Quality Improvement in the Emergency Department

Creating the culture so it's second nature

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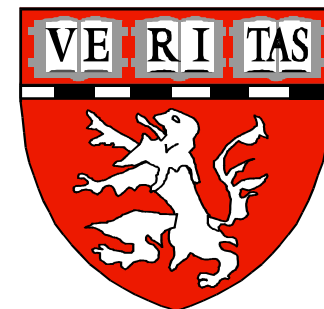
Function of the ED

- Clinical care of patients
- Teaching
- Research

Primary mission: to give the **best possible clinical care** for every patient

To do this, one must **continually improve**
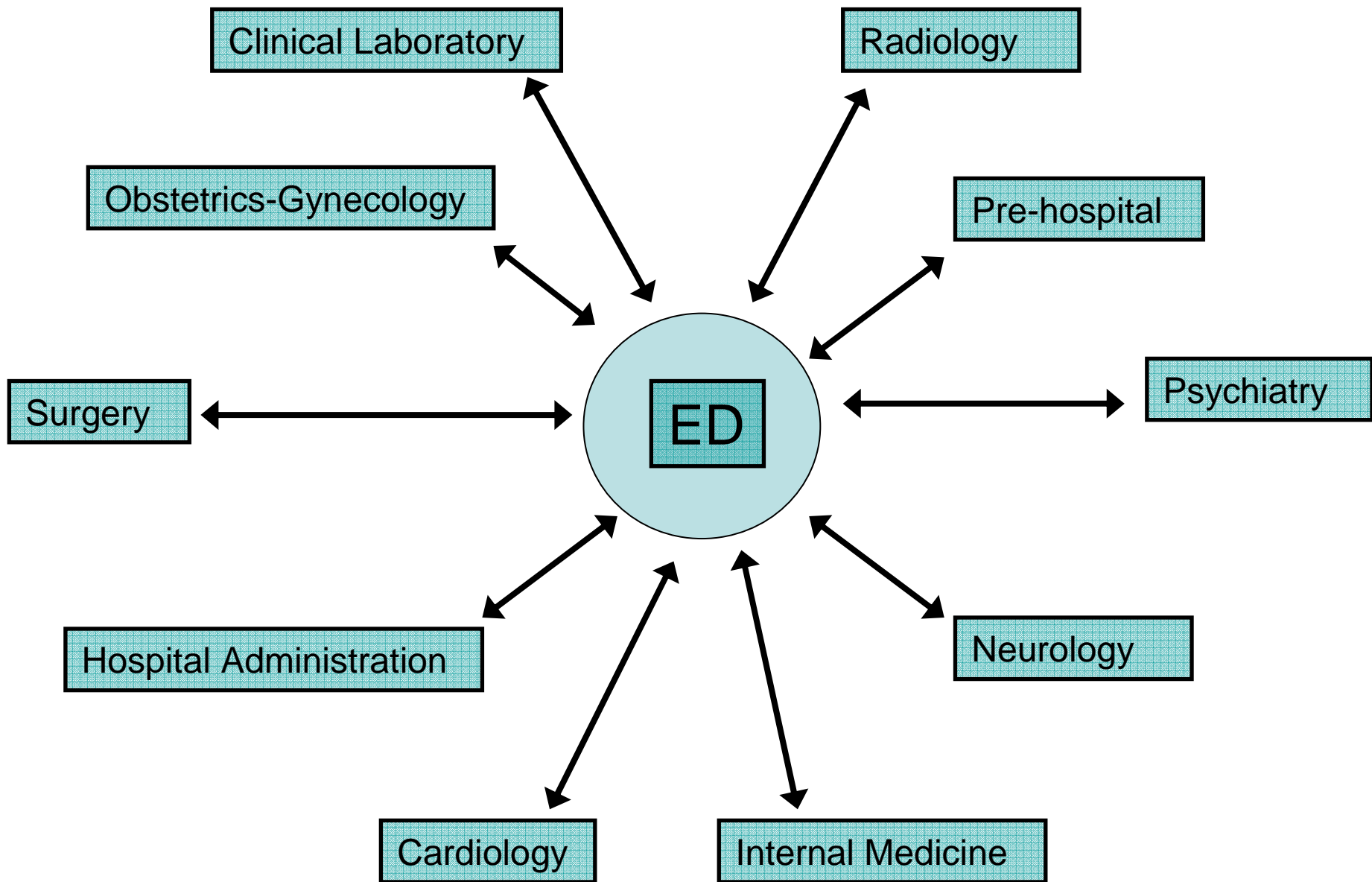
Creating the Culture

