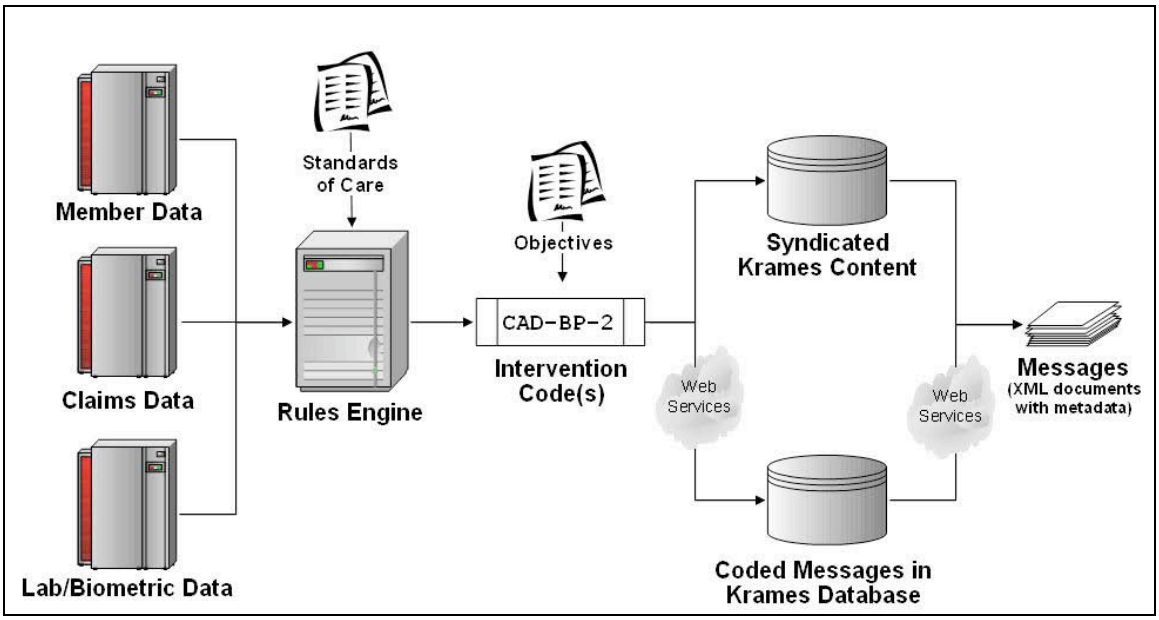
- Take your medication at the same time each day.
- Find out if it should be taken with food.
- Call your healthcare provider if you think the medication is making you dizzy or sick to your stomach.
- Do not skip doses.
- Do not stop taking your medication unless your doctor tells you to. Doing so may be harmful.

Summarized graphically, an Anticipatory Care Management program is a flowchart wherein an education intervention is derived from standards of care and objectives, and is dependent on content-return rules that recommend the combinations of data that should be present to appropriately execute an education intervention.



Anticipatory Care Management Beneath the Hood

Presented technically, the process of creating an education intervention for an Anticipatory Care Management program looks like this, where client-owned data is run through a rules engine to generate a standards-of-care-based education intervention code. Education intervention codes are associated with a content plan made up of one or more messages (articles) that educate about that intervention's objective. Each message (article) is stored in XML format in Krames/StayWell's content database and can be called up as a group via Web Services, or individual or sets of messages can be called up using the metadata built into the messages (ICD-(, CPT, NDC, MeSH, gender, age, etc.).



Customization of Content Plans

It should be noted that the content-return rules and education interventions can be customized in accordance with client preferences. For example, rules can be modified to accommodate available data sets; education interventions can be added, deleted or modified; metadata coding can be customized; and client content can be integrated into the content plans.

Sample Content-Return Rules

Guideline-driven content-return rules recommend the combinations of data that should be present to appropriately execute an education intervention. In the coronary artery disease (CAD) examples below, education interventions differ if specific data is present ("+") or absent ("-") and these rules are based on practice guidelines from organizations such as the American Heart Association and the American College of Cardiology.

