



Using Health IT to Promote Health Literacy & Medication Safety

Michael S. Wolf, PhD MPH

Division of General Internal Medicine

Feinberg School of Medicine

Northwestern University

Chicago, IL, USA



Acknowledgements.

Northwestern

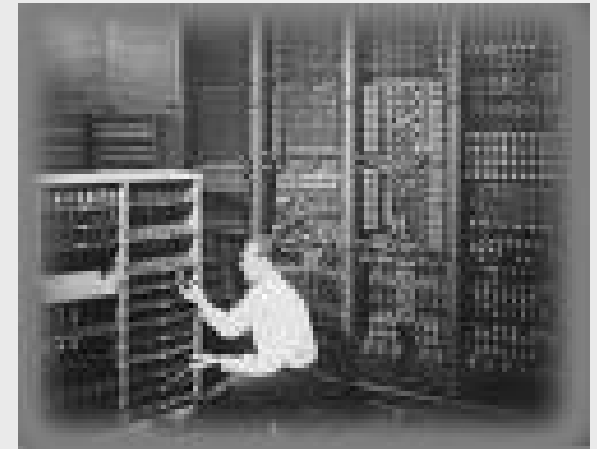
David Baker, MD MPH
Stacy Cooper Bailey, MPH
Laura Curtis, MS
Joe Feinglass, PhD
Darren Kaiser
Anjali Pandit, MPH

Emory

Ruth Parker, MD
Kara Jacobson, MPH

LSUHSC

Terry Davis, PhD



Harvard

Will Shrank, MD MSHS

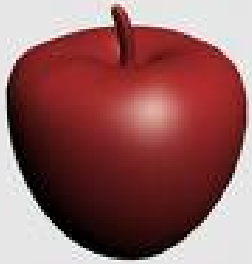
UConn/St Francis

Greg Makoul, PhD

Community Partners

JoAnn Pearson Knox
Pear Moraras
Mickey Eder, PhD





‘Low Hanging Fruit’: R_x examples

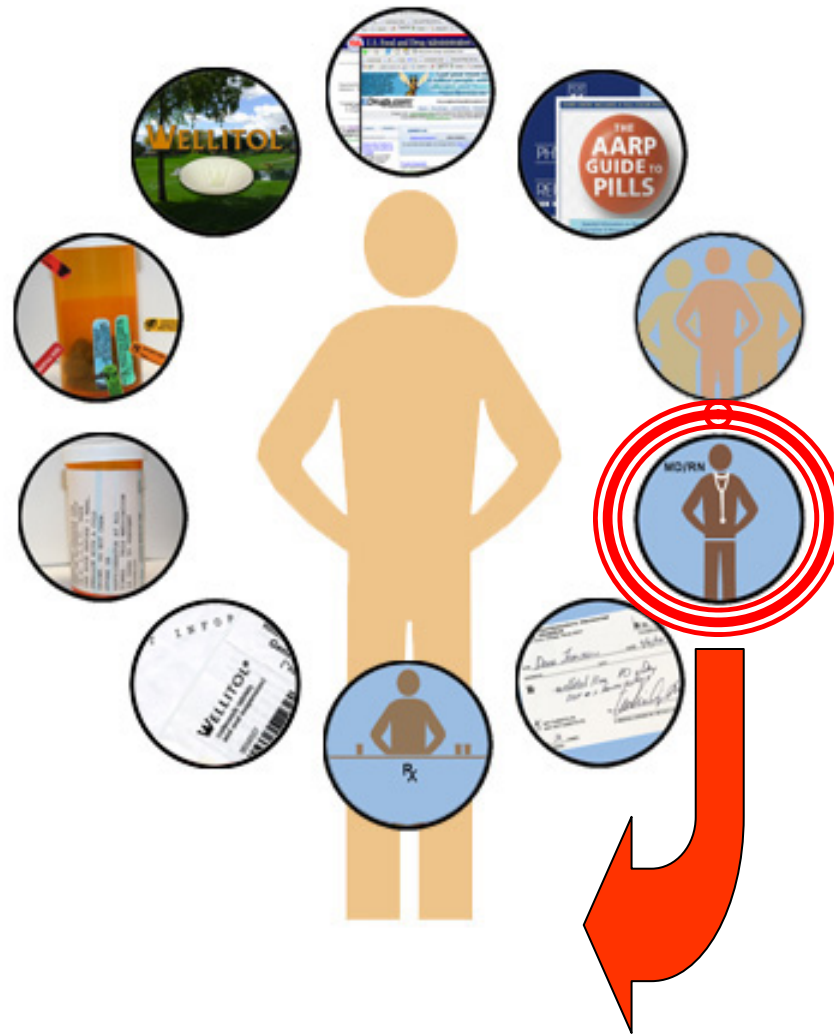
1. Standardize prescribing
2. Reconcile medicines
3. Improve R_x labeling