- M   hip
- I   blem

                                                                the

- D
- F   with
  a   roups

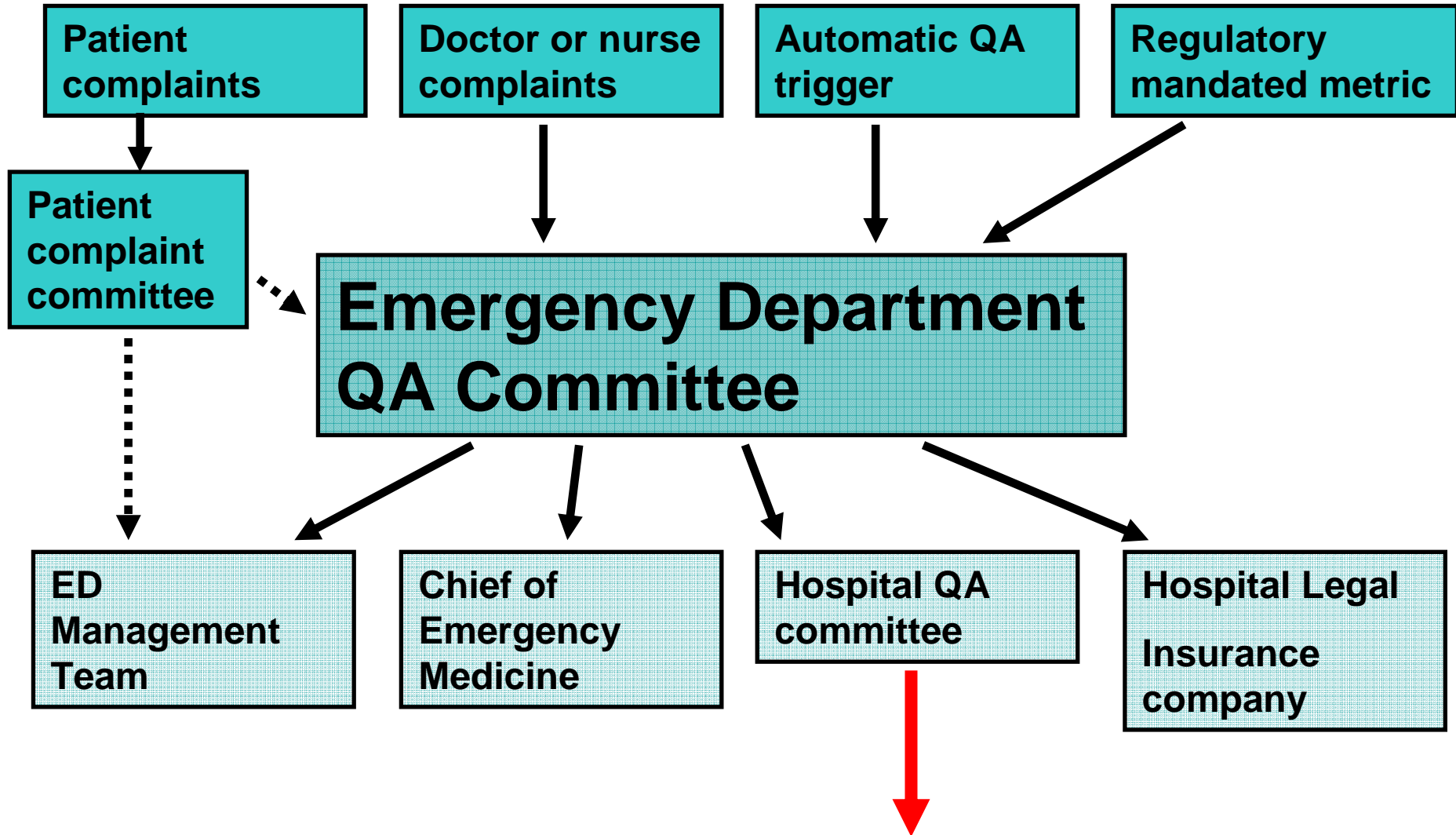**NE TIREZ PAS DE CONCLUSIONS HÂTIVES**
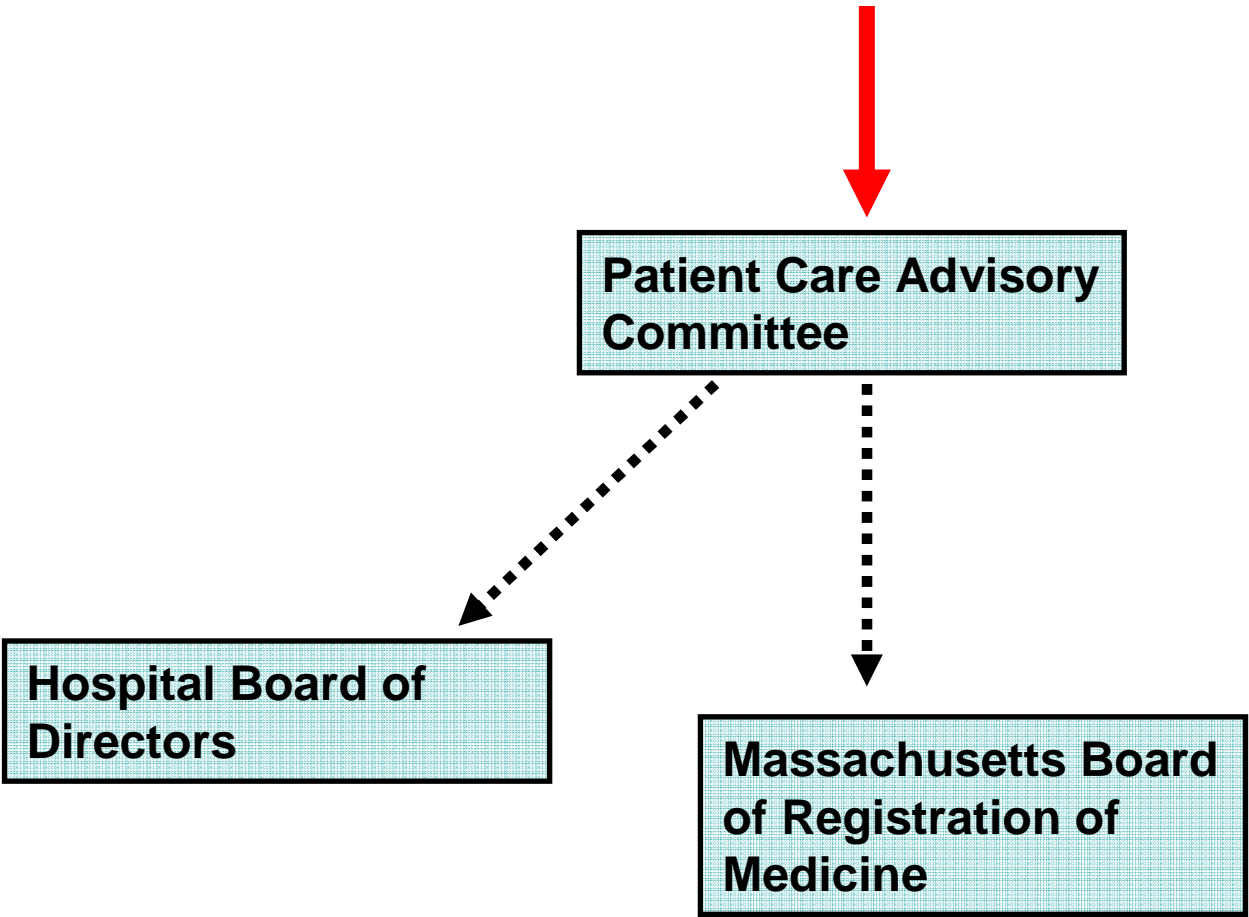
Emergency Department (ED)
Basic statistics

