

# VI International Forum on Patient Safety: Medication Errors How to *AVOID* the “*A PINCH*” in medication-use process.

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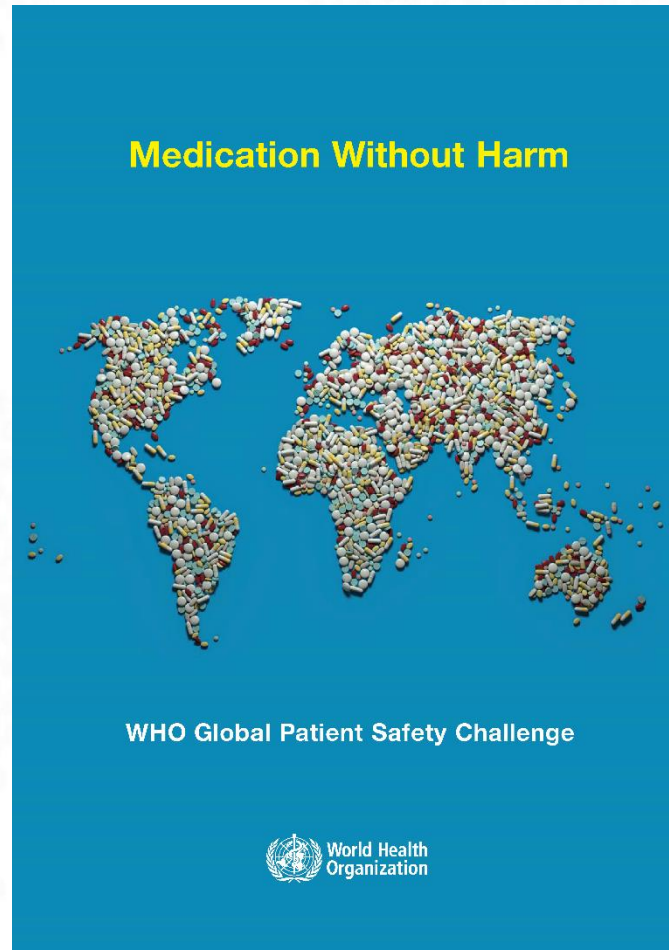
Obrigado pela honra de falar nesta conferência

# Pensamentos

Todos são peças importantes no trabalho em equipe, cada um representa uma pequena parcela do resultado final, quando um falha, todos devem se unir, para sua reconstrução.

All are important pieces in teamwork, each representing a small portion of the final result, when a failure, all must unite, for its reconstruction.

# WHO Global Patient Safety Challenge: *Medication Without Harm*



<http://www.who.int/patientsafety/medication-safety/medication-without-harm-brochure/en/>

# Trabalho Importante

- Unsafe medication practices and medication errors are a leading cause of injury and avoidable harm in health care systems across the world.
- Globally, the cost associated with medication errors has been estimated at \$42 billion USD annually.
- Multiple interventions to address the frequency and impact of medication errors have already been developed, **yet their implementation is varied**.
- WHO has identified *Medication Without Harm* as the theme for the third Global Patient Safety Challenge.

# Goal of Third Global Patient Challenge

- Worldwide action to **reduce severe, avoidable medication-related harm by 50% in the next five years**, specifically by addressing harm resulting from errors or unsafe practices due to weaknesses in health systems.





# Impact of Medical Errors

- The third leading cause of death in the US<sup>1</sup>
- A literature review by James estimated preventable adverse events using a weighted analysis and described an incidence range of 210,000-400,000 deaths a year associated with medical errors among hospital patients.<sup>2</sup>

<sup>1</sup>*BMJ* 2016;353:i2139 doi: 10.1136/bmj.i2139 (Published 3 May 2016)

<sup>2</sup>James JTA. A new, evidence-based estimate of patient harms associated with hospital Saf 2013;9:122-8. doi:10.1097/PTS.0b013e3182948a69 pmid:23860193.