1. Patient-Centered Prescribing.

Goal

- Standardize prescribing using clear, concise, and explicit directions
 - eliminate variability at point of prescribing
 - eliminate variability at point of dispensing (?)

Start with the Root Cause...



The Problem.

Take one tablet orally once every day.

Take 1 tablet by mouth every morning.

53 Different Ways to Say 'Take 1 Tablet a Day'

Take one tablet for cholesterol.

Take one tablet by mouth once daily.

Take 1 tablet 1 time daily.

Take 1 tablet one time each day.

Take one pill by mouth at bedtime.

Take one pill by mouth once each day.

EHR Solution.

- Replace existing default 'sigs' with patient-centered list
- Set physician preferences
- Offer 'dot phrases' to support MD/Pt communication
- Automate print outs of Med Sheets w/ new scripts

You Have a New Medication

Date: August 1, 2008

Name: John Doe

Doctor: David Baker, MD

Please read the information below. This tells you how to take your medicine.

Drug Name	Lipitor®				
Generic Name	Atorvasatin (a TORE va sta tin)				
Purpose	This medication can lower "bad" cholesterol.				
Benefit	It can help prevent a heart attack or stroke.				
How to Take	Take 1 tablet by mouth at bedtime.	Morning 8:00-8:00	Noon 11:00-1:00	Evening 4:00-8:00	Bedtime 8:00-11:00
					
For How Long	You may need to be on this medication for the rest of your life.				
Call Your Doctor	If you have any of these symptoms for more than <u>1 week</u> : <ul style="list-style-type: none"> • Headaches • Stomach pain • Diarrhea 				
Stop Taking and Call Your Doctor	If you ever have: <ul style="list-style-type: none"> • Muscle pain • Muscle weakness • Joint pain 				
Important!	<ul style="list-style-type: none"> • Take this medicine only the way your doctors tells you.  Tell your doctor or pharmacist if you are pregnant, think you are pregnant, or breastfeeding. You should not take this medicine. <ul style="list-style-type: none"> • If you take over-the-counter medicines every day, tell your doctor. • Limit how much grapefruit juice you drink every day. 				
Please call NoVA ScriptsCentral Pharmacy at (123) 456-7890 if you have questions or concerns.					
These websites can tell you more about your medicine: www.ahrq.gov/consumer and www.nlm.nih.gov/medlineplus					

Challenges.

- 'Dot phrases' too passive...will MDs use?
- Making Med Sheets a 'dynamic' tool
- E-prescribing and work-arounds...


You Have a New Medication

Date: August 1, 2008

Name: John Doe

Doctor: David Baker, MD

Please read the information below. This tells you how to take your medicine.

Drug Name	Lipitor®			
Generic Name	Atorvasatin (a TORE va sta tin)			
Purpose	This medication can lower "bad" cholesterol.			
Benefit	It can help prevent a heart attack or stroke.			
How to Take	Take 1 tablet by mouth at bedtime.	Morning 8:00-8:00	Noon 11:00-1:00	Evening 4:00-8:00
				Bedtime 8:00-11:00
For How Long	You may need to be on this medication for the rest of your life.			
Call Your Doctor	If you have any of these symptoms for more than <u>1 week</u> : <ul style="list-style-type: none"> • Headaches • Stomach pain • Diarrhea 			
Stop Taking and Call Your Doctor	If you ever have: <ul style="list-style-type: none"> • Muscle pain • Muscle weakness • Joint pain 			
Important!	<ul style="list-style-type: none"> • Take this medicine only the way your doctors tells you.  Tell your doctor or pharmacist if you are pregnant, think you are pregnant, or breastfeeding. You should not take this medicine. <ul style="list-style-type: none"> • If you take over-the-counter medicines every day, tell your doctor. • Limit how much grapefruit juice you drink every day. 			
Please call NoVA ScriptsCentral Pharmacy at (123) 456-7890 if you have questions or concerns.				
These websites can tell you more about your medicine: www.ahrq.gov/consumer and www.nlm.nih.gov/medlineplus				

Patient Tools.

my
meds

It's your medicine. It's your health.