- 53,000 patients per year

- 30% arrive by ambulance (or helicopter)

- 33% admitted
- 5% admitted to an ICU
- 8% admitted to an ED-based observation unit

Structure of QA in the ED

Patient complaints	Doctor or nurse complaints	Automatic QA trigger	Regulatory mandated metric

Patient complaint committee

Emergency Department QA Committee

ED Management Team	Chief of Emergency Medicine	Hospital QA committee	Hospital Legal Insurance company

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                                    ↓ (red arrow)

                         ┌─────────────────────────┐
                         │ Patient Care Advisory    │
                         │ Committee                │
                         └─────────────────────────┘

   ┌──────────────────────┐              ┌──────────────────────┐
   │ Hospital Board of     │             │ Massachusetts Board   │
   │ Directors             │             │ of Registration of    │
   │                       │             │ Medicine              │
   └──────────────────────┘              └──────────────────────┘
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Patient Care Advisory Committee

Hospital Board of Directors

Massachusetts Board of Registration of Medicine

Try to simplify data collection

Core+Red WR=4

TID	A/S	Rm	Name	Flags	Chief Complaint	Rad	Lab	EKG	Att	Res	Nur	Disp
22	45	1		♫	Chest Pain						DJ	
2:29	60	2		Meds Triage	Head Pain	C			11/07	DCAL	Hegedus	DJ
2:24	44	3		♫ Triage	Rectal Bleeding		L		5/09	DCAL	Ethan	Dalida
27	71	4			R Knee Weakness	X			6/09			ShellyD
58	41	5		Com REF	LT Flank Pain	0					Ladapo	ShellyD
5:33	80	6		Com RN Meds Triage	Loose Stool	X	L		4/09	DCAL	Ethan	DJ	A [84m]
6:56	78	7		Com RN REF	Weakness	X	L		2/09	DCAL	Ladapo	Kayon	A [121m]
4:11	79	8		Com REF Neuro NSurg Meds Triage	LT Sided Weakness	XC	L		5/09	DCAL	Hegedus	DJ
		9			<Clean>							
2:01	81	10		Com RN ♫ Meds	Rectal Bleeding	XC	L		10/06	DCAL	lindsay	Kayon
		11			<Clean>							
21	85	12		REF Reg	HypoTN					DCAL		
3:52	59	14		Triage	Scooter Accident	XC	L		1/09	DCAL	Hegedus	Kayon	D
49	80	15		REF GI Meds Reg	Gib		L			DCAL	Ethan	Dalida	A ICU [23m]
3:08	79	16		Com	Epig Pain	XC	L		6/98	DCAL	Ladapo	ShellyD
5:22	49	Hall 9		Com RN 72 Meds	Seizure	C	L		6/09	DCAL	Zinchuk	Kayon	A ♥ [87m]
		17										
		18										
1:39	58	19		REF Meds Triage	Motorcycle	XC	L			DCAL	Ethan	Dacey
58	68	20		REF ♫	Dyspnea	XC	L		3/09	DCAL	Ethan	tyler
26	20	21		Reg	Fall	XC	L			DCAL	Ethan	
27	20	21		Reg	Fall	XC				DCAL	Hegedus	
		22a										
		22b										
		23a			[23 B]							
		23b			<Clean>							
6:39	44	Disch		Com ♫	Chest Pain	XC	L		8/08	RUBIN	Ethan	ShellyD	D
4:02	68	Inpt Bed		Com RN REF ♫ Card	Chest Pressure	X	L		5/09	DCAL	Ethan	Kayon	A ♥
10:35	47	Inpt Bed		Com RN ♫	Chest Pain, Ha	XC	L			RUBIN	Ethan	ShellyD	A

