Innovation and Improvement Center

EIIC

Emergency Medical Services for Children

ABCs of Quality Improvement

NASEMSO Spring Meeting 2017

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EIIC Prehospital/State Partnership Domain Lead

Acknowledgement

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- This information or content and conclusions are those of the author and should not be construed as the official position or policy of, nor should any endorsements be inferred by HRSA, HHS or the U.S. Government.

Cardamom
Brown Pelican
Pink
TO QUALITY.
The Best Of Everything

Tchoupitoulas
HANSEN'S SNO-BLIZ SHOP

SNO-BLIZ

PRICES RANGE
FROM [illegible] TO $1.00

SNO-BLIZ

ONE FLAVOR ONLY-TWO FLAVORS EXTRA

THESE PRICES ONE FLAVOR ONLY
PLAIN FLAVOR WITH ICE & SYRUP

SMALL
CUPS
BUCKETS

[illegible] TO 450 - 5[illegible]
[illegible]10
[illegible] 500 - 800

SUNDAE

ICE-SYRUP-CREAM-CRUSHED
PINEAPPLE AND CHERRY

6.50

SUPER

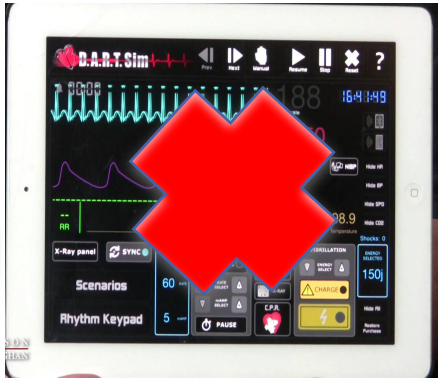
BABY DUPER [illegible] 7.50

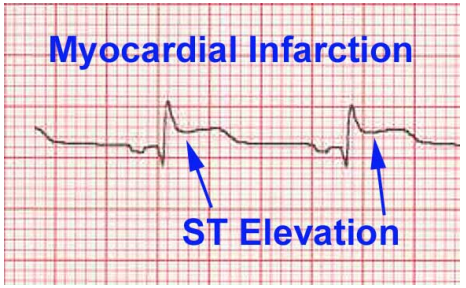
[illegible] SUPER DUPER 8.50

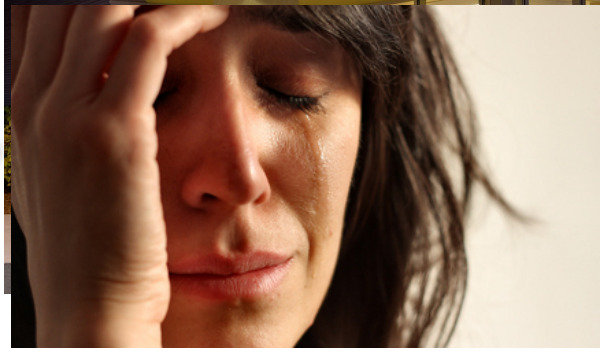
ICE-SYRUP-C[illegible]RUSHED PINEA
MARSHMELLOW & CHERRY

THERE ARE NO
SHORT - CUTS
TO
QUALITY

Why Do We Do What We Do?







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Emergency Medical Services for Children

EMS for Children Program Mission/Aims

The EMSC program's mission is to reduce child and youth mortality and mortality resulting from severe illness or trauma by:

- Ensuring state of the art emergency medical care for ill/injured child/adolescent is available when needed

- Ensuring that pediatric services are well integrated in the existing state EMS system and backed by optimal resources

- Ensuring that the entire spectrum of emergency services (primary prevention, acute care, rehab) is provided to children at the same level as adults

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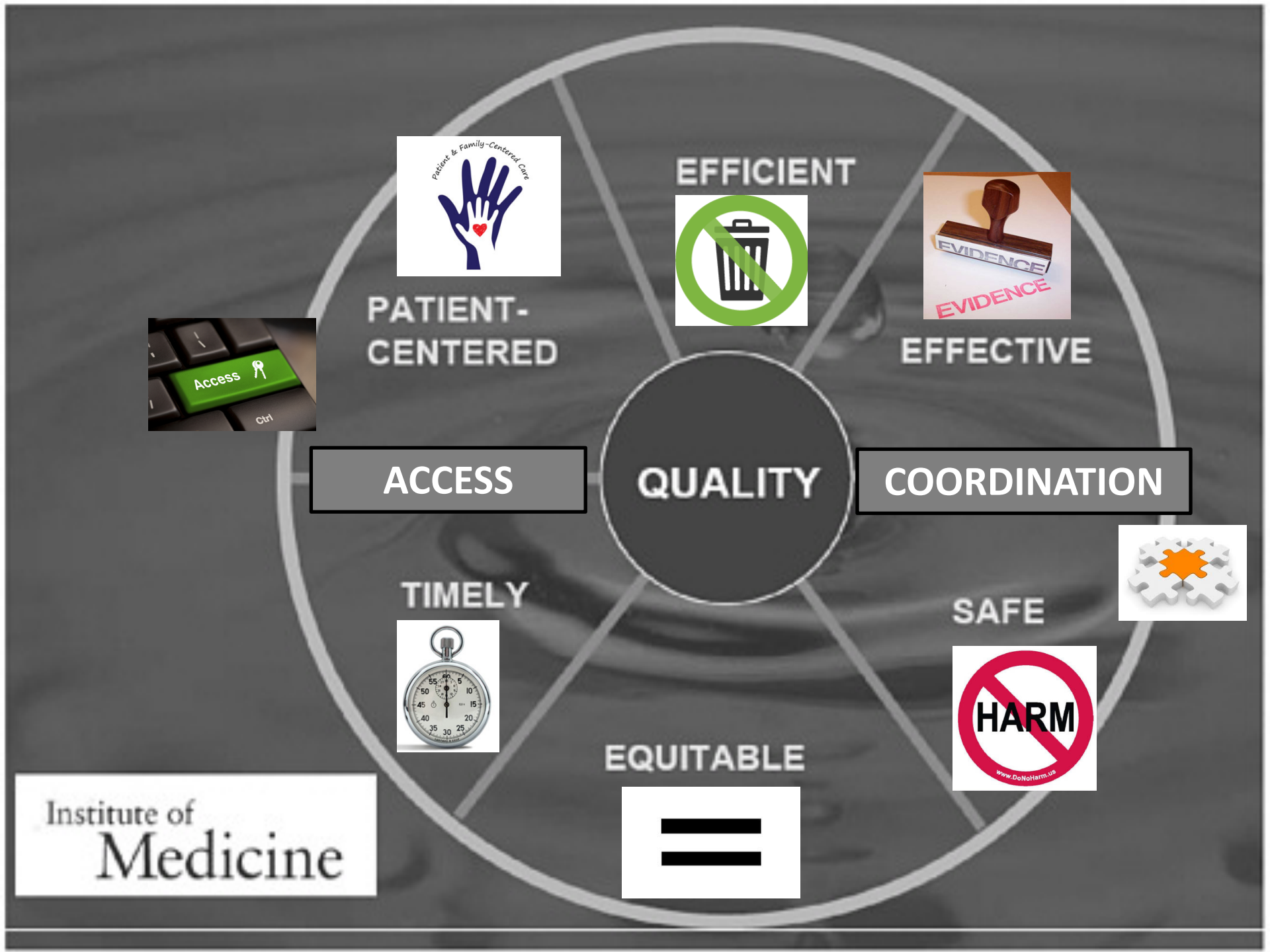
Patient & Family-Centered Care
PATIENT-CENTERED
EFFICIENT
EVIDENCE
EVIDENCE
EFFECTIVE
Access
Ctrl
ACCESS
QUALITY
COORDINATION
TIMELY
SAFE
HARM
www.DoNoHarm.us
EQUITABLE
Institute of Medicine