Medications are a very important part of your care. It's up to you to take your medicine the right way.

Use this folder to hold information about your medications.

Take it with you when you see your doctor.

What to do before you see your doctor

- Know what you are taking.
- Make a list of all your medicines and bring it to your doctor's office.

Medicines include all of the following:



Prescription



Over-the-counter



Vitamins



Supplements

What to do when you see your doctor

- Review your medicines with your doctor.
- Tell your doctor if you have any allergies to medicines.
- Let your doctor know if you have any questions or concerns.

If you are given a new medicine, always know:

- What the medicine is for.
- How you take the medicine.
- What the side effects are.
- What to do if you miss a dose.

Always take your medicine the way your doctor tells you.

Remember – it's up to you to take your medicine the right way!

What to do after you see your doctor

- Fill any new prescription medicines as soon as you can.
- Ask to speak to the pharmacist if you have any questions or concerns about any medicine you are taking.

2. Medication Reconciliation.

Goals

1. Improve the accuracy & comprehensiveness of Rx lists in ambulatory care.
2. Promote patient understanding of medicines

The Problem: Frequency of Discrepancies.

Study

Determine the frequency and type of antihypertensive medication discrepancies between patient-report and the medical record

Explore the relationship between these discrepancies and health outcomes

The Problem: Frequency of Discrepancies.

Study

Determine the frequency and type of antihypertensive medication discrepancies between patient-report and the medical record

Explore the relationship between these discrepancies and health outcomes

24.8% patients were classified as reconciled

25.6% were unable to name *any* antihypertensive medications

49.6% had some reconciliation discrepancies

Patients with some or complete discrepancies were more likely to have uncontrolled blood pressure (ARR 1.51; 95% 1.11-2.07; ARR 1.66; 95% CI 1.31 -2.10)

Type of Discrepancies.

Type	Patients with this Type of Discrepancy
Patient names one or more drugs not included in medical record	20%
Chart includes one or more drugs not reported by patient	35%
Patient identifies non-antihypertensive medication as antihypertensive	10%
Patient includes non-specific name, description only, gives unrecognizable name, or provides dose but cannot name	23%

Medication Reconciliation.

Zztest, Becky (MR # Z9Z)

Please Review Your Medicines

It is very important that your doctor knows all the medicines you are taking.

Follow these steps:

Step 1. Remove any medicines you are not currently taking by **drawing a line through the drug's name**.

Step 2. For medicines you are currently taking, place a check (✓) in the **Taking as directed?** column next to the correct box indicating if you are taking the medication as described in the instructions.

Step 3. Place a check (✓) in the **Concerns** column next to any concern you may have about the medication.

Your Current Medications Are

Medication	Instructions	Taking as directed?	Concerns
CELEBREX 200 MG OR CAPS	Take one tablet by mouth daily with food	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
DONEPEZIL HYDROCHLORIDE (ARICEPT) 5 MG TABS	Take one tab by mouth every AM	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
TYLENOL 325 MG TABS	2 TABLETS EVERY 4 HOURS AS NEEDED	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZIAC 5-6.25 MG or TABS	1 TABLET DAILY	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZOLPIDEM TARTRATE (AMBIEN) 10 MG TABS	Take one tab by mouth every night	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other

✓ 1

Pt receives latest Rx list

reviews meds

corrects list

flags concerns

gives to RN

Medication Reconciliation.

Zztest, Becky (MR # Z9Z)

Please Review Your Medicines

It is very important that your doctor knows all the medicines you are taking.

Follow these steps:

Step 1. Remove any medicines you are not currently taking by **drawing a line through the drug's name**.

Step 2. For medicines you are currently taking, place a check (✓) in the **Taking as directed?** column next to the correct box indicating if you are taking the medication as described in the instructions.

Step 3. Place a check (✓) in the **Concerns** column next to any concern you may have about the medication.

