

Understanding Medication Reconciliation and Solving the “Med Wreck” Problem

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Friday, April 5, 2019

About the Speaker...

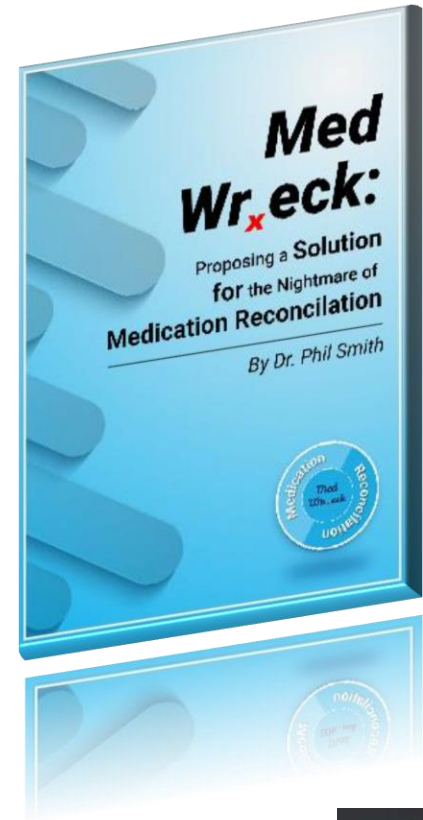
Author of the book, ***Med Wreck: Proposing a Solution for the Nightmare of Medication Reconciliation*** ©2017

Board-certified family physician with sub-specialty certification in clinical informatics

Physician, healthcare executive, consultant, author and mentor

Automated over 1% of hospitals in the U.S.

Author of ***Making Computerized Provider Order Entry Work***,
©2012 Springer-Verlag, London

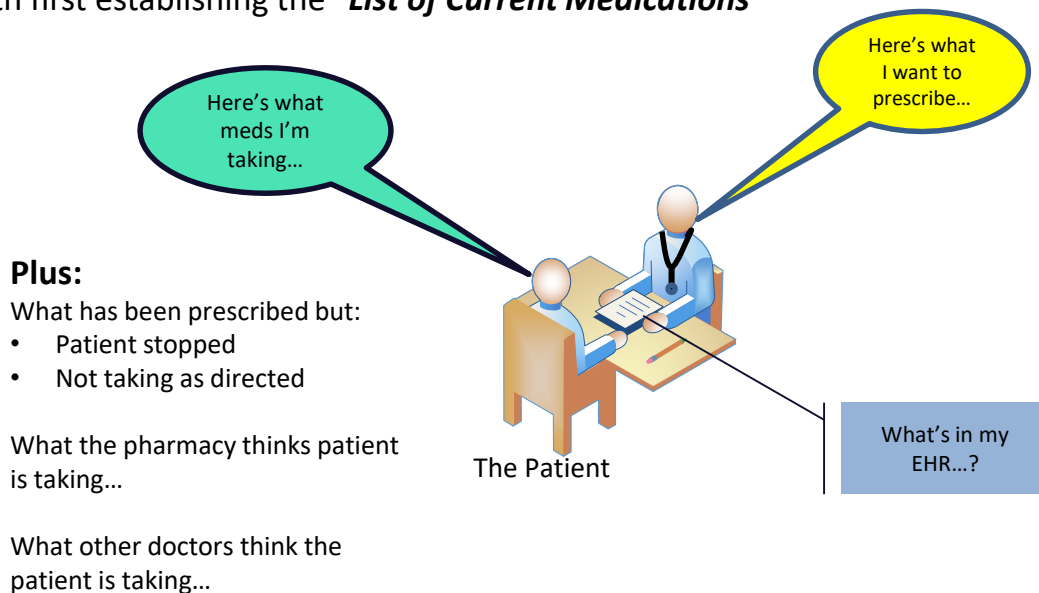


Deconstructing Medication Reconciliation

*Part 1: What is medication
reconciliation and why do we care?*

What is Med Rec?

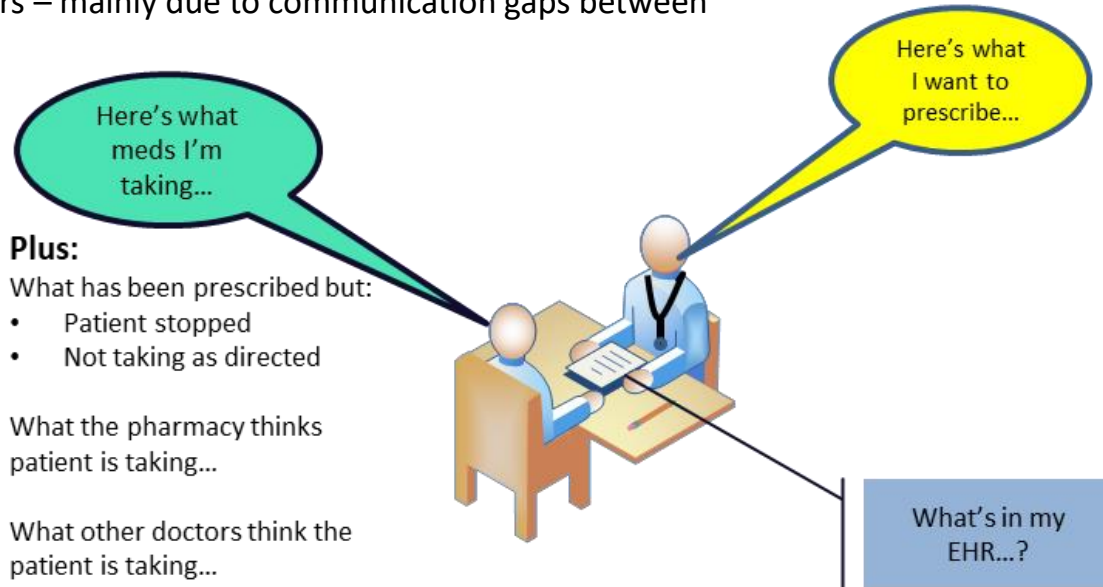
- Essentially a process to create a complete, accurate and current list of medications as appropriate for the venue of care...
- Med Rec is expected to occur whenever there is a “transition of care”.
- It begins with first establishing the “**List of Current Medications**”



“Transitions of Care”

Represent hand-offs – patient home to office, home to ED, home to hospital, physician care to physician care, hospital to home health...

“Transitions of care” are associated with errors – mainly due to communication gaps between providers and information systems.