Collecting data
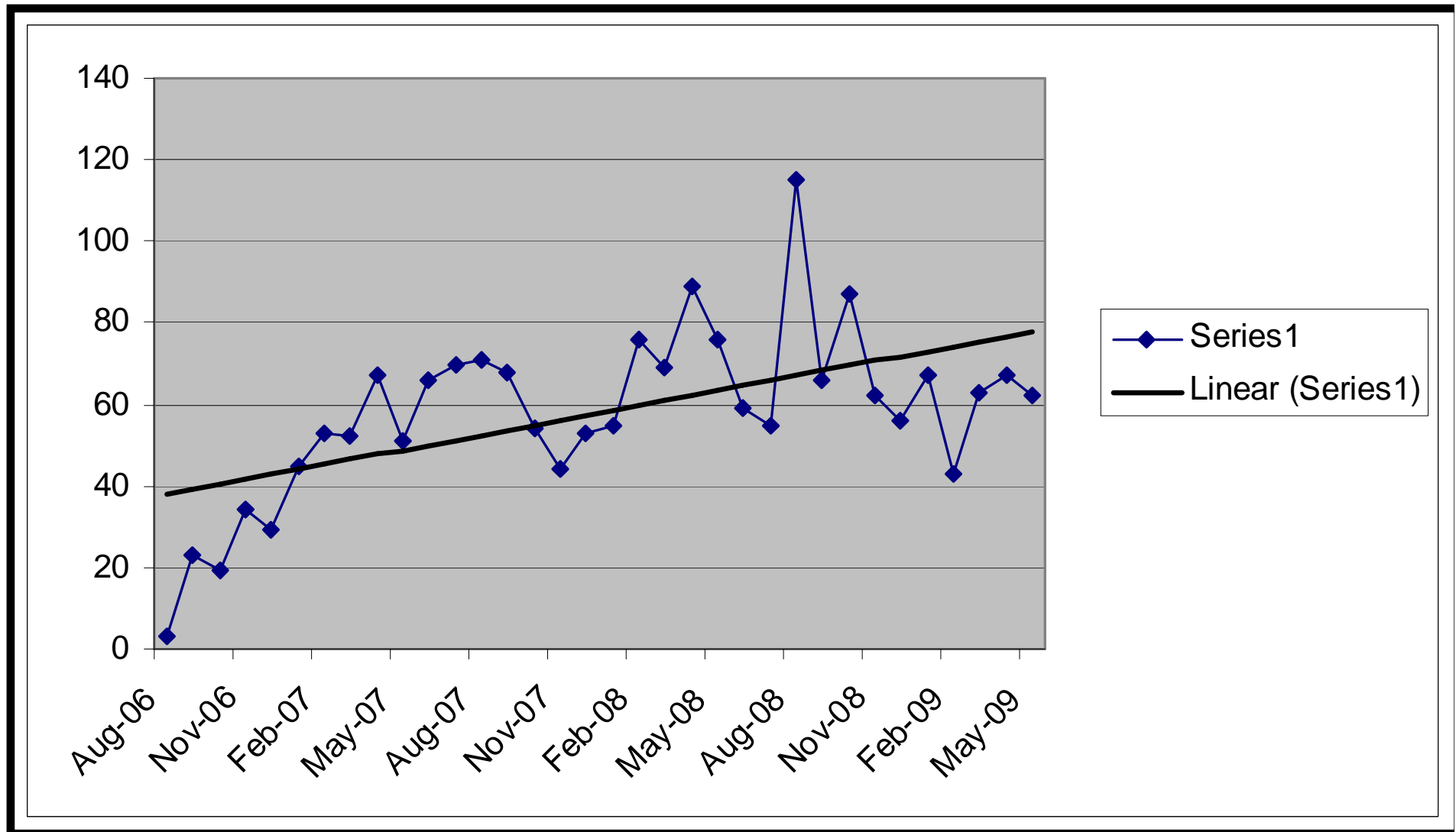
Set a flag for patient ▓▓▓▓▓

Please choose a reason for the flag:

- ⦿ QA Issue
- ○ Triage Issue
- ○ New Triage System Feedback
- ○ Throughput Delay
- ○ Interesting Case/X-ray/EKG
- ○ Registration Issue
- ○ EMS Case Review
- ○ Equipment
- ○ Evaluate Resident
- ○ Self-Reminder
- ○ Dashboard Feedback

Description of Issue:

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This is a description of the QA issue.
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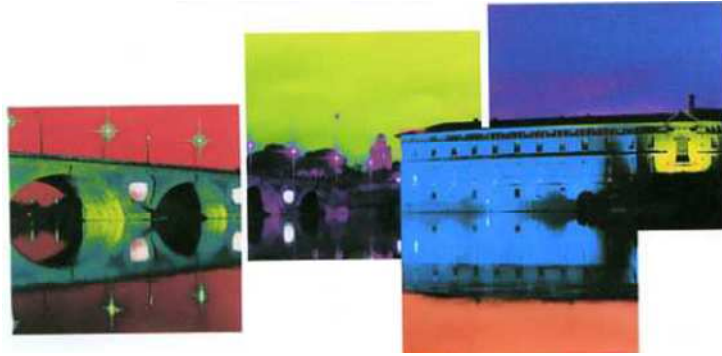
[Cancel]   [Submit]

QA "flags" over time

STEMI process improvement

Percutaneous Coronary Intervention (PCI) Received Within 90 Minutes of Hospital Arrival