Your Current Medications Are

Medication	Instructions	Taking as directed?	Concerns
CELEBREX 200 MG OR CAPS	Take one tablet by mouth daily with food	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
DONEPEZIL HYDROCHLORIDE (ARICEPT) 5 MG TABS	Take one tab by mouth every AM	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
TYLENOL 325 MG TABS	2 TABLETS EVERY 4 HOURS AS NEEDED	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZIAC 5-6.25 MG or TABS	1 TABLET DAILY	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZOLPIDEM TARTRATE (AMBIEN) 10 MG TABS	Take one tab by mouth every night	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other

✓ 1

Pt receives latest Rx list

reviews meds

corrects list

flags concerns

gives to RN

✓ 2

RN clarifies Rx issues

reviews Rx list

Classifies issue

Medication Reconciliation.

Zztest, Becky (MR # Z9Z)

Please Review Your Medicines

It is very important that your doctor knows all the medicines you are taking.

Follow these steps:

Step 1. Remove any medicines you are not currently taking by **drawing a line through the drug's name**.

Step 2. For medicines you are currently taking, place a check (✓) in the **Taking as directed?** column next to the correct box indicating if you are taking the medication as described in the instructions.

Step 3. Place a check (✓) in the **Concerns** column next to any concern you may have about the medication.

Your Current Medications Are

Medication	Instructions	Taking as directed?	Concerns
CELEBREX 200 MG OR CAPS	Take one tablet by mouth daily with food	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
DONEPEZIL HYDROCHLORIDE (ARICEPT) 5 MG TABS	Take one tab by mouth every AM	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
TYLENOL 325 MG TABS	2 TABLETS EVERY 4 HOURS AS NEEDED	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZIAC 5-6.25 MG or TABS	1 TABLET DAILY	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other
ZOLPIDEM TARTRATE (AMBIEN) 10 MG TABS	Take one tab by mouth every night	<input type="checkbox"/> yes <input type="checkbox"/> no <input type="checkbox"/> taking only as needed	<input type="checkbox"/> None <input type="checkbox"/> Need Refill <input type="checkbox"/> Cost <input type="checkbox"/> Side Effects <input type="checkbox"/> Other

✓ 1

Pt receives latest Rx list

reviews meds

corrects list

flags concerns

gives to RN

✓ 2

RN clarifies Rx issues

reviews Rx list

Classifies issue

✓ 3

MD reviews Rx list w/ Pt

updates EHR

3. Variable and Poor Quality R_x Labeling.

Goals

1. Incorporate health literacy 'best practices' in Rx labeling at the point of dispensing.
2. Standardize translations for physician instructions; match to universal medication schedule (UMS).

The Problem.

<p>Lipitor 10 mg tabs Take one tab QD Dispense #30 Indication: for high cholesterol No refills</p>	<ul style="list-style-type: none"> - "Take one tablet daily." - "Take 1 tablet by mouth for high cholesterol." - "Take one (1) tablet(s) by mouth once a day." - "Take one tablet by mouth every day for high cholesterol."
<p>Fosamax 5 mg tabs Take one tab QD Dispense #30 Indication: osteoporosis prevention Do not lie down for at least 30 minutes</p>	<ul style="list-style-type: none"> - "Take 1 tablet by mouth daily." - "Take one tablet by mouth every day for osteoporosis prevention. Do not lie down for at least 30 minutes after taking." - "Take 1 tablet every day, 30 minutes before breakfast with a glass of water. Do not lie down." - "Take one tablet every day."
<p>Bactrim DS tabs Take one tab BID Dispense #6 Indication: UTI No refills</p>	<ul style="list-style-type: none"> - "Take one tablet by mouth twice daily for UTI" - "Take one tablet by mouth twice daily for urinary tract infection." - "Take 1 tablet by mouth 2 times a day." - "Take 1 tablet twice daily for 3 days."
<p>Ibuprofen 200 mg tabs Take 1-2 tabs TID PRN pain Dispense #30 No refills</p>	<ul style="list-style-type: none"> - "Take 1 to 2 tablets by mouth as needed for pain." - "Take 1 to 2 tablets by mouth three times daily as needed for pain." - "Take 1 to 2 tablets by mouth as needed for pain ** Not to exceed 4 times a day" - "Take 1 to 2 tablets 3 times a day as needed for pain."

Reprogramming the R_x Label.