# “How to AVOID the “A *PINCH*” in medication-use process.”

- This presentation will provide a definition and strategies to avoid patient harm when using high-risk medications.
- “A PINCH” is an acronym for different medications or classes of medications that cause more patient harm than other medications.



# Definition of High-Risk Medications

- Those medications involved in a high percentage of medication errors and/or sentinel events or medications that carry a higher risk for abuse, errors, or other adverse outcomes<sup>1</sup>.
- Prevention Strategies are needed to reduce or eliminate the possibility of error.
- WHO, ISMP-Brasil, US, Canada, IHI, US FDA, and Joint Commission International (JCI) have identified strategies to assist in achieving this objective.



<sup>1</sup>Cleveland Clinic Abu Dhabi: High-Alert Medications & Concentrated Electrolytes Procedure, v2.

# High-Alert Medications

**A:** Anti-infectives and other classes

**P:** Potassium salts and other electrolytes

**I:** Insulin

**N:** Narcotics and other sedatives

**C:** Chemotherapeutic & immunosuppressive agents

**H:** Heparin and anticoagulants

# High-Alert Medications (continued)

## Additional classes of concern

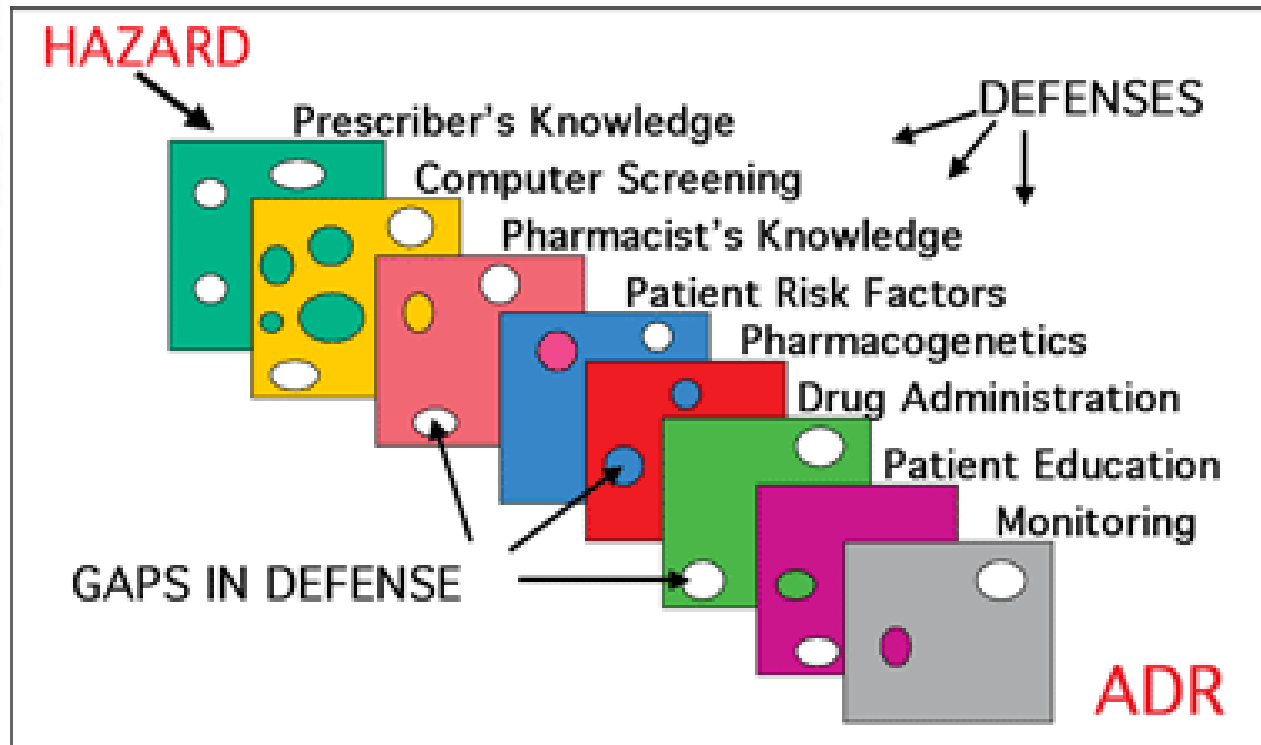
A: Adrenergic agonists (IV) – epinephrine