Intv. Code	Educational Interventions	Targets	Message(s)	Triggers: Personal / Lifestyle	Triggers: Lab Data / Biometrics	Triggers: Diagnoses	Triggers: Procedures	Triggers: Meds Utilization	Triggers: Suggested Event(s)
CAD-CH-2	Promote lipoprotein screening and patient awareness of outcome (healthy/ unhealthy)	Adults with CAD risk factors	*Know Your Cholesterol Levels* <get a fasting lipoprotein profile test at least every 2 years>	+Age: >19 ±Age ≥45 (men) ±Age ≥55 (women) ±Smoking status: smoker ±Activity level: sedentary ±Emotional status: high stress	±BP > 140/90 ±BMI ≥ 25 ±LDL > 160 ±HDL < 40 (men) ±HDL < 50 (women)	±Hypercholesterolemia (272.0) ±High-density lipoid deficiency (272.5) ±Hypertriglyceridemia (272.1) ±Hypertension (401.*) ±CAD or cardiovascular event (410.*, 411.*, 412.*, 413.*, 414.0*, 414.8*, 414.9*) ±Diabetes (250.*) ±Overweight, obesity (278.0*) ±Tobacco use (305.1)	-Lipid panel (80061, 83721 or V77.91) within 2 years		>20th birthday >New member >First appearance of one or more risk factor(s) >Two-year+ lapse since last screening >As scheduled in education program >HRA responses matching specified triggers
CAD-BP-8	Promote medication compliance in treatment of hypertension	Adults with hypertension and underutilization of blood presssure medication	*How Medication Can Help You Control Your Blood Pressure* <fill and take your prescriptions or ask your doctor about getting a prescription>	+Age: >19		+Hypertension (401.*)		+Underutilization of ACE inhibitors +Underutilization of beta blocker +Underutilization of thiazides	>Lapse in ACE inhibitor, beta blocker or thiazide utilization >Annual medication review

Triggers Key	
+	Data triggers marked "+" must be present to trigger specified intervention content.
-	Data triggers marked "-" must be absent to trigger specified intervention content.
±	At least one data trigger marked "±" must be present to trigger specified intervention content.

Flexible Delivery Architecture

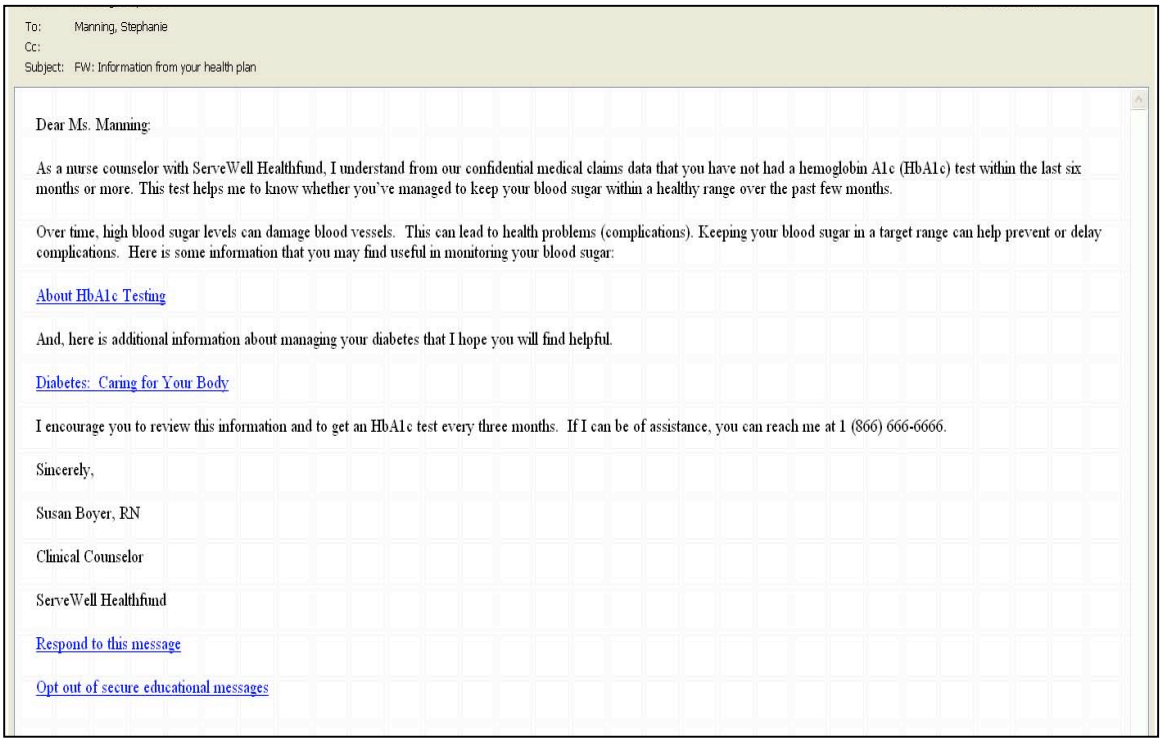
Content is delivered via a Service Oriented Architecture. Web services use either SOAP, HTTP GET, or HHTP POST commands. They allow retrieval of messages associated with intervention codes, as well as search using any of the metadata..