System Design

Knowledge and availability of evidence-based practice

Every system is perfectly designed to achieve exactly the results it gets

Front desk unaware of death

Lab results not known during transfer

Inability to transmit the ECG

Timely transport in the transfer process

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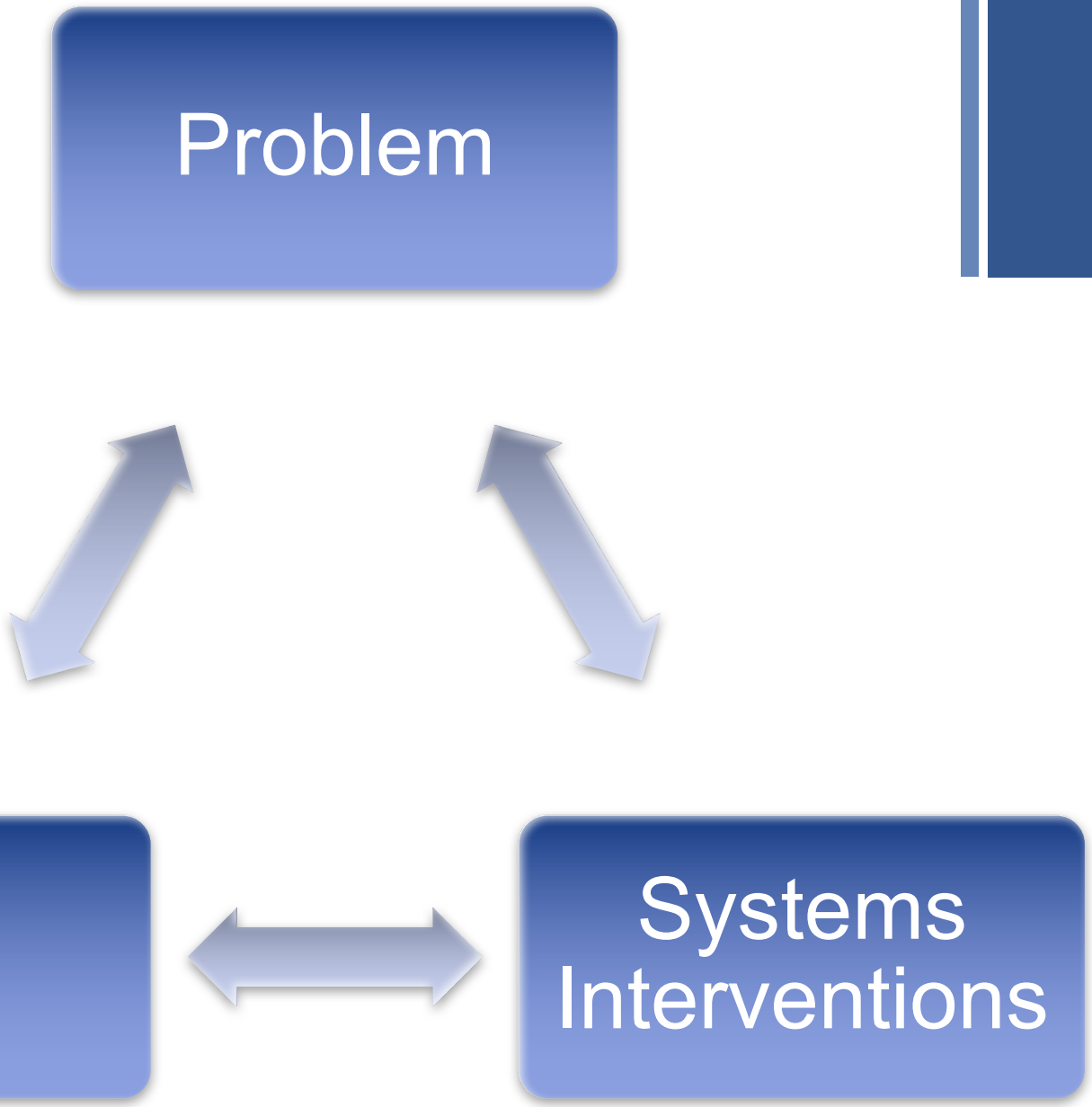
Problem
Data
Systems Interventions