Adrenergic antagonists (IV) – labetalol

Anesthetic agents (inhaled, IV) – propofol, ketamine

Antiarrhythmics (IV) - lidocaine

# Medication Errors



**Figure 1**—The Swiss cheese model of adverse drug outcomes. The hazard initiates a “hazard arrow” (in our case a drug interaction) that must traverse the defenses in order for an ADR to occur. The holes in the cheese represent gaps in the defenses.  
ADR = adverse drug reaction.

*Adapted from BMJ 2000;320:768*

# Medication Errors Drivers



W. Edwards Deming

Every system is perfectly designed  
to get the results it gets.

\* attribution disputed,  
see source link

source: [quotes.deming.org/10141](http://quotes.deming.org/10141)

# Medication Errors Drivers

- Human factors
  - Training
  - Fatigue
  - Poor environmental conditions
  - Staff shortagesin combination with
- Weak medication systems
  - Prescribing,
  - Transcribing,
  - Dispensing,
  - Administration, and
  - Monitoring practices
- Lead to significant patient harm



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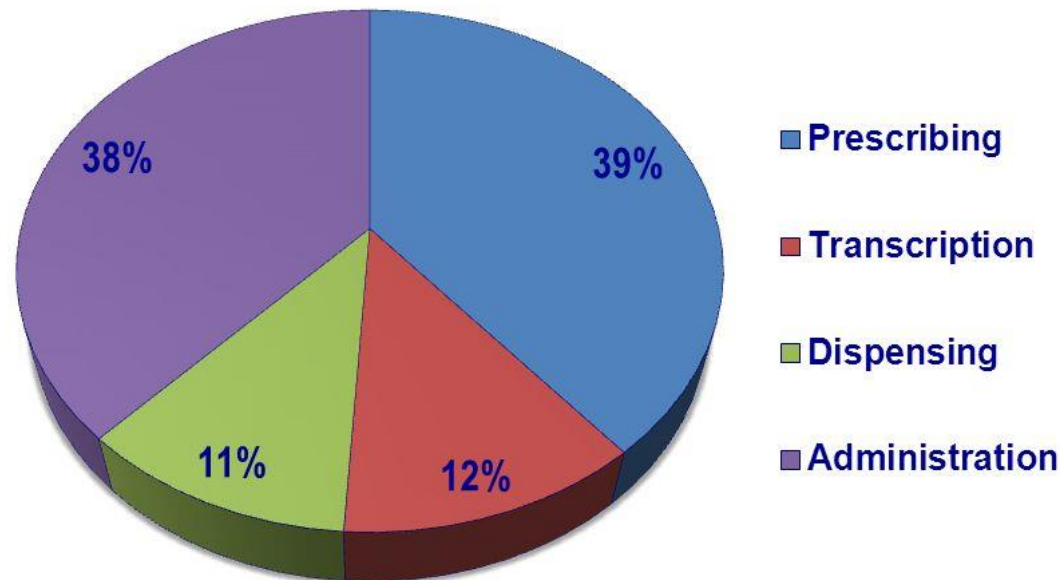


AREAS OF FOCUS



# Medication Errors Drivers

## Where Do Medication Errors Occur (%)



# Pensamentos

“What is it that is not a poison? All things are poisons and nothing is without poison. It is the dose only that makes a thing not a poison.”

Paracelsus, 1493-1541



# A: Anti-infectives

- Standardize concentrations and volumes of these medications
- Establish anti-infective dosing service
- Timely and appropriate monitoring of aminoglycoside antibiotics.
  - For example, gentamicin courses that continue for longer than 72 hours;
  - not acting on a toxic concentration result could lead to renal impairment and toxicity,
  - and not acting on a sub-therapeutic result could lead to ineffective antibiotic treatment
- Ensure that staff undertaking anti-infective dosing duties are trained and competent.
- To reduce compounding and labeling errors, ensure that the organization uses pre-mixed infusions, when these products are available.