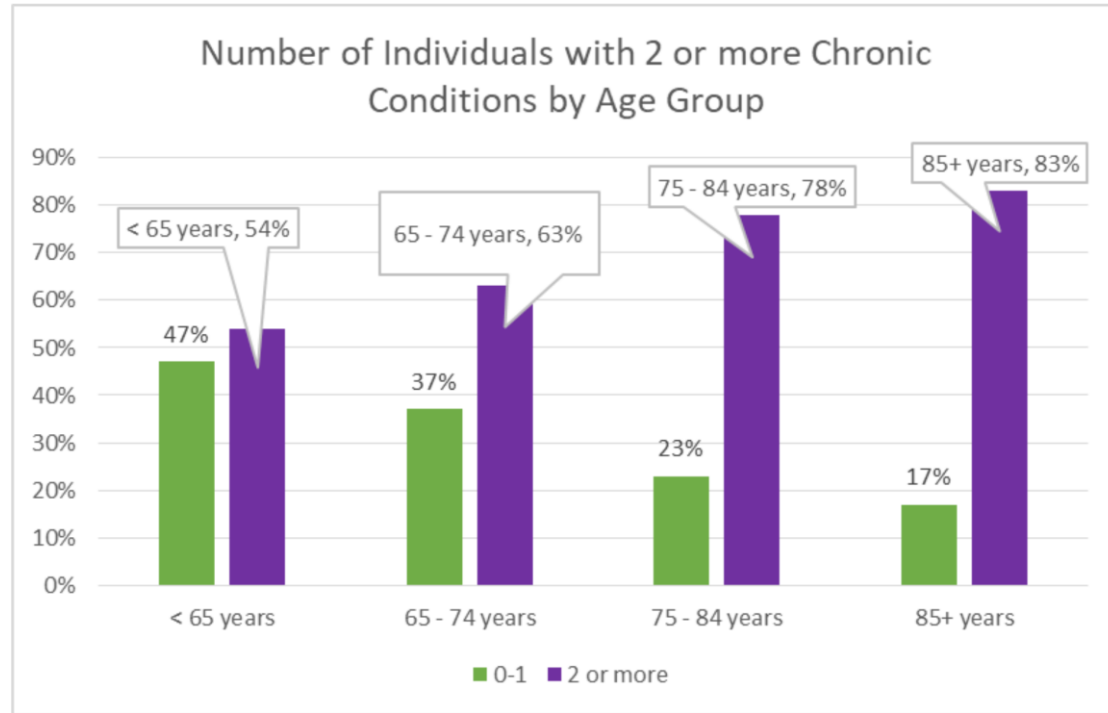


Why do we care?

1. Many Americans take one of more medications

Some facts: about why so many meds are taken...

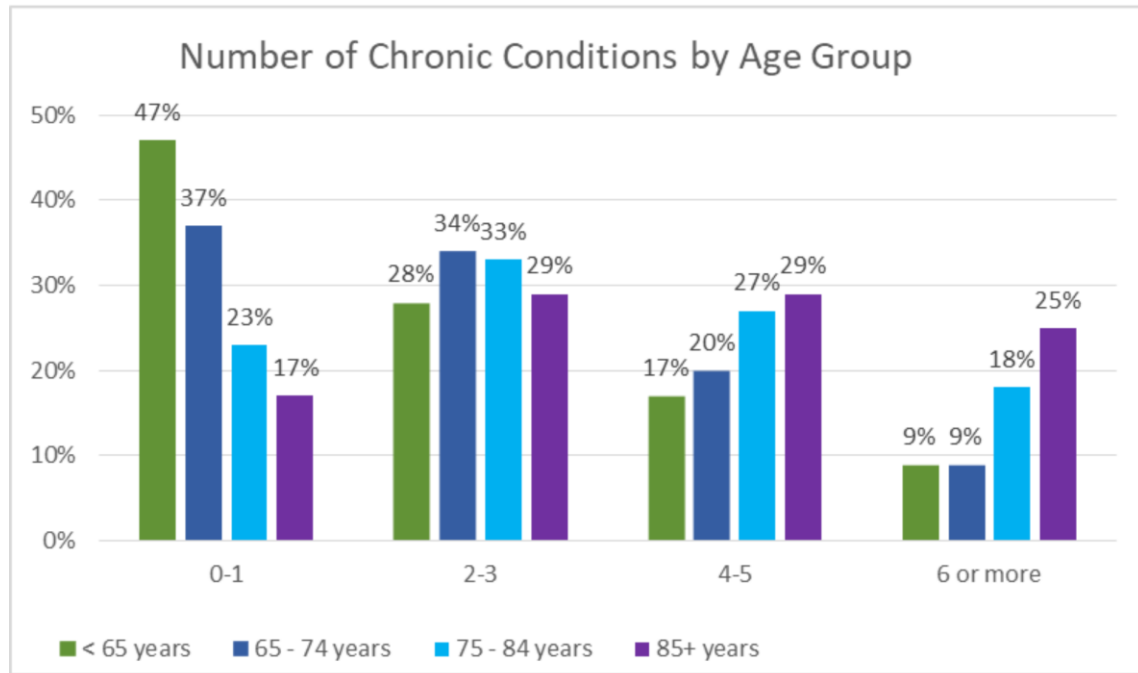
- According to the CDC¹
 - ***“40% of Americans have one or more chronic conditions”*** and are likely taking one or more medications daily.



¹ National Center for Health Statistics, CDC.gov

Some facts: about why so many meds are taken...

- According to the CDC¹
 - “40% of Americans have one or more chronic conditions” and are likely taking one or more medications daily.
 - The number of chronic conditions increase with age.



¹ National Center for Health Statistics, CDC.gov

Why do we care?

1. Many Americans take one of more medications
2. Medication errors do occur and for a variety of reasons.

Costs/Risks of current med rec

- Have about 1.1 billion med reconciliation opportunities each year.
 - Consume at over 32,000 FTEs in physician, pharmacist and nurse resources each year.
 - Cost of over \$3.8 billion/year.
- Despite this effort, adverse drug events
 - Affect 2 million hospital stays annually
 - Prolong hospital stays by 1.7 – 4.6 days
 - Account for over 3.5 million physician office visits
 - Account for over 1 million ED visits
 - Estimated to account for 125,000 hospital admissions

Some facts about medications...

- According to the CDC¹
 - “**40% of Americans have one or more chronic conditions**” and are likely taking one or more medications daily.
 - The number of chronic conditions increase with age.
- Adherence is an issue²
 - 49% have forgotten to take a prescribed medication
 - 31% had failed to fill a prescription
 - 29% had stopped a medication prematurely.

¹ National Center for Health Statistics, CDC.gov

² “Take as Directed: A Prescription Not Followed.”

National Community Pharmacists Association, December 2006

Medication errors can & do cause harm

- Due to medications that are
 - Missed or inadvertently stopped (omission errors)
 - Administered wrongly (commission errors)
 - Overdosed (including duplicates)
 - Misused

In addition to allergic reactions, medication interactions and side effects.

Why do we care?

