

Pediatric Asthma Management Flow

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Overview

The Problem

Asthma is a growing problem for children. This approach employs creative technology enhanced methods to improve patient adherence to prescribed treatment. Using readily accessible text messaging and email technology this approach provides a 90 day educational program for anyone diagnosed with asthma.

1 Areas of Focus

- 1) Helping the patient follow their Action Plan
 1. Daily use of a controller
 2. Symptomatic use of a reliever upon first signs of difficulty in breathing and staged reuse until symptoms clear.
- 2) Use of peak flow for educational purposes and full loop spirometry for measurements

2 Common Barriers to Self-care (Why people don't follow their Action Plan)

- 1) Forgetting to take the controller
- 2) Not identifying difficulty in breathing – lack of spirometry for indication
- 3) Peer pressure – not wanting to be different and skipping treatment
- 4) Need more education in
 1. Symptoms
 2. Environment
 3. Triggers

Asthma Education Summary

This approach integrates technology into the cycle of care, with data transmission from mobile phones, resulting in a data driven process including remote insight and behavior change for the patient from home, school or anywhere they might be. Registration will be via web (hfstx.org) or text message (TEXT healthy asthma to 25827).

This approach is designed for patients previously diagnosed with chronic asthma and already prescribed with a routine of daily controllers and relievers as well as regularly scheduled follow up visits. Baselines will be established for each patient using full loop spirometry where possible. The educational messages act as a tool to help the patient understand symptoms, environment and triggers.

healthimo technology (aka - “healthimo”) is used to collect patient medication compliance data, provide education and deliver a satisfaction survey to patients. healthimo is a secure mobile text messaging based platform that makes it possible for the patient to remotely enter data into the system in just a few seconds. Children as young as ten years old are able to use healthimo with just a few minutes of training.

Key features are:

1. Patient Notifications via SMS or email
2. Compliance data collection using healthimo and Text Messaging
3. Education using healthimo and Text Messaging
4. Periodic messages focused on Zone awareness to engage patients
5. Periodic messages focused on Encouragement and Reinforcement

Patient Groups

Open to anyone with asthma or an interest in learning more about asthma

Success Metrics

- 1) Satisfaction
 - Patient
 - Parent
 - School Nurse
 - Medical Staff
 - 2) Sustainability
 1. Patient
 1. Quality of Life survey at beginning and end of pilot
 2. Clinicians
 3. Home Health
 4. Parent
- healthimo will be used for a three question patient survey (for Patients in Flow 1b that have been provided with healthimo).
 - Metrics
 - Number of one way messages sent
 - Number of two way messages sent
 - Number of responses to two way messages

Methods

Definitions

Zones

- Well controlled – green
- Mild to medium symptoms – yellow
- Severe symptoms – red

If a patient remains in the yellow category for 24 hours then they are automatically reclassified to the red or severe category.

4 uses of a reliever within any 24 hr period is a cause for concern.

Contact Points – The patient/guardian will be asked to provide two cell phone numbers and one email address.

Action Plan

- Template: <http://www.cdc.gov/asthma/actionplan.html>
- Self care plan customized to each patient's needs
- “Follow your action plan”
 1. Mantra

2. Always ends with “If symptoms don't improve, call PCP”

Adjunct Education – Education about symptoms, environment and triggers

1way Notification Message – An outbound notification message where no response is expected

2way Request Message – An outbound message where a response is expected

Participation – the patient is 'participating' if there is response to a 2way Request Message or healthimo Request within the last 7 calendar days

Key Features

1 Full loop spirometry data collection

- 1.1 In-office

2 Patient Notifications via SMS or email

- Notifications are sent to all contact points for a patient
 - Patient
 - Caregiver
 - via email and text message (for those who have opted in to receive texts)
- 2.1 Appointment Reminders
 - 2.1.1 For appointments, contact healthimo with the latest schedule
- 2.2 Changes in ozone
- 2.3 Changes in weather
- 2.4 Changes in pollen counts

3 Compliance data collection using healthimo

- 3.1 Medication logging via healthimo
 - 3.1.1 Use of Reliever
 - 3.1.1.1 “Register” use of inhaler; e.g. record first use (for this period) in healthimo
 - 3.1.1.2 Patient is asked to use healthimo to log the first use for inhaler.
 - 3.1.1.3 Maximum of two logs per week.