The Problem
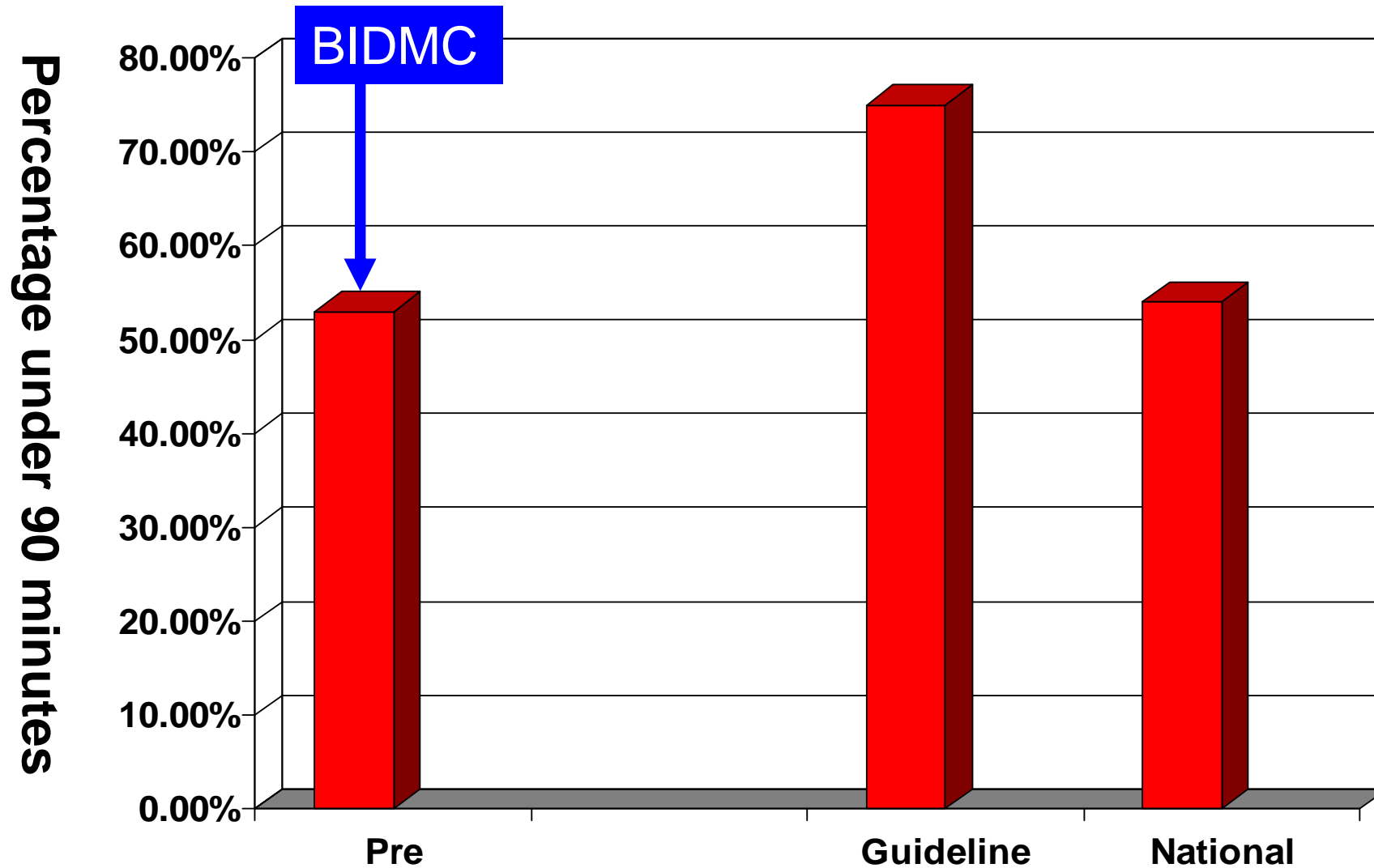
Goals

- **<u>Multi-disciplinary</u>** review the cause of delay for patients with Acute Myocardial Infarctions requiring primary angioplasty

- Implement a **<u>standard treatment protocol</u>** utilizing current evidence-based medicine and AHA Guidelines .

- **Increase percentage of AMI patients who receive primary angioplasty within 90 minutes of hospital presentation to 75%**

Key Metrics

- Analysis of delay points in the workflow from ED to Cardiac Catheterization Lab
  - Door to initial ECG (Goal: 8 minutes)
  - Door to Cath team notified (Goal: 15 minutes)
  - Door to Departure to Cath Lab (Goal: 45 minutes)
  - Door to PCI (Goal: 90 minutes)
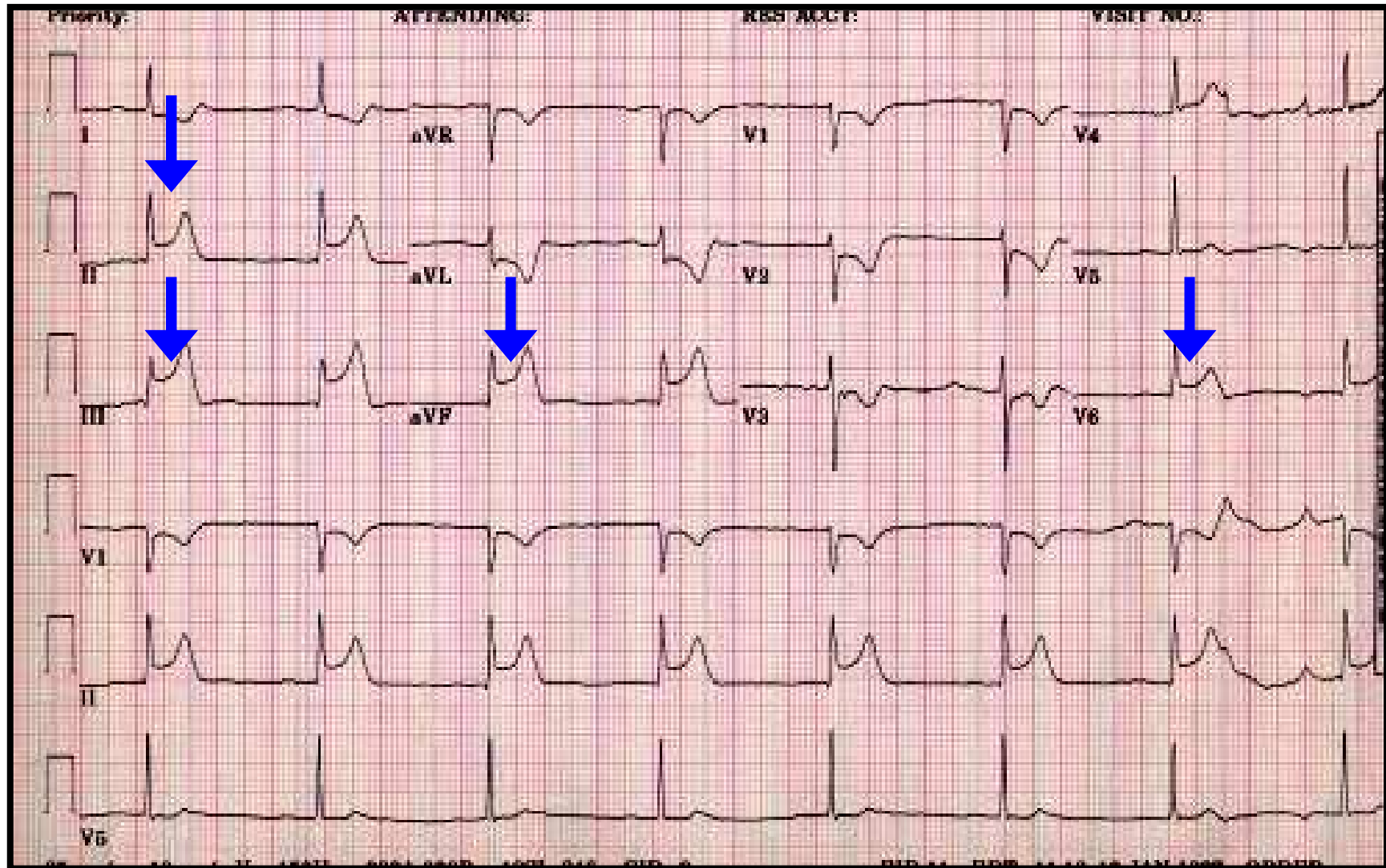
Who does the ECG and when?