# P: Potassium salts and other electrolytes

- Remove potassium salts and other concentrated electrolytes from patient care unit except for the following situations:
  - Calcium Chloride ( $\text{CaCl}_2$ ) and Calcium Gluconate in crash carts or secured cabinets for use during cardiotoxicity events
  - Hypertonic saline (3% NaCl) limited to neurosurgery for elevated intracranial pressure (ICP)
- Standardizing the dosing, units of measure, and terminology are critical elements of safe use of concentrated electrolyte solutions



# I: Insulin

- Conduct an insulin-safety assessment
- Remove insulin as floor stock item
- Place safeguards on high-dose insulin (U-500)
- Remove tuberculin (TB) syringes from floor stock
- Have patients manage their own insulin if capable
- Implement a nurse- or pharmacy-driven diabetes management team
- Require independent double-checks before administering all IV insulin
- Separate look-alikes and sound-alikes
- Prepare all insulin infusions in pharmacy and standardize to a single concentration of IV insulin



<https://www.ismp.org/sites/default/files/attachments/2017-11/ISMP138-Insulin%20Guideline-051517-2-WEB.pdf>

<https://www.ismp-canada.org/insulin/>

# N: Narcotics and other sedatives

- Increase the use of non-pharmacologic intervention for pain and anxiety.
- Standardize protocols for the initiation, maintenance, and monitoring of pain management.
- Minimize or eliminate multiple drug strengths and concentrations where possible.
- Set up all pumps to be programmed with an independent double-check from nursing or nursing staff or use smart pumps.
- Perform independent double-checks on the unit for PCA and epidural narcotics.
- Set standards for frequently monitoring vital signs for adverse effects of narcotics and opiates.
- Make available protocols that include the administration of reversal agents if needed as part of treatment plan. Contact the physician after the administration of the reversal agent.



# C: Chemotherapeutic & immunosuppressants

- Standardize order sets and use for the initiation, maintenance, and monitoring of drug management.
- Patient weight is a critical patient matrix.
- No verbal orders for chemotherapy except to hold or discontinue
- Clear expression of Drug Names and Doses
  - Chemotherapy drugs for specific day are written explicitly
  - Patient-specific dose and dosing method (mg/kg, mg/m<sup>2</sup>)
- Perform independent double-checks on the unit prior to administering chemotherapy.
- Use Tall Man lettering.
- Several additional elements must be considered.

# H: Heparin & Anticoagulation

- Conduct an ISMP Antithrombotic Therapy Self-Assessment (2017)<sup>1</sup>
- Format anticoagulation flow sheet and orders to follow the patient through transitions from hospital to skilled care to home.
- Use an anticoagulant dosing service or "clinic" in inpatient and outpatient settings.
- Ensure that staff undertaking anticoagulant duties are trained and competent.
- To reduce compounding and labeling errors, ensure that the organization uses ONLY oral unit- dose products and pre-mixed infusions, when these products are available.
  - Standardize concentrations and volumes of these medications

<sup>1</sup> <https://www.ismp.org/assessments/antithrombotic-therapy>

# Key Components of Appropriate Management of High-Alert Medications

Grouped Actions	Action Objectives
Establish safe medication systems, policies and procedures	<ul style="list-style-type: none"><li>• Identify and assemble process champions and stakeholders who will drive change</li><li>• Assess the most effective changes for managing this medication</li></ul>
Changes designed to ensure standardization	<ul style="list-style-type: none"><li>• Design processes to prevent errors and harm</li></ul>
Changes designed to ensure adequate monitoring	<ul style="list-style-type: none"><li>• Design methods to identify errors and harm when they occur</li></ul>
Changes designed to better partner with patients and families	<ul style="list-style-type: none"><li>• Design methods to mitigate the harm that may result from the error</li></ul>