A Pediatric EMS Example

Seizures are Common

Treatment Minimizes Morbidity

Variation in Practice Exists

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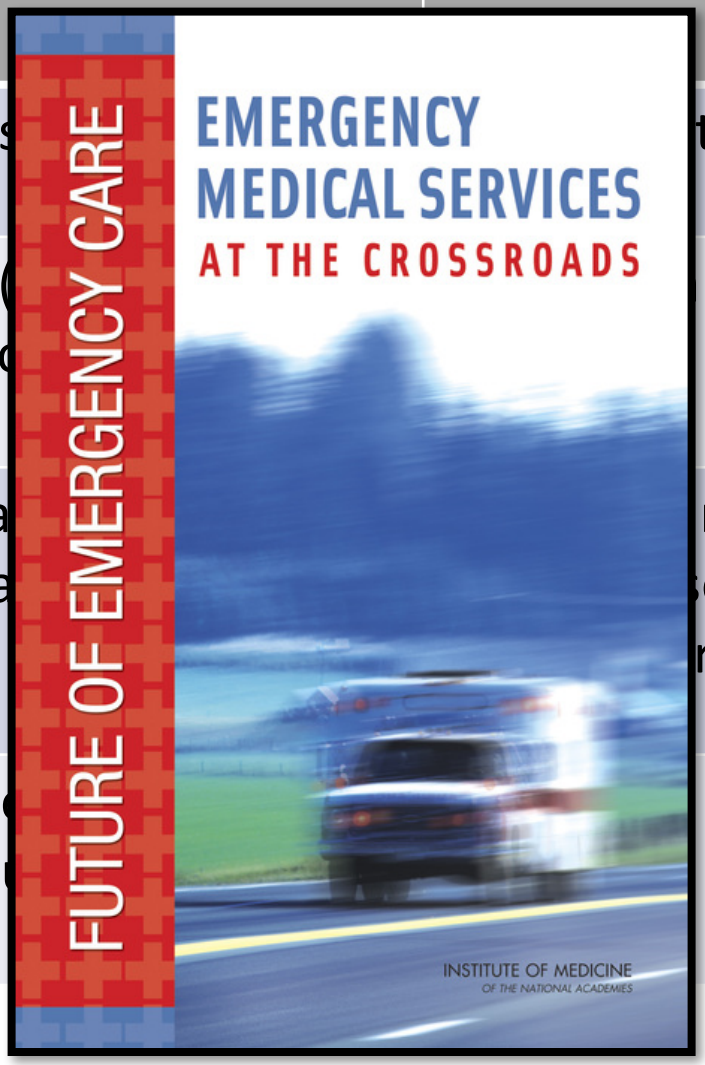
Evidence Based Guideline

DO	DON'T
• Check a blood glucos	tal medication
• Give dextrose IV/IO (glucagon IM for hypo mg/dL)	IV/IO initially
• Give IM/IN benzodia line treatment (mida mg/kg)	medical control for the es of medication (apnea r 2 doses)
• IV/IO benzodiazepin can be given subseq including diazepam	



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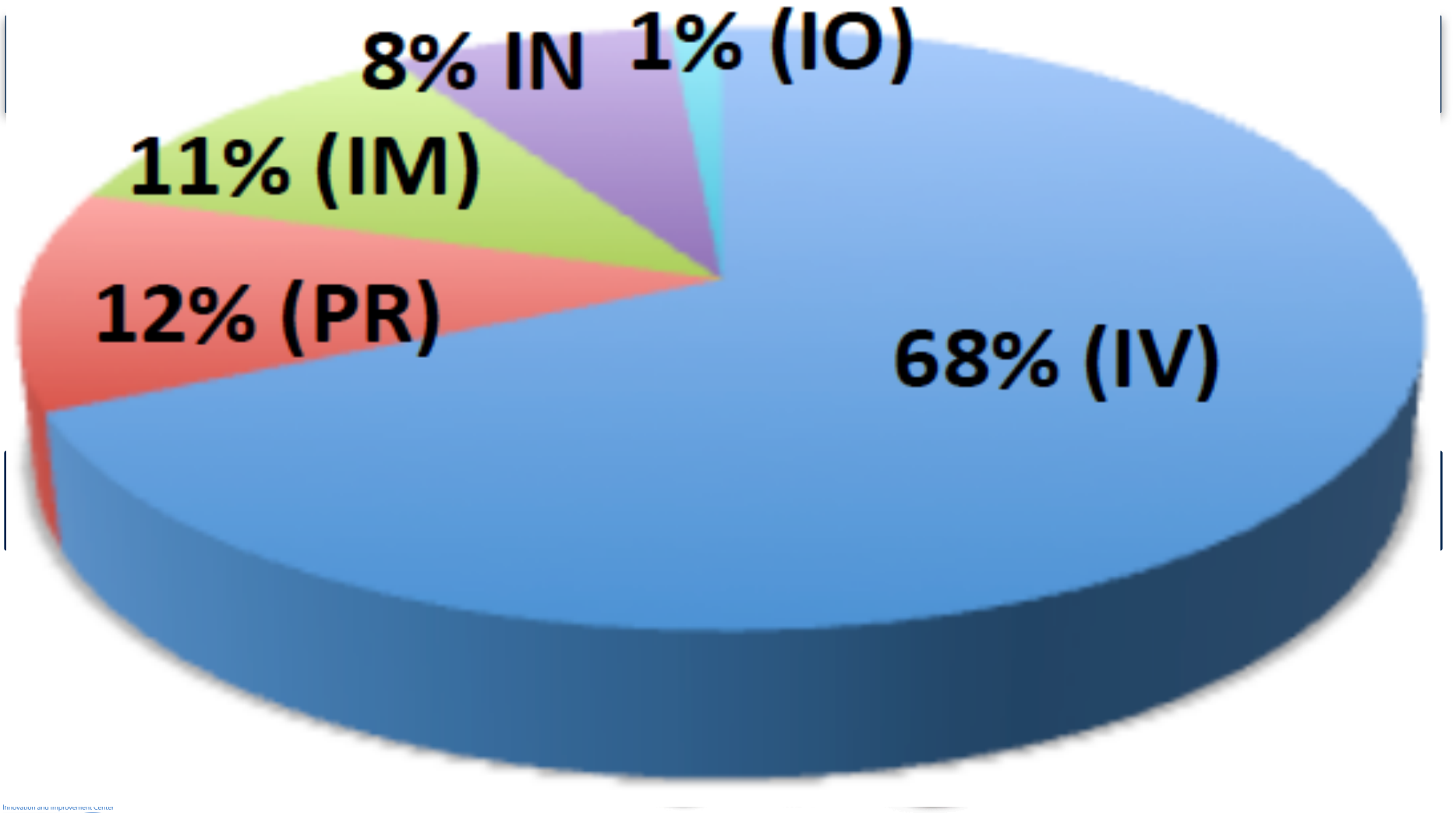
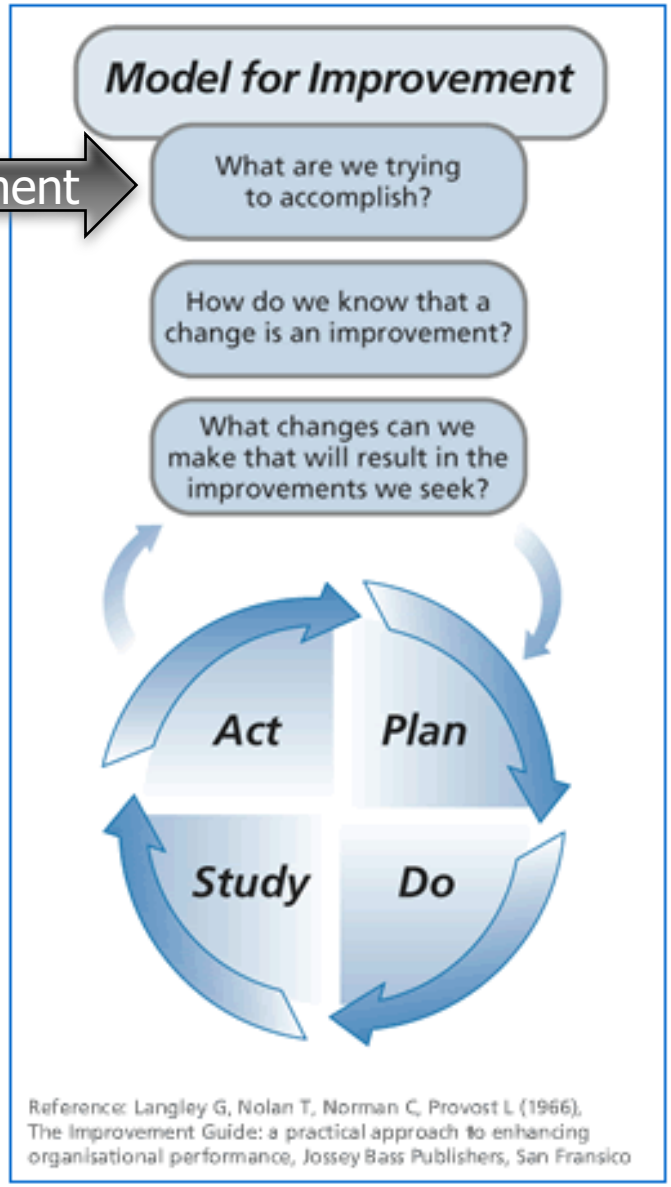
Shah MI et al. *Prehospital Emerg Care.* 2014; 18(1)