4 Daily controller reminder message combined with data collection and education

- 4.1 Patients commonly set reminder alarms to remember to take their controller each day
- 4.2 We collect the time of day the patient would like to take their controller
- 4.3 A text message is sent to the patient each day of the week at their preferred time of day.
 - 4.3.1 Messages do not say “take your controller”! Instead, the receipt of the message itself serves as the reminder to take the controller. The message content is used to deliver education and request information.
- 4.4 **Data Collection**
 - 4.4.1 There are two data collection requests per week
 - 4.4.1.1 Once per week a message asking how many times the patient missed/forgot controller
 - 4.4.1.2 Once per week a message asking the patient what zone they are in
 - 4.4.1.2.1 How are you feeling, what zone are you in?
 - *Green*
 - response reminding how important to keep taking controller,
 - “Follow your action plan”
 - *Yellow*
 - “Follow your action plan, and if you don't improve, call your PCP”

- *Red*

- “Follow your action plan, and if you don't improve, call your PCP or go to the EMR”

4.5 **Education**

Get patients engaged in identifying how these concepts apply to them personally by asking them questions via healthimo, and reporting this information back to healthimo staff.

4.5.1 Symptoms

- Concept: What are *your* symptoms? They are very patient specific. Get them to think in terms of *their* asthma symptoms, triggers, etc.
- Symptom checklist display incl use of Peak Flow (use std checklist)

4.5.2 Environment. Where are you? What is around you?

- Second hand smoke,
- Ozone,
- Weather,
- etc.

4.5.3 Triggers. What are *your* triggers?

4.5.3.1 List from meds was discussed

4.6 **Periodic messages focused on Encouragement and Reinforcement**

4.6.1 Message content TBD

4.6.2 Every message should encourage and reinforce

4.6.3 Additional message 1x a week with encouragement/reinforcement regardless of zone, participation etc.

Patient Enrollment Process

1. Person texts or registers via web.

1. Profile information will be collected:

1. includes contact information as well as preferred contact method
2. includes patient mailing address
3. includes any scheduled appointments
4. includes patient identifier
5. includes known 'triggers'

Messages

Message Frequency

1 Notification and Reminder Messages

Message Type	Schedule	Total	Note
Patient Setup	At Patient Enrollment	1	Confirm phone # is correct
Appointment Reminder	24 hours before each appointment	2	Sent at same time appointment is scheduled for on the following day
Pollen Notification	Ad-hoc	0-17	Maximum of 1 per week?
Ozone Notification	Ad-hoc	0-17	Maximum of 1 per week?
Weather Notification	Ad-hoc	0-17	Maximum of 1 per week?

2 Weekly Messages

- There may be more messages in the library than the total here because there can be multiple messages for each message type (e.g. more than one way to ask how you are feeling and what zone you are in).

Number of weeks patient is enrolled	17
Number of messages with replies	2

Message Type	Reply?	Total	Note
1. Controller compliance	Number of times missed controller this week	17	
2. Zone Question	Patient replies with current zone they are in	17	System replies to patient response per Flow 1b
3. Encouragement	-	17	
4. Symptoms	-	17	
5. Environment	-	17	
6. Triggers	-	17	
7.	-	17	
Totals	34	119	153

Example Messages

- Message (+Subject) can be up to a max of 130 characters.

- A two line message in this format is 130 characters.
- To wrap to second line, add a space (e.g. the second example message, the word max has a space after the a (ma x)).

1 Example Message

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

This is a message example and this message is 65 characters long.

2 Example Message

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

This is an example of a 130 character text message that is the max length supported by standard text messaging by all phones in US

Patient Setup Message

1 Phone Number Confirmation Message

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

Thank you for enrolling in the Healthy Families asthma management program. Please reply to confirm this phone on your profile.

One Way Reminder and Notification Messages

1 Appointment Reminder

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

Genevieve has a home health appointment at 9:30 AM on Wed Mar 17th at 6850 Clear Dr. Call 214.555.1212 to reschedule.

2 Pollen Notification

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

Fungus, Juniper, Grass are High. Follow your Action Plan!

Source: <http://www.pollencount.com/>

3 Ozone Notification

1	2	3	4	5	6
1234567890	1234567890	1234567890	1234567890	1234567890	1234567890

Ozone alert - air pollution watch level Orange. Follow your Action Plan!

Source: http://www.tceq.state.tx.us/cgi-bin/compliance/monops/ozone_actionday.pl