# Core Prevention Strategies

- Standardize
  - Establish standard order sets, protocols, flowsheets, and monitoring for high-alert medications
- Reduce or eliminate the possibility of error
  - Standardize drug concentrations and volumes
  - Use Ready-To-Use (Premixed) when possible
  - Segregate the medication from others
  - Pharmacy compounds the electrolyte solution if premix is not available
  - Restrict prescribing and administration to designated patient care units and specialties
  - Limit the available choices of concentrations
  - Limit the storage of certain medications in pharmacy only

# Core Prevention Strategies (continued)

- Make Actual or Potential Error visible
  - Create a list of High-Alert Medications in the facility
  - Identify the High-Alert Medications to staff
    - Labels, seals, other differentiating packaging
  - Implement barcoding technology if possible
  - Alert labeling used to identify medication during all phases of lifecycle
    - Storage, compounding, administration
- Minimize the consequences of error
  - Use smallest sized packaging (vial, bag, bottle)
  - Remove administration devices (tubing, syringes) that can facilitate medication errors



# Where to Start?

- Conduct an assessment in your institution and identify one of the high-alert medications that are most problematic.
  - <https://www.ismp.org/assessments/high-alert-medications>
- Assemble a multidisciplinary team.
  - Hospital administration, medicine, nursing, pharmacy, risk management and other health care providers as needed



## Where to Start? (continued)

- Review survey outcome and evaluate the Adverse Drug Reactions (ADR) data and incidents involved with this medication and share with the patient care team to establish “current state”.
- Use a proven resource: IHI Model for Improvement<sup>1</sup>
  - Model has two parts



<sup>1</sup><http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>

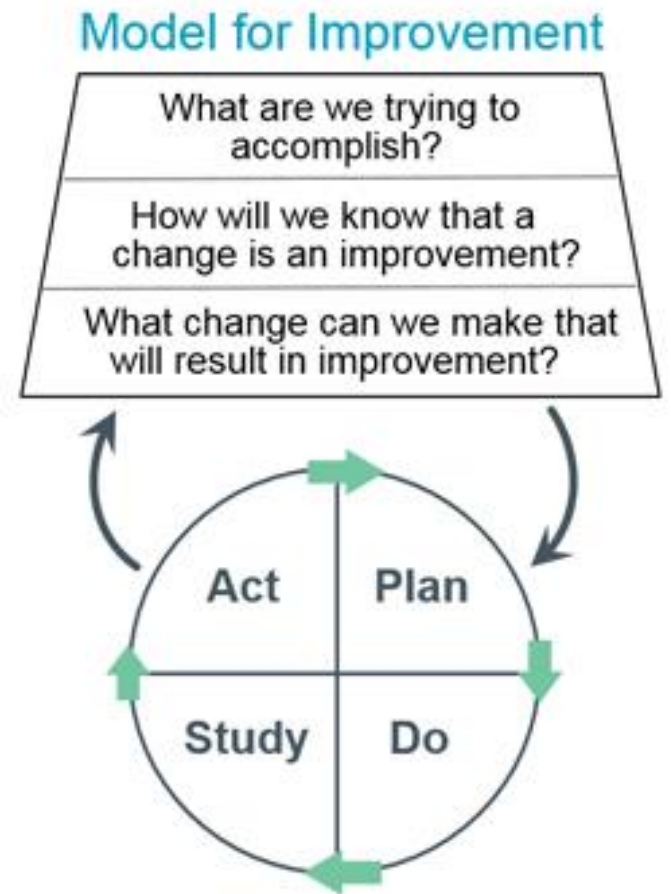
# IHI Model for Improvement: Part I

- Three fundamental questions guide the team to
  - 1) Set clear aims,
  - 2) Establish measures that will identify improvement, and
  - 3) Identify changes that are likely to lead to improvement



# IHI Model for Improvement: Part II

- Use the Plan-Do-Study-Act (PDSA) cycle to conduct small-scale tests of change in real work settings.
  - Plan a test
  - Try it
  - Observe the results
  - Act on what is learned
- Broader change can occur after learning through several PDSA cycles.
- Use the model for additional changes for high-alert medications.