Data Demonstrating a Problem



Shah MI et al. *Prehospital Emerg Care*. 2016

The Model for Improvement



By 2020, 90% of actively seizing children will receive IN/IM midazolam as 1st line treatment in this EMS system

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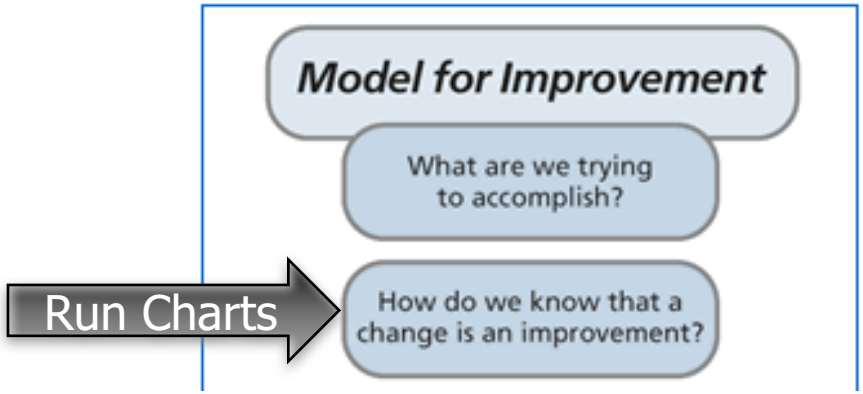
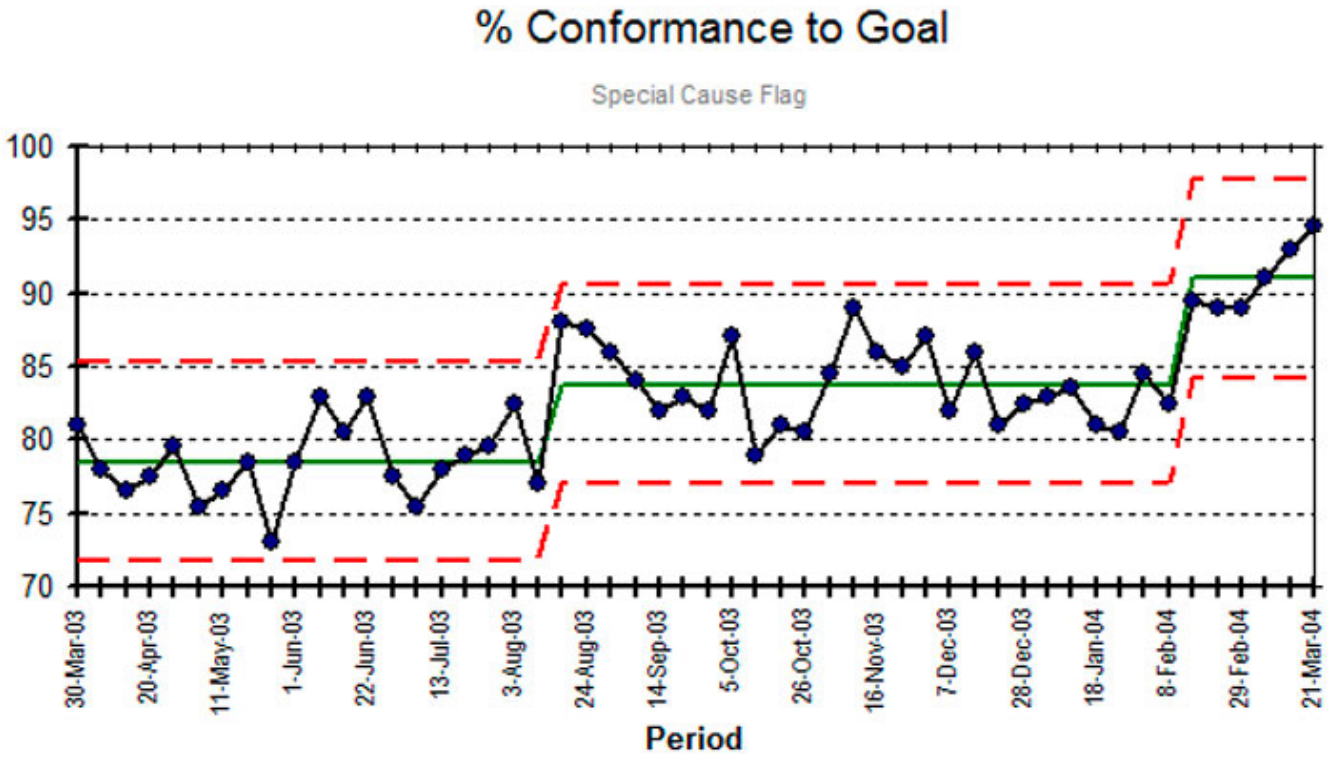
The Model for Improvement