<p>Do not drink alcoholic beverages while taking this medicine</p> <p>Carry or wear medical identification stating you are taking this medicine</p> <p>You should avoid prolonged or excessive exposure to direct and/or artificial sunlight while taking this medicine</p>	<p>Michael Wolf 04/29/71</p> <p>Glyburide 5mg</p> <p>Take for Diabetes</p> <p>Take: 2 pills in the morning 2 pills in the evening</p> <table border="1"><thead><tr><th>Morning 7-9 AM</th><th>Noon 11-1 PM</th><th>Evening 4-6 PM</th><th>Bedtime 9-11 PM</th></tr></thead><tbody><tr><td>2</td><td></td><td>2</td><td></td></tr></tbody></table>	Morning 7-9 AM	Noon 11-1 PM	Evening 4-6 PM	Bedtime 9-11 PM	2		2		<p>Rx #: 1234567 9/8/2009</p> <p>You have 11 refills</p> <p>180 pills</p> <p>Discard after 9/8/2010</p> <p>Provider: RUTH PARKER, MD Emory Medical Center (414) 123-4567</p> <p>Pharmacy: NoVA ScriptsCentral 11445 Sunset Blvd. Reston, VA (713) 123-4567</p> <p>NDC # 1234567</p>
Morning 7-9 AM	Noon 11-1 PM	Evening 4-6 PM	Bedtime 9-11 PM							
2		2								

Reprogramming the R_x Label.

Formatting for 3 panels
requires timely re-programming

Printers do not have
color – pre-printed

<p>Do not drink alcoholic beverages while taking this medicine</p> <p>Carry or wear medical identification stating you are taking this medicine</p> <p>You should avoid prolonged or excessive exposure to direct and/or artificial sunlight while taking this medicine</p>	<p>Michael Wolf 04/29/71</p> <p>Glyburide 5mg Take for Diabetes</p>	<p>Rx #: 1234567 9/8/2009</p> <p>You have 11 refills 180 pills</p> <p>Discard after 9/8/2010</p> <p>Provider: RUTH PARKER, MD Emory Medical Center (414) 123-4567</p> <p>Pharmacy: NoVA ScriptsCentral 11445 Sunset Blvd. Reston, VA (713) 123-4567</p> <p>NDC # 1234567</p>							
	<p>Take: 2 pills in the morning 2 pills in the evening</p> <table border="1"><thead><tr><th>Morning 7-9 AM</th><th>Noon 11-1 PM</th><th>Evening 4-6 PM</th><th>Bedtime 9-11 PM</th></tr></thead><tbody><tr><td>2</td><td></td><td>2</td><td></td></tr></tbody></table>	Morning 7-9 AM	Noon 11-1 PM	Evening 4-6 PM	Bedtime 9-11 PM	2		2	
Morning 7-9 AM	Noon 11-1 PM	Evening 4-6 PM	Bedtime 9-11 PM						
2		2							

Pre-programmed
and locked

USES ALL CAPS

Pre-printed on label
paper

Create new fields
for pharmacist

Some font
sizes locked

Lessons Learned.

- 'Low Tech' workarounds will likely be apart of first generation solutions

Lessons Learned.

- 'Low Tech' workarounds will likely be apart of first generation solutions
- Be mindful of impact on clinical practice culture...yet change is inevitable

Lessons Learned.

- 'Low Tech' workarounds will likely be apart of first generation solutions
- Be mindful of impact on clinical practice culture...yet change is inevitable
- Consider what new patient roles will be created

Lessons Learned.

- ‘Low Tech’ workarounds will likely be apart of first generation solutions
- Be mindful of impact on clinical practice culture...yet change is inevitable
- Consider what new patient roles will be created
- Importance of learning how created systems will communicate (MD practice – community pharmacy)

Lessons Learned.

- ‘Low Tech’ workarounds will likely be apart of first generation solutions
- Be mindful of impact on clinical practice culture...yet change is inevitable
- Consider what new patient roles will be created
- Importance of learning how created systems will communicate (MD practice – community pharmacy)
- Need for effective policies to drive change

Contact Information:

Michael S. Wolf, PhD MPH
Associate Professor, Medicine & Learning Sciences
Associate Division Chief – Research
Division of General Internal Medicine
Northwestern University
Feinberg School of Medicine
750 N. Lake Shore Drive, 10th Floor
Chicago, IL 60611
(312) 503 – 5592
mswolf@northwestern.edu