1. Many Americans take one of more medications
2. Medication errors do occur and for a variety of reasons.
3. To maximize the benefits and minimize the risks of each medication, it is important to have an accurate and complete list of precisely the medications to consider, both prescribed and over-the-counter (OTC) agents.
4. “*Primum non nocere...*”

Deconstructing Medication Reconciliation

Part 2: The Mechanics of Med Rec

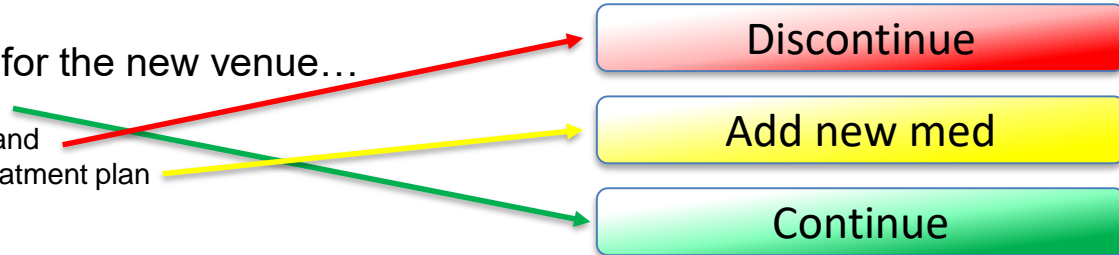
The Structure of the Med Order

Prinivil 20 mg tab, PO daily

- Medication (Trade and generic names)
- Dose (or strength or volume. Includes a unit of measure)
- Dosage Form (tab, cap, ER, CR, XR, liquid, sol., susp., inj.)
- Route of Administration (PO, IM, IV, SQ)
- Frequency (daily, twice a day, every 8 hours)
- Special Instructions (custom comments)
- +Prescriber, refills, pharmacy, start date, end date, duration.

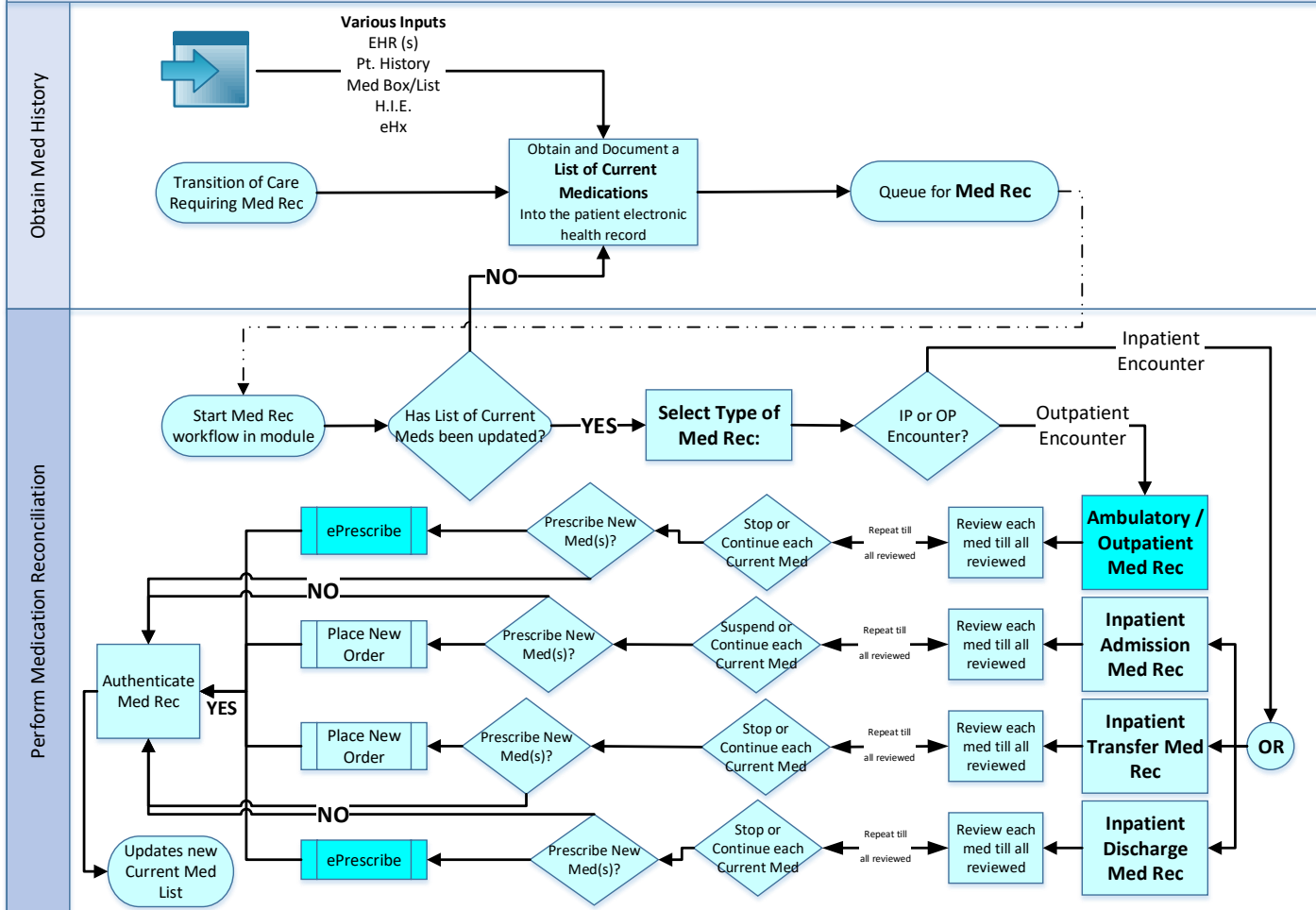
The mechanics of med rec...

- Obtain a medication history
 - Done by staff, nurse, pharmacist and/or provider
 - Done from patient and/or caretaker/parent/guardian
- Review against existing medication list (such as within the electronic health record (EHR))
- Provider determines, for the new venue...
 - What to continue,
 - What to discontinue, and
 - What to add to the treatment plan
- This creates a new, “reconciled” list of medications.



NOTE: Formulary limitations also contribute to changes in the medication list.