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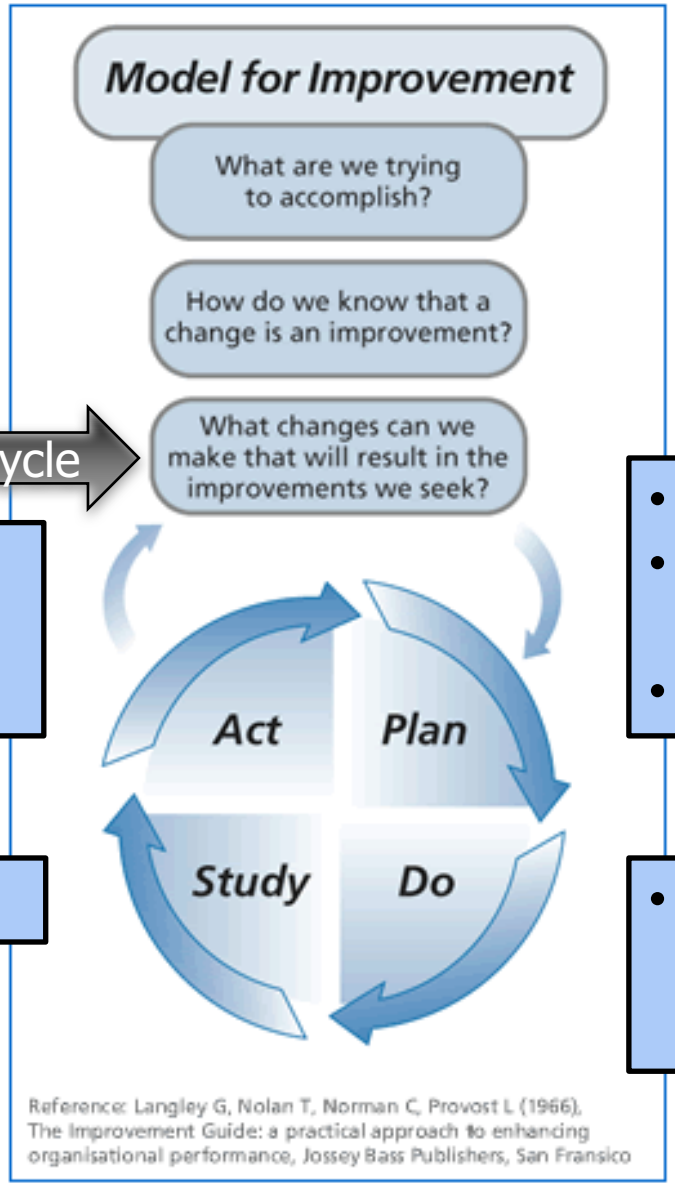
The Model for Improvement



- Define the system
- Assess current situation
- Analyze causes

- Try out improvement theory

- Study the results

- Standardize the implementation
- Plan for change

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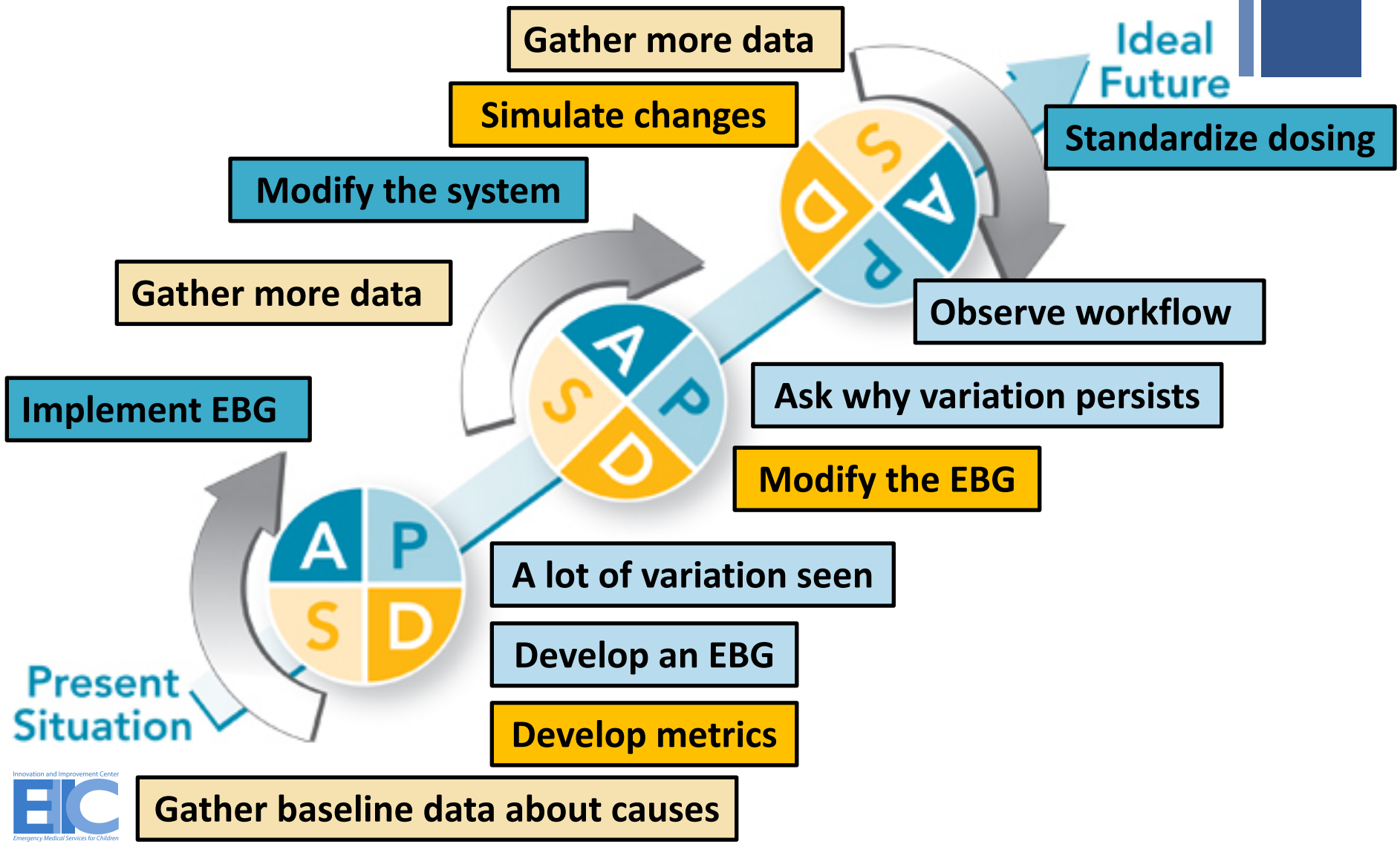
Repeated PDSA Cycles