For customers needing an alternate deployment option, content can be syndicated and delivered as either XML or HTML. However, it is recommended that customers make use of web services for real-time access to content additions and updates.

Anticipatory Interventions vs Disease Management

Krames has developed Anticipatory Care Management programs for Asthma, COPD, CAD, Heart Failure (CHF), Depression and Diabetes. Traditional disease management approaches have been costly**.** So costly, you probably could address only 10-20% of your chronic disease population. Now, Krames can help you implement highly personalized yet cost-effective *anticipatory* interventions targeted to potentially high utilizers who are headed for suboptimal outcomes. Krames programs can help build awareness and change behaviors *before* bad health decisions are made. We know, and independent studies have shown, that an educated patient is more likely to achieve better outcomes than the uneducated patient.[iii] [iv]

Your diabetic population may need to be reminded of the importance of regular HbA1c testing or an annual foot exam. You identify the target population for the intervention, and Krames provides credible, objective-based and actionable education interventions that will make a bottom-line difference in outcomes (and dollars).



To: Manning, Stephanie
Cc:
Subject: FW: Information from your health plan

Dear Ms. Manning:

As a nurse counselor with ServeWell Healthfund, I understand from our confidential medical claims data that you have not had a hemoglobin A1c (HbA1c) test within the last six months or more. This test helps me to know whether you've managed to keep your blood sugar within a healthy range over the past few months.

Over time, high blood sugar levels can damage blood vessels. This can lead to health problems (complications). Keeping your blood sugar in a target range can help prevent or delay complications. Here is some information that you may find useful in monitoring your blood sugar:

About HbA1c Testing

And, here is additional information about managing your diabetes that I hope you will find helpful.

Diabetes: Caring for Your Body

I encourage you to review this information and to get an HbA1c test every three months. If I can be of assistance, you can reach me at 1 (866) 666-6666.

Sincerely,

Susan Boyer, RN

Clinical Counselor

ServeWell Healthfund

Respond to this message

Opt out of secure educational messages

Sample intervention deployed via e-mail. Interventions can be mail based, e-mail based or Web based.

Managing Diabetes: HbA1c Testing

If you have diabetes, you need to have an HbA1c test regularly. This lab test, also called the hemoglobin A1c (HbA1c) test, shows what your blood sugar level has been over the past few months. It helps show how well your diabetes is being managed over time. It is recommended that you have this test every 3–6 months.

A Simple Test

You don't need to do any special preparation for the HbA1c test. This test is usually done in a blood lab or in your doctor's office. Blood is taken from one of your veins using a needle.

Getting Your Number

HbA1c is normal if it is 5 or less. Normal ranges may vary slightly depending on the laboratory used. If the HbA1c value is 7 or above, your diabetes is considered poorly controlled.

What Your Results Mean

In general, the higher your HbA1c value, the higher the risk that you will develop problems from diabetes. These include eye disease, kidney disease, nerve damage, heart disease, and stroke. This is especially true if your HbA1c remains high on more than one occasion. So you should try to keep your level below 7. To do this, follow your treatment plan to control your blood sugar. Talk to your healthcare provider if you have trouble following your plan.

Anticipatory Care Management: Are You Ready?

Actionable, behavior-based education is available to be dispensed at the time when your member needs to make a better health care decision. Anticipatory Care Management programs facilitate the use of available data to target high-risk people who can benefit from early intervention. Prevention that not only improves outcomes, but makes a real difference to your bottom line. Krames Anticipatory Care Management programs can put it all together for you. Are you ready?

Contact Us

Krames has been the leader in patient education since 1974. Krames content can be found in over 80% of US hospitals, is used by over 300,000 providers in doctors' offices nationwide, and used by leading managed care and disease management organizations nationwide. Annually, Krames content touches 40 million lives.

We know that when patients are educated, their outcomes improve. And when health improves, so does your bottom line.

Contact us to learn how we can help your organization.

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[ii] "Pharmaceutical Patient Compliance and Disease Management – The Cost of Noncompliance." Cutting Edge Information, 2005.

[iii] "Congestive Heart Failure Disease Management Study: A Patient Education Intervention" Serxner, S., et. al, CHF, May/June, pg. 23-28, 1999.

[iv] "Randomized Controlled Trial of an Educational Booklet for Patients Presenting with Back Pain in General Practice". Roland M, & Dixon M. J Royal Col of Gen Practitioners, 39, 244–46. 1989.