Med Reconciliation Workflow in the Electronic Health Record



Typical EMR Medication History:

https://holmes-stage.caregroup.org/?MGWLPN=TOBY-... F 51 Session # 2668216 - Windows Internet Explorer

My Schedule My Lists Tasks Find Logoff Select an option










Medication	Written	Last Filled	Dispense	Refills	Prescriber	Pharmacy	Action
Sort by Drug Class							
ALBUTEROL SULF HFA 90 MCG INH		10/15/2007	1		KRISTY, REED	CVS #02236 WOODSTOCK GA	
30 Days Supply							
AMBIEN 10 MG TABLET		10/18/2007	30		KRISTY, REED	CVS #02236 WOODSTOCK GA	
30 Days Supply							
30 Days Supply							
LIPITOR 20 MG TABLET		10/23/2007	30		KRISTY, REED	CVS #02236 WOODSTOCK GA	
15 Days Supply							
NOVOLOG FLEXPEN SYRINGE		10/19/2007	1		KRISTY, REED	CVS #02236 WOODSTOCK GA	
30 Days Supply							
PREVACID		10/22/2007	30		KRISTY, REED	CVS #02236 WOODSTOCK GA	
15 Days Supply							
PROZAC 10 MG TABLET		10/21/2007	30		KRISTY, REED	CVS #02236 WOODSTOCK GA	Unable to Determine Alert Status
30 Days Supply							
UNISTIK 2 NORMAL 0.81MM DEVICE		10/17/2007	1		KRISTY, REED	CVS #02236 WOODSTOCK GA	
30 Days Supply							
Sort by Drug Class							

Certain information may not be available or accurate in this report, including items that the patient asked not be disclosed due to patient privacy concerns, over-the-counter medications, low cost prescriptions, prescriptions paid for by the patient or non-participating sources, or errors in insurance claims information. The provider should independently verify medication history with the patient.

QHS = Take daily at bedtime. (a frequency)
 PO = Take by mouth (a route)
 Mg = milligrams (a dose strength)

Typical EMR Medication Profile w/Med Rec:

+Add Med

Medication	Directions	Type	Refills	Ordered by	Continue	Stop	Rx (Start)
Lisinopril 40 mg Tab	PO, Daily	Rx	3	Phil Smith, MD			
Baby Aspirin 82 mg Tab	PO, Daily	Hx	-	Outside Provider			
Pravastatin 20 mg Tab	PO, QHS	Rx	1	Phil Smith, MD			

QHS = Take daily at bedtime. (a frequency)

PO = Take by mouth (a route)

Mg = milligrams (a dose strength)

*Meta Data may also be available on each med, like compliance (taking, not taking, not taking as prescribed) and last dose.

Typical EMR Med Rec Medication Tool:

Name	ARAMIS, BEN		DOB		Location	MSU-5	PCU	MEDSURG	Hospital Nur	66666611		
Allergies	nonsteroidal anti-inflammatory agent, penicillin,				Sex		Ht	165.00	cm	Wt	70.000	kg
Diag/Prob	Congestive heart failure /				BSA	1.77	m ²					
Notes	Crush all medications				Timeline	Assessment		ATTMD - RASHID, SAI		?		
Patient	MAR	Worksheet	Assessment	Orders	Observations	Reports						
History	Admission - 07/10 13:45 - HCS		Discharge - 07/08 14:52 - HCS		MED Orders							
Rx	Continue	Stop	Class	Source	Description	Brand	Dose	Ro ute	Frequen cy	PR		
anti-infectives												
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	anti-infectives	I	penicillin V potassium 250 mg TAB	V-Cillin K	250 MG	PO	QID			
cardiovascular agents												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	cardiovascular agents	I	hydrochlorothiazide-triamterene 50 mg-75 mg TAB	Maxzide	1 TAB	PO	DAILY			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	cardiovascular agents	H	metoprolol 50 mg ERT	Toprol-XL	50 MG	PO	Q1400			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	cardiovascular agents	I	metoprolol 50 mg TAB	Lopressor	50 MG	PO	DAILY			
central nervous system agents												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	central nervous system agents	I	acetaminophen 325 mg TAB	Tylenol	650 MG	PO	Q4H			
<input type="checkbox"/>	<input type="checkbox"/>	DC <input checked="" type="checkbox"/>	central nervous system agents	H	baclofen 10 mg TAB	Lioresal	10 MG	PO	TID			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	central nervous system agents	I	divalproex 250 mg ECT	*Depakote	250 MG	PO	BID			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	central nervous system agents	I	phenobarbital 30 mg TAB	*PHENOBARB	30 MG	PO	DAILY			
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	central nervous system agents	I	tramadol 50 mg TAB	Ultram	50 MG	PO	Q4H	P		
gastrointestinal agents												
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	gastrointestinal agents	I	docusate sodium 100 mg CAP	Colace	50 MG	PO	BID			
metabolic agents												
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	metabolic agents	B	allopurinol Oral 100 mg TAB 1 ea	*Zyloprim	100 MG	PO	BID			
psychotherapeutic agents												
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	psychotherapeutic agents	I	aripiprazole 10 mg TAB	*Abilify	15 MG	PO	BID			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	psychotherapeutic agents	H - MQ	haloperidol 2 mg TAB	Haldol	2 MG	PO	TID			
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	psychotherapeutic agents	I	sertraline 25 mg TAB	*Zoloft	25 MG	PO	DAILY			
respiratory agents												

Typical EMR Med Rec Medication Tool:

Medication	Directions	Type	Refills	Continue	Stop	Rx (Start)	Reconciled Med	Reconciled Directions
Lisinopril 40 mg Tab	PO, Daily	Rx	3					
Baby Aspirin 82 mg Tab	PO, Daily	Hx	-					
Pravastatin 20 mg Tab	PO, QHS	Rx	1					

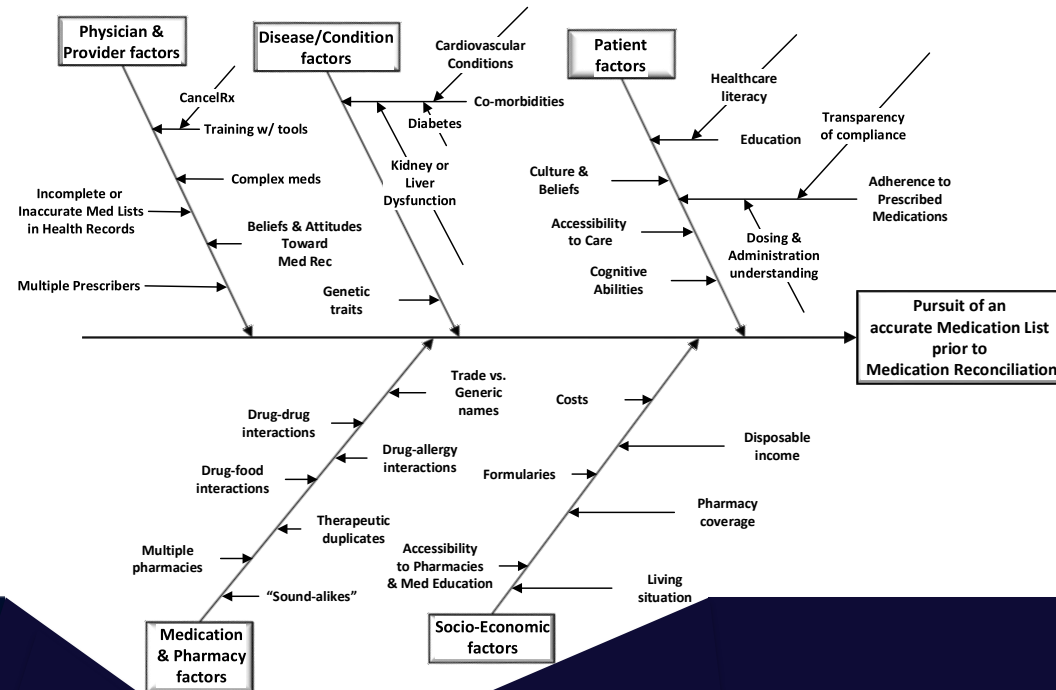
Deconstructing Medication Reconciliation