Who reads the ECG and when?

Cardiology notified
of STEMI: 617- CARDIAC

CODE STEMI

TIME:_____

- Admitting
- Interventional Cardiology Attending
- Interventional Cardiology Fellow
- Cath lab technician
- Cath lab nurse
- Security
- CCU resource nurse

Simplify the Process

Choose a service:

|	
○ Cardiology	*Cardiology Fellow -- **NOT for STEMI!***
○ GI - General	*Most GI consults - use this first if unsure*
○ GI - ERCP/Biliary	*For ERCP procedures and Biliary issues*
○ GI - Hepatology/Liver	*For patients of the liver service and known variceal bleeds*
○ Neurology	*Neurology consults, including non-acute CVA and atraumatic ICH.*
○ Neurosurgery	*Neurosurgery consults.*
○ OB/Gyn	*OB/Gyn ED Consult*
○ Orthopedics	*Emergency Orthopedics consult*
○ Psychiatry	*Emergency Psychiatry Consults*
○ Post-Arrest Response Team	*for patients resuscitated from cardiac arrest*
○ Acute ST-Elevation MI	*Cardiology consult FOR ST-ELEVATION ACUTE MI ONLY*
○ Code STROKE	*TIA w/in 3 hrs or CVA w/in 9hrs. **Attending/Sr EM Resident Only***
○ Surgery	*Surgical consults, including trauma*
○ Thoracic Surgery	*Thoracic Surgery Consults*
○ Toxicology	*Ingestions, occupational exposures and adverse drug reactions*
○ Vascular Surgery	*Vascular Surgery Consults*
○ Transplant Surgery	*Transplant Surgery consult*
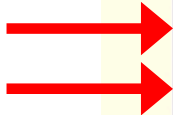
Simplify and Standardize the Process

- All medications listed on a pre-printed **single order sheet** with dosages, and potential contra-indications

- The **medications are all grouped together** in PYXIS; just enter STEMI to automatically be prompted to pull out all the meds.

- **Bolus only**; no drips

Analyze the Data

- Data (time windows) collected and analyzed by health care quality

- All cases reviewed within 24 hours
  - Case conference for all cases > 90 min (also within 24 hours)