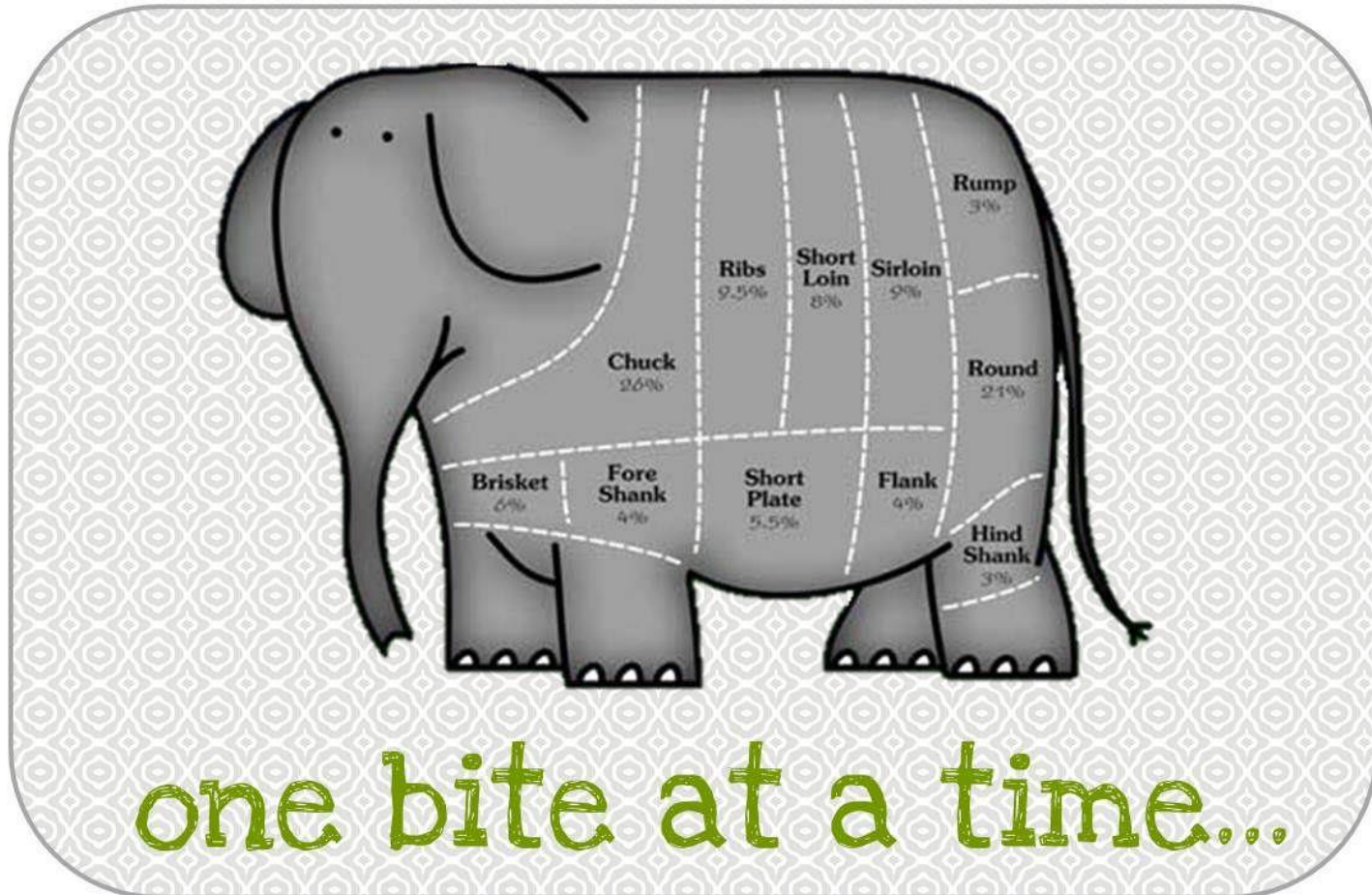
<sup>1</sup><http://www.ihl.org/resources/Pages/HowtoImprove/default.aspx>