Tools for Improvement

View Processes

Organize Information

Measure Change

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View Processes

Process Mapping

1) Physician determines patient needs medication → 2) Physician selects type of medication → 3) Physician selects the dose of medication → 4) Physician writes/enters prescription → 5) Physician explains prescription to patient

6)Prescription delivered to pharmacy → 7') Overcheck of dose → 8') Pharmacist selects the medication → 9') Pharmacist measures the medication → 10') Independent check of prescription filled

11') Medication delivered to nurse → 12') Nurse takes medication to area → 13') Independent check of medication → 14') Verification of patient identity → 15') Medication given to patient

Organize Information

Cause/Effect Diagram
(aka Fishbone Diagram)

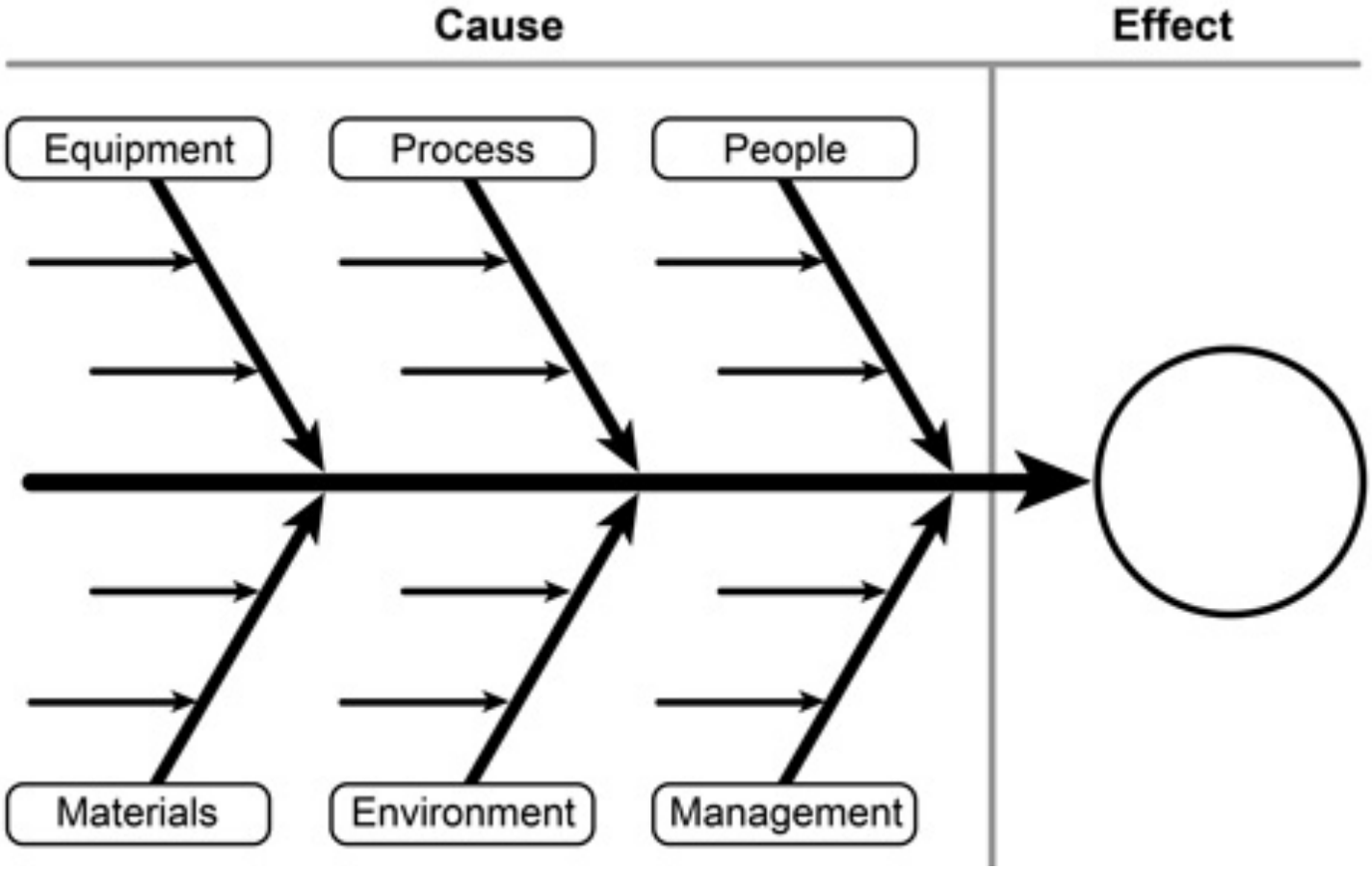
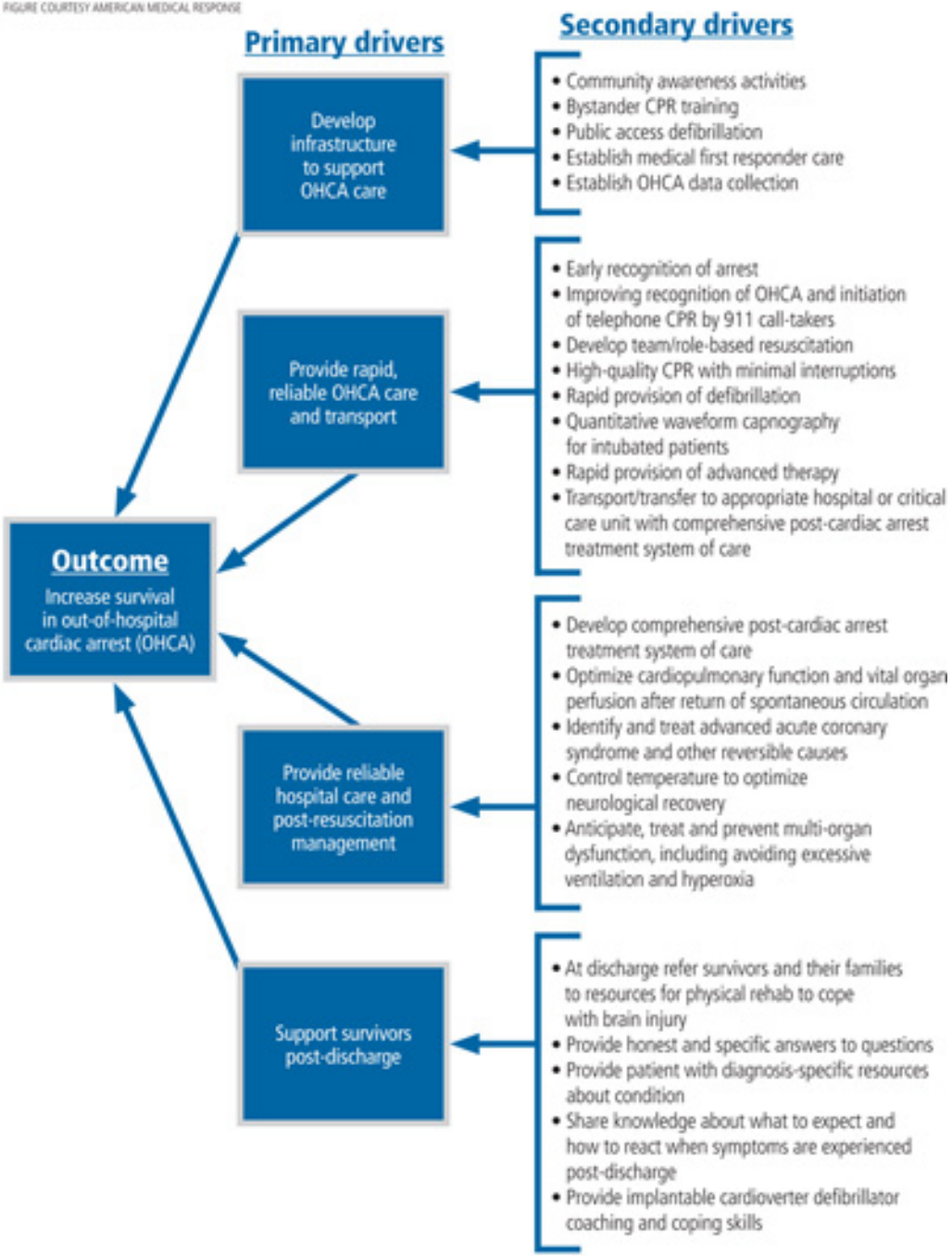