- Monthly STEMI team meeting
  → Emergency physician
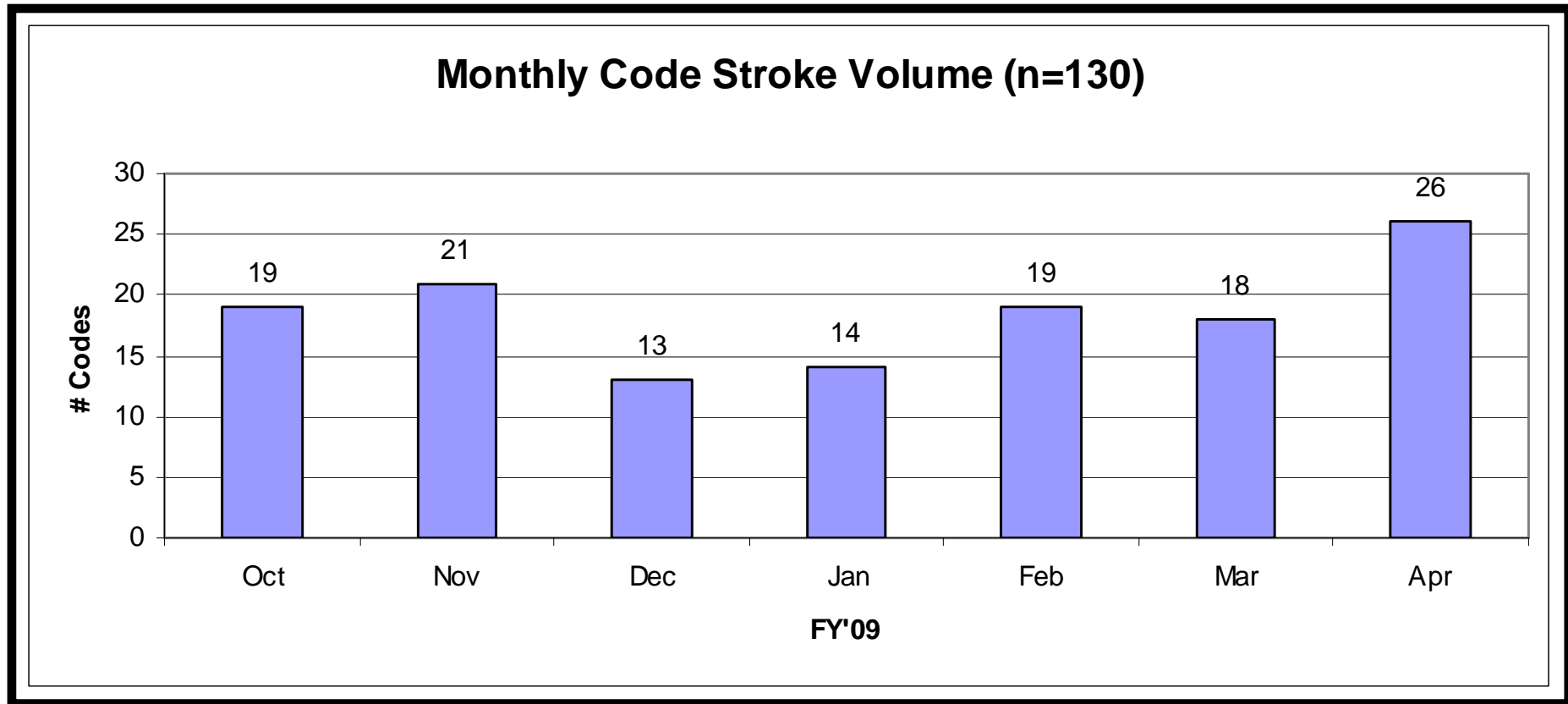 → Cardiologist
  → ED nursing

Success
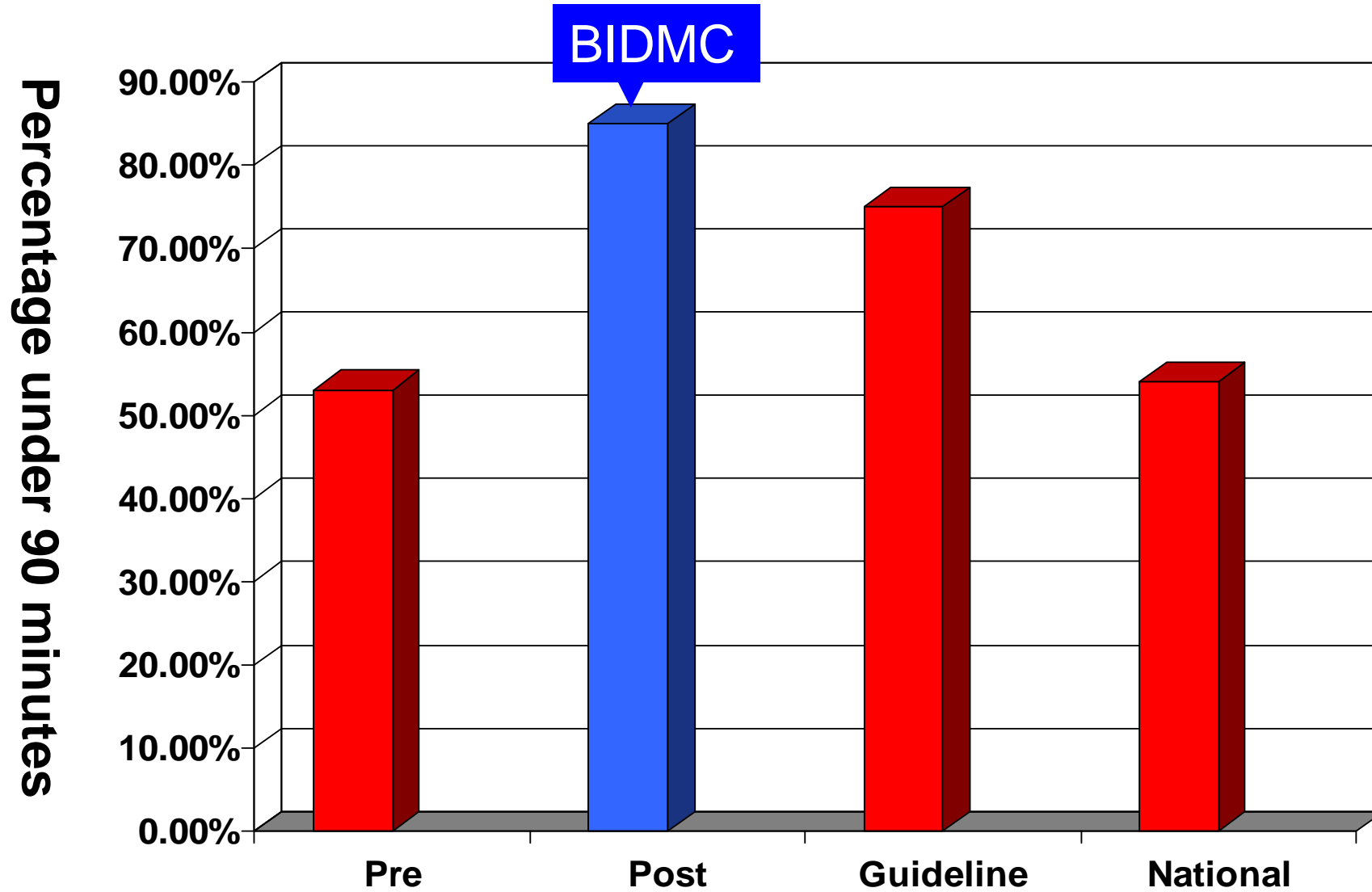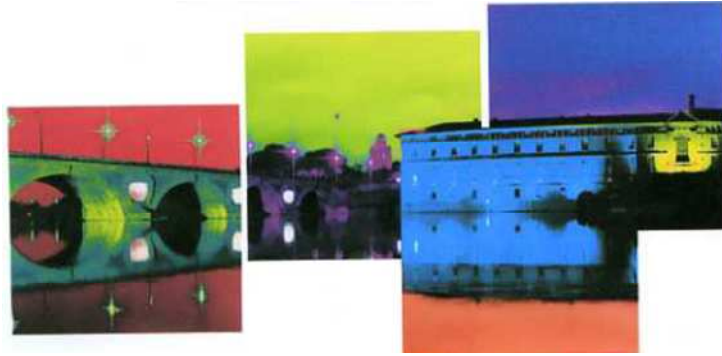
Stroke process improvement