# Roadmap to Success

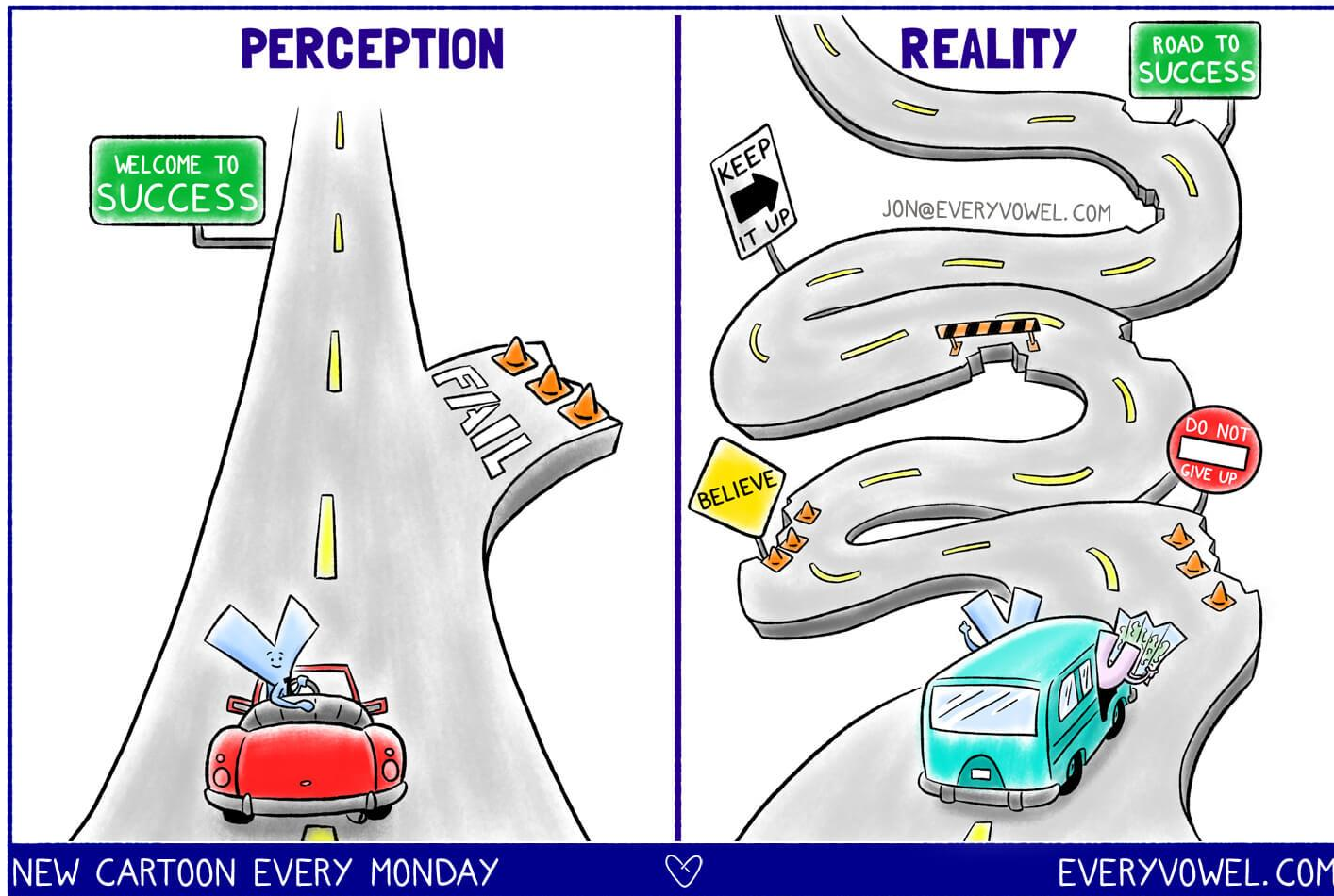


# Roadmap to Success





# Roadmap to Success





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# Referencias

- ISMP-US, ISMP Medication Safety Self Assessment® for High-Alert Medications Tool

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# Perguntas?