*Part 2: Garbage in; garbage out. Why
is this so hard?*

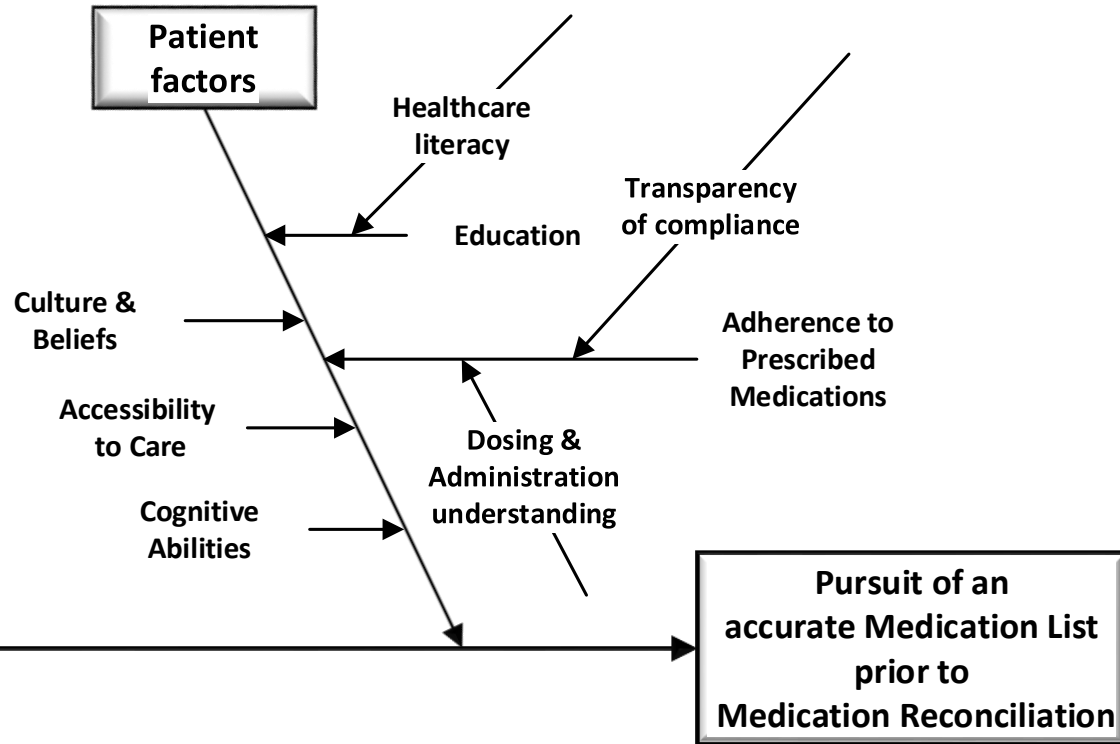
What could possibly go wrong?

- There are >30 common failure points in obtaining a true and accurate list of medications

- Patient factors
- Disease/Condition factors
- Physician/Provider factors
- Medication and Pharmacy factors
- Socio-Economic factors.