Figure 1: Driver diagram for increasing OHCA survival outcomes

FIGURE COURTESY AMERICAN MEDICAL RESPONSE



Key Driver Diagram

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Measure Change

Pareto Principle

Many Trivial Tasks

Few Vital Tasks

80% of time expended

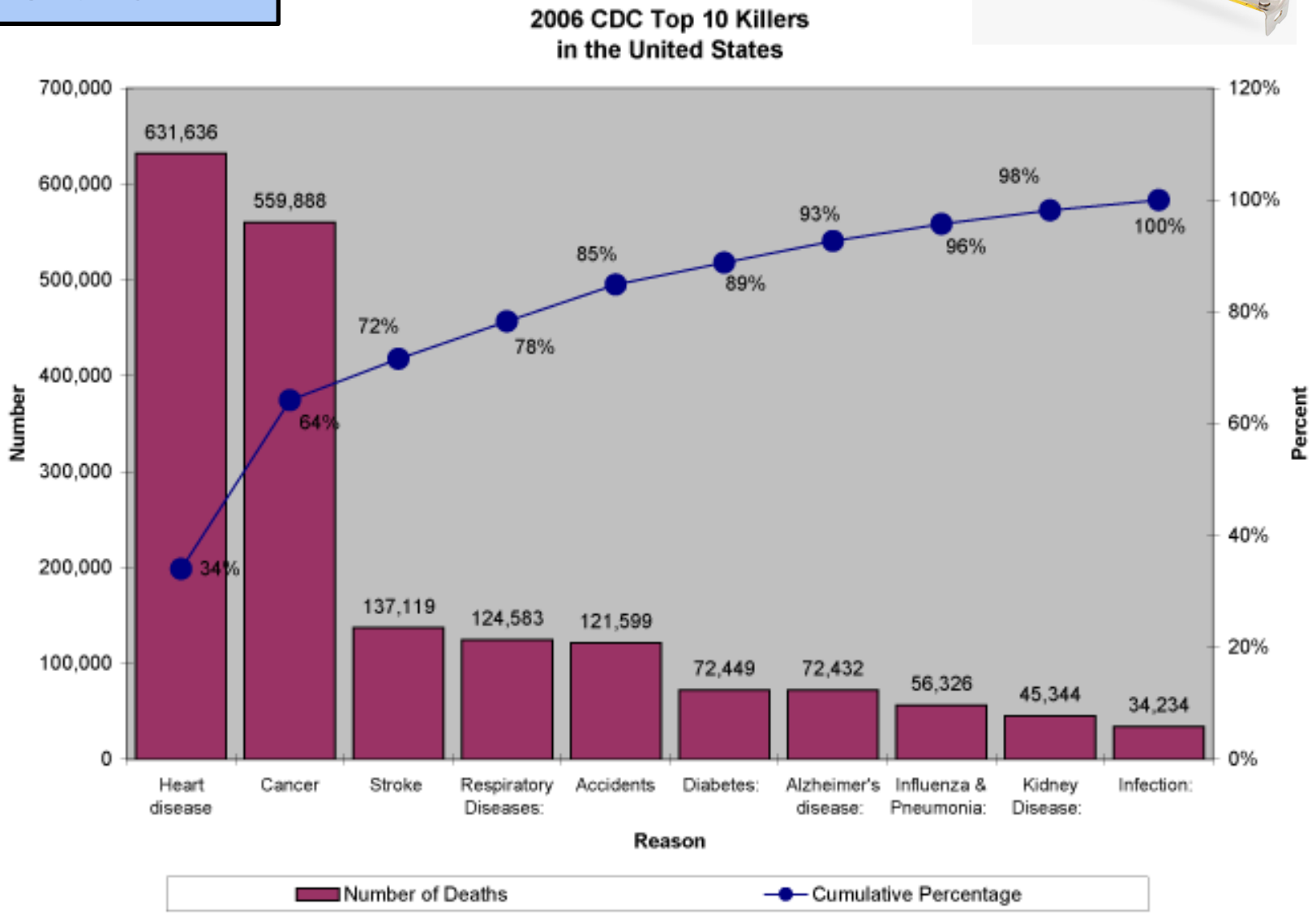
20% of time

20% of results

80% of results

Measure Change

Pareto Chart



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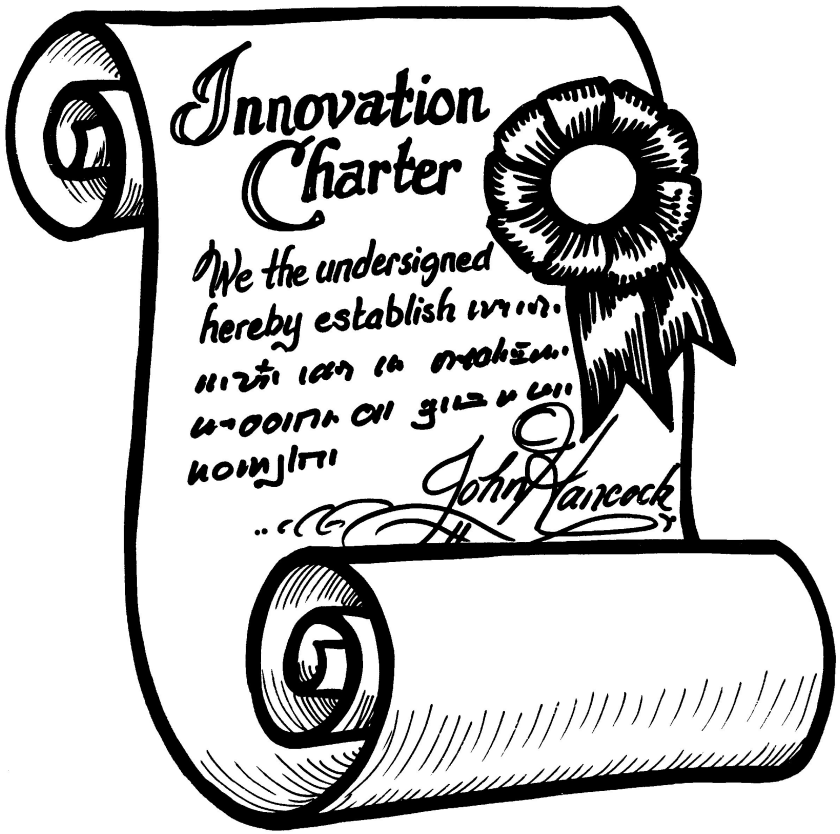
Quality Project Management

DEVELOP AN INNOVATION CHARTER



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Charter Components

Title, Background, Problem Statement

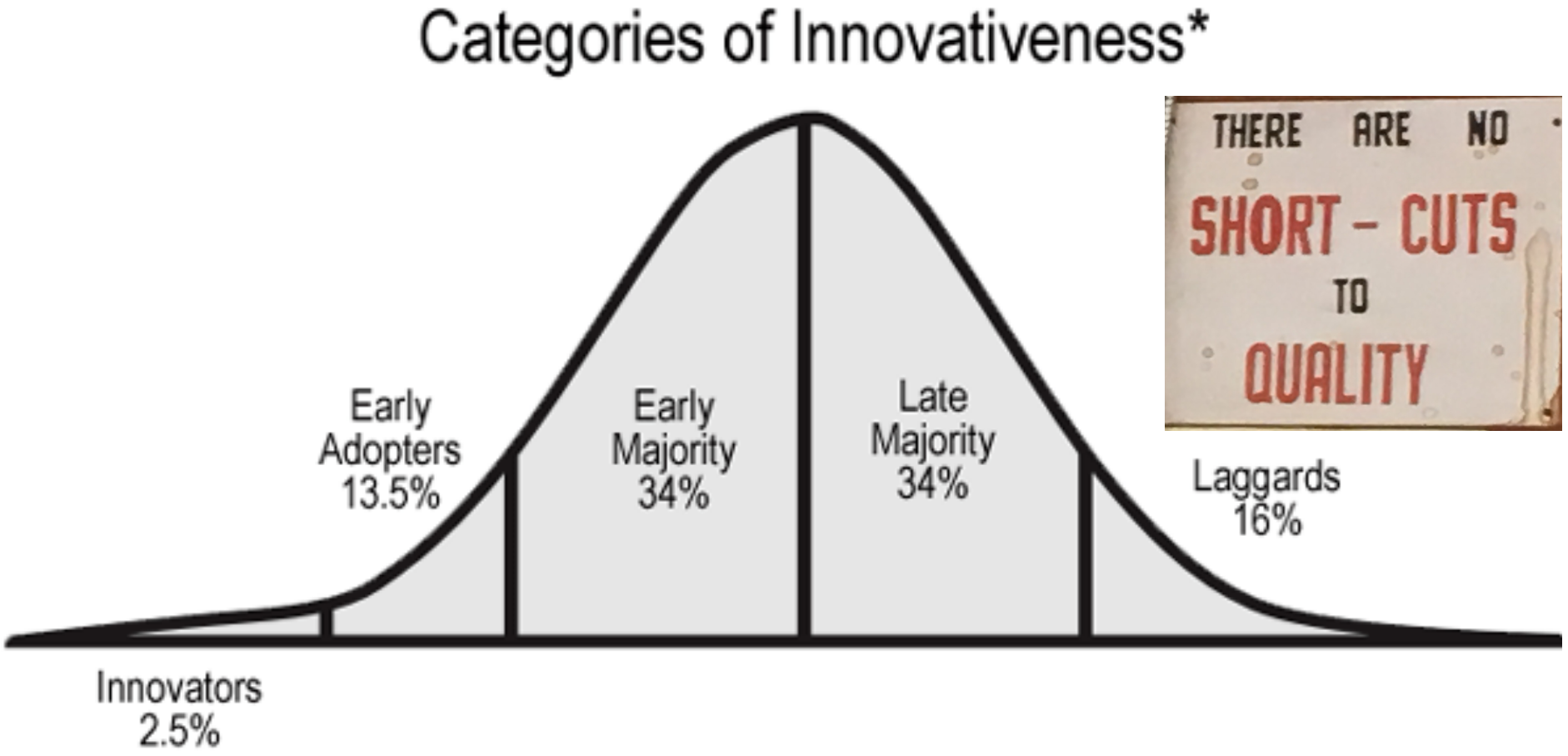
SMART Aims

Measure	Definition of measure	Data Source	Measure Type	IOM Quality Domain
Medication Route	% of actively seizing patients that receive IN/IM midazolam	NEMSIS Variable #	Process	Effectiveness
Time to Seizure Cessation	Time seizure stopped after on-scene arrival	NEMSIS Variable #	Outcome	Timeliness

Charter Components

Key Stakeholders	EMS, ED, Neurologists, Pharmacist, Parents
Project Scope	Prehospital, Pediatric, ALS care in 1 EMS system
Potential Impact	Improve quality and safety of care for seizures
Potential Challenges	Provider use of IN/IM route limited by training & equipment
Tools for Improvement	Process mapping, Pareto charts, cause/effect diagrams
How Data Will Be Collected	Weekly query of EMS database using NEMSIS variables
How Data Will Be Analyzed	Statistical process control charts; share data with providers once a month through a special bulletin

Changing Culture Takes Time



*From E.M. Rogers, *Diffusion of Innovations*, 4th edition (New York: The Free Press, 1995)