Reduce the time for door to administration of tPA for acute ischemic stroke

Code Stroke activations

Monthly Code Stroke Volume (n=130)

The problem – getting the work done faster

The Magic Hour: "Door to ..."

Time of onset – last time known to be normal
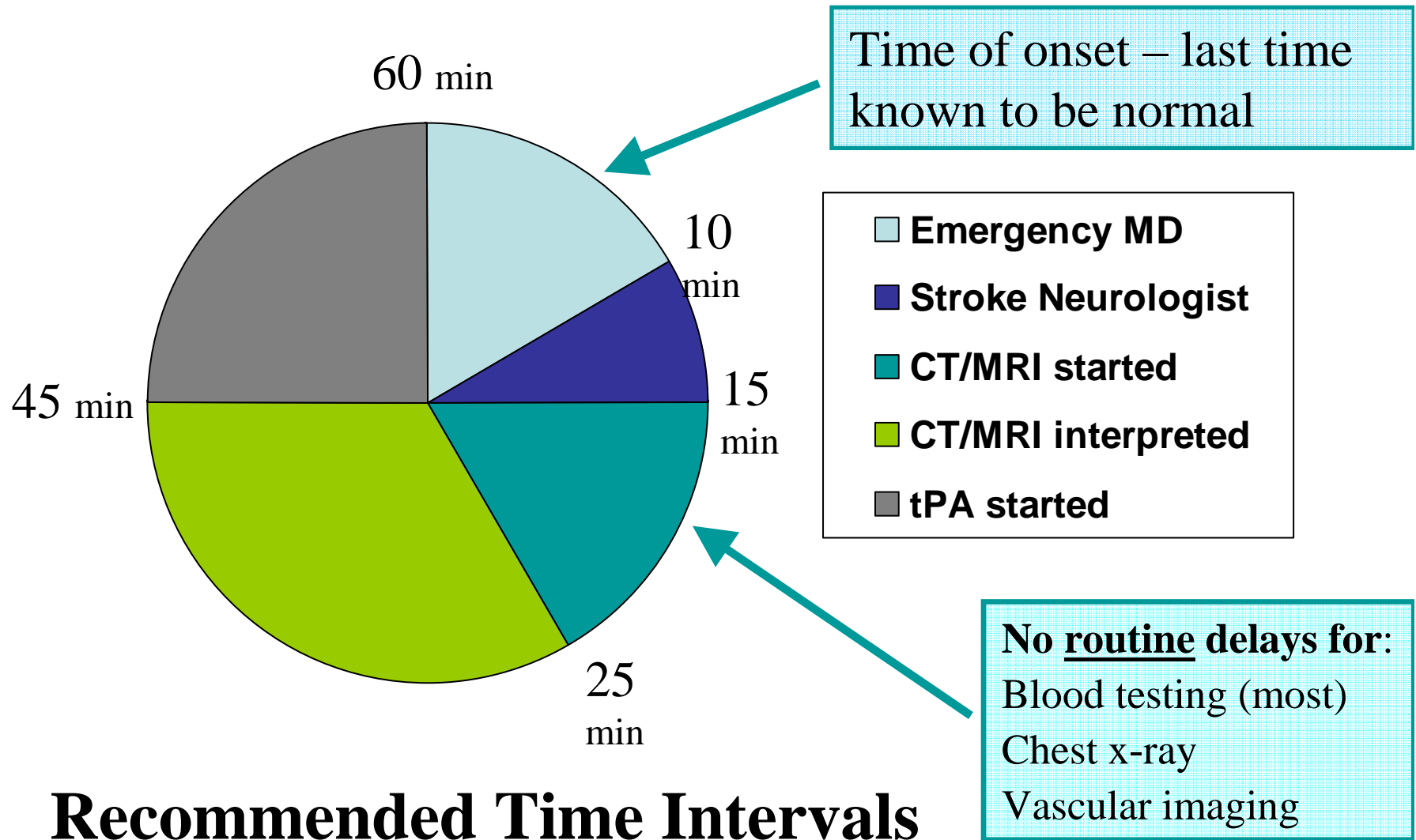
Recommended Time Intervals

Legend:
- Emergency MD
- Stroke Neurologist
- CT/MRI started
- CT/MRI interpreted
- tPA started

Pie chart labels: 60 min, 10 min, 15 min, 25 min, 45 min

No routine delays for:
Blood testing (most)
Chest x-ray
Vascular imaging

Composite data – average
Registration to Code Stroke activation

Time from ED Registration to Code Stroke Called

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	Overall
Minutes	18	14	27	23	24	27	22	22

FY'09