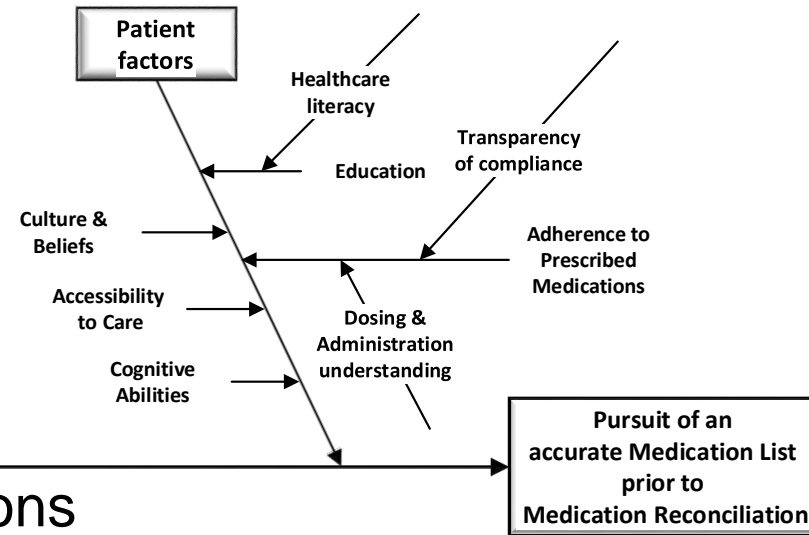


Patient Factors

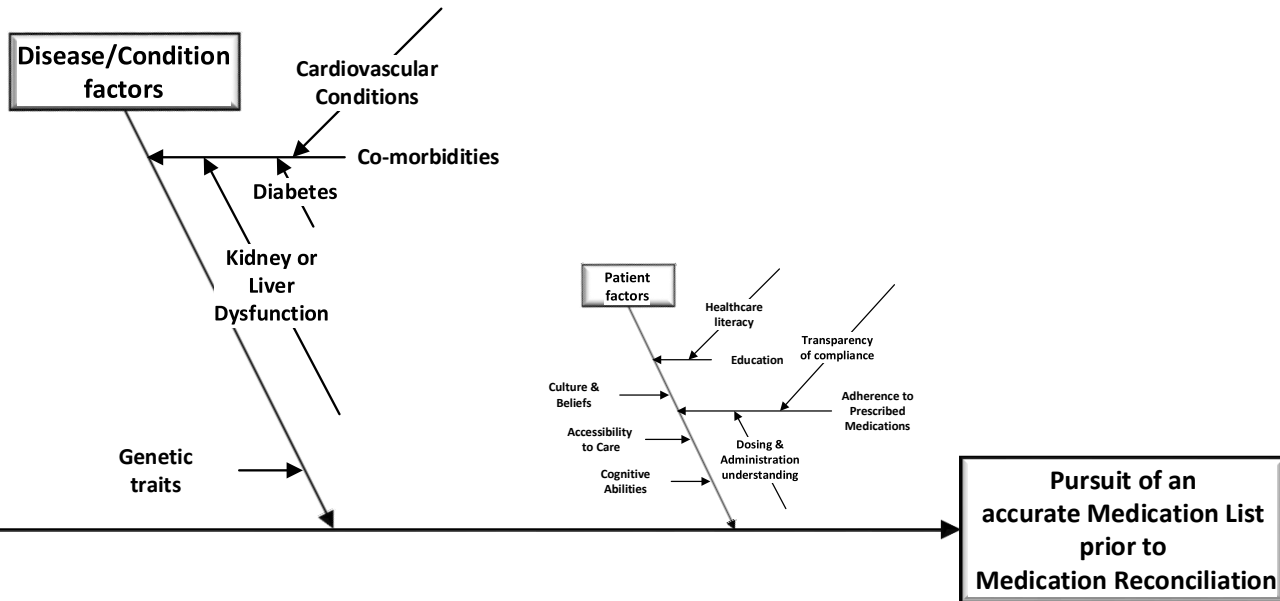


8 Patient Factors

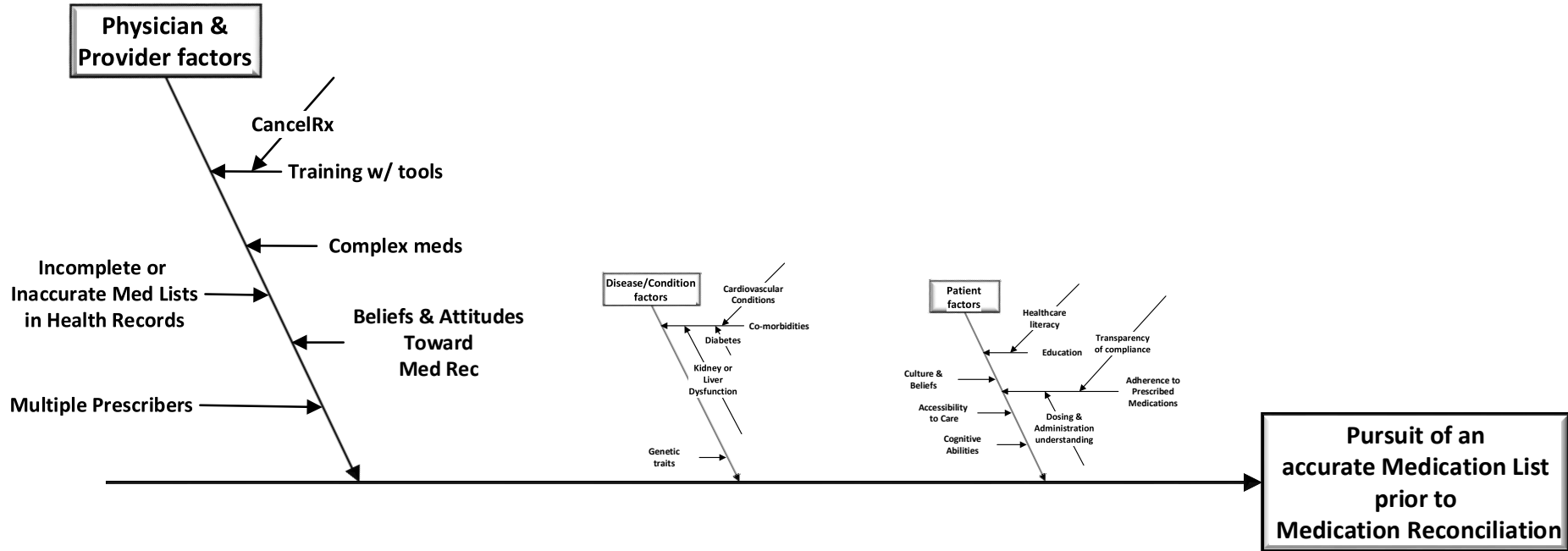
1. Culture & Beliefs
2. Accessibility to Care
3. Cognitive Abilities
4. Education
 - Healthcare literacy
5. Adherence to Prescribed Medications
 - Transparency of compliance
 - Dosing & Administration understanding



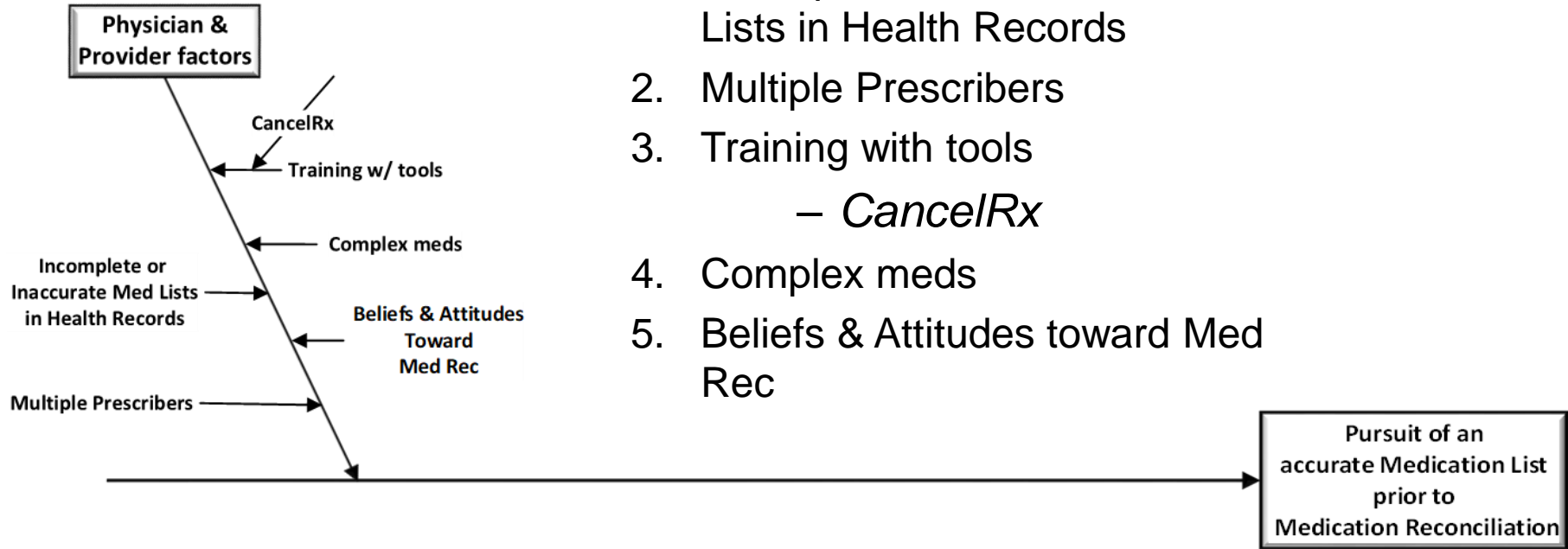
Disease and/or Condition(s) Factors



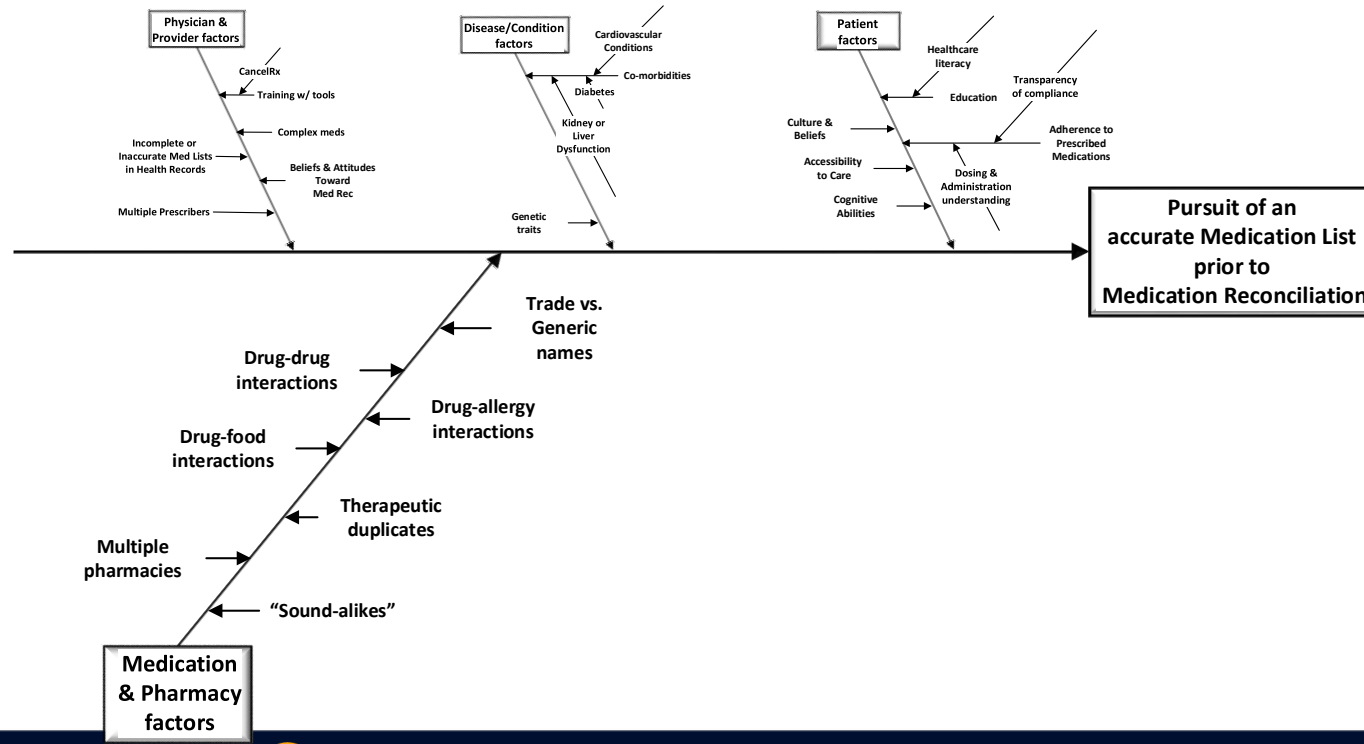
Disease and/or Condition(s) Factors



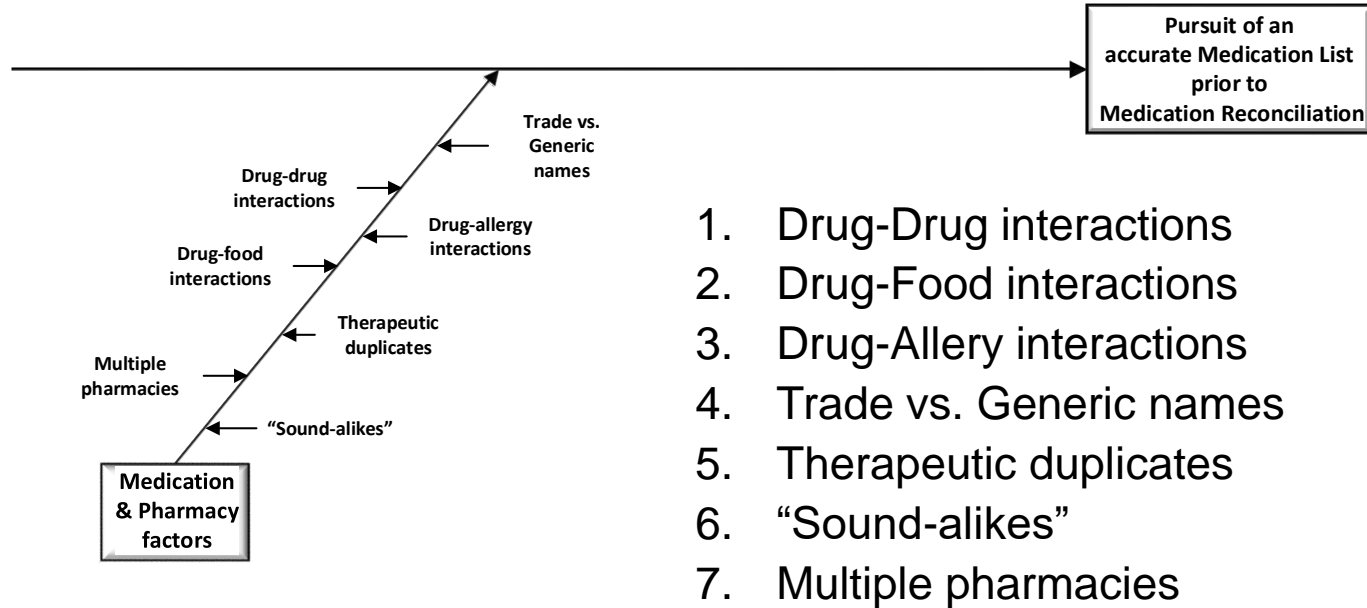
6 Physician / Provider Factors



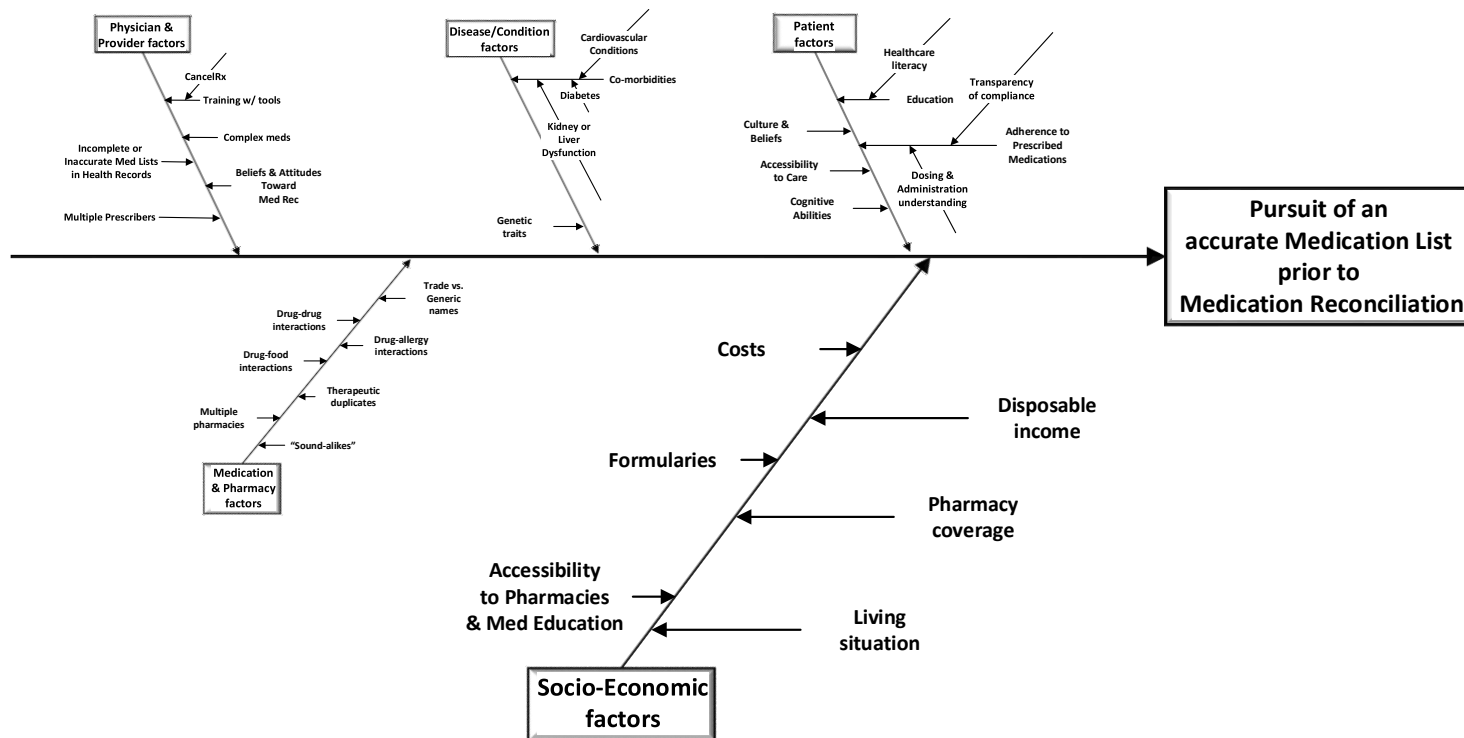
Disease and/or Condition(s) Factors



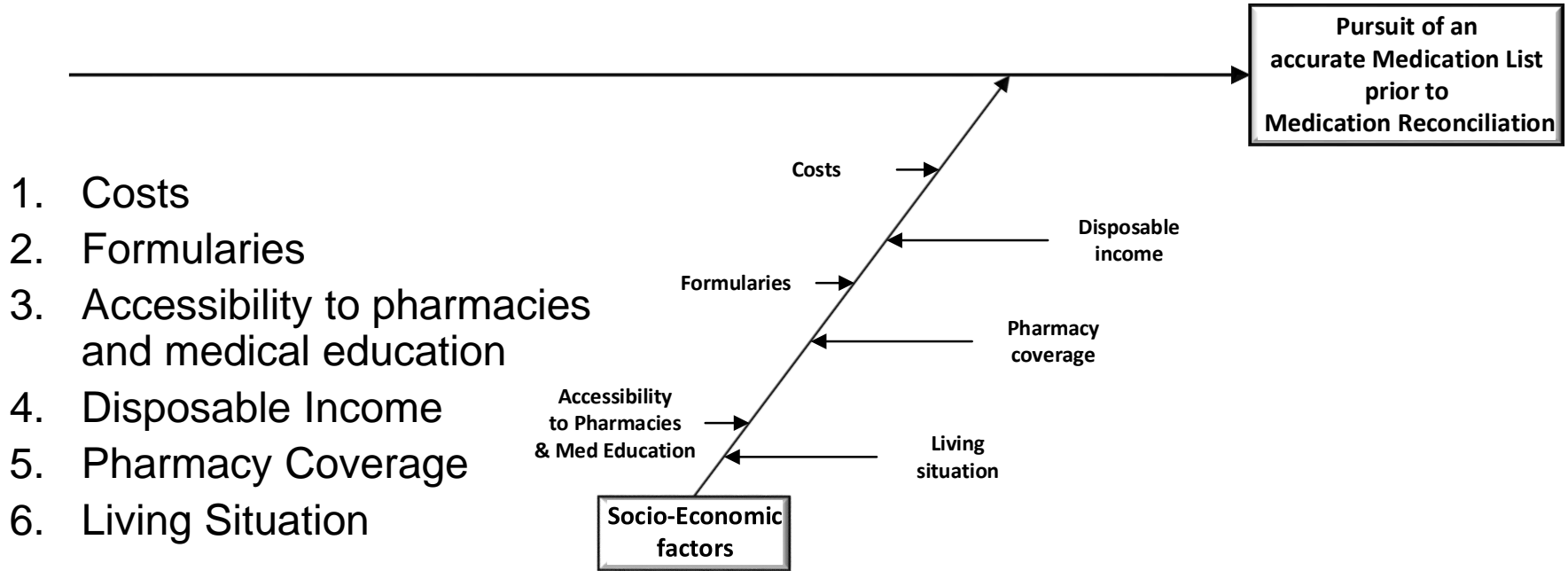
6 Medication & Pharmacy Factors



Socio-Economic Factors



Socio-Economic Factors



Med Rec itself is a “broken process”

- Mainly because there are too many sources of medication lists that have to be reconciled.
- If we could create one, continuously updated list of medications, and everyone used it, from patient, caregiver, pharmacy, physicians and anyone else in the loop, we could eliminate much of the confusion.
- This is called, “Creating a Single Source of Truth”

A Single Source of Truth (SSOT)

- Maintaining a SSOT for medication histories and then providing it in the EHR workflow as a service, perhaps from a state-wide HIE, could eliminate the Medication History silos in each medical record.
- Would most likely require a public-private partnership with buy-in by Americans that they would allow some considerations for privacy and security risks over the risks of harm from the current system.

The Challenge before us...

1. Obtain a clean, accurate and up-to-date list of current medications that
 - Reflects not only what has been prescribed, but what the patient is actually taken.
 - Place it in the clinical workflow
2. Allow reconciliation to occur at multiple transitions of care
3. Create seamless updates for ongoing medication management

Questions or Comments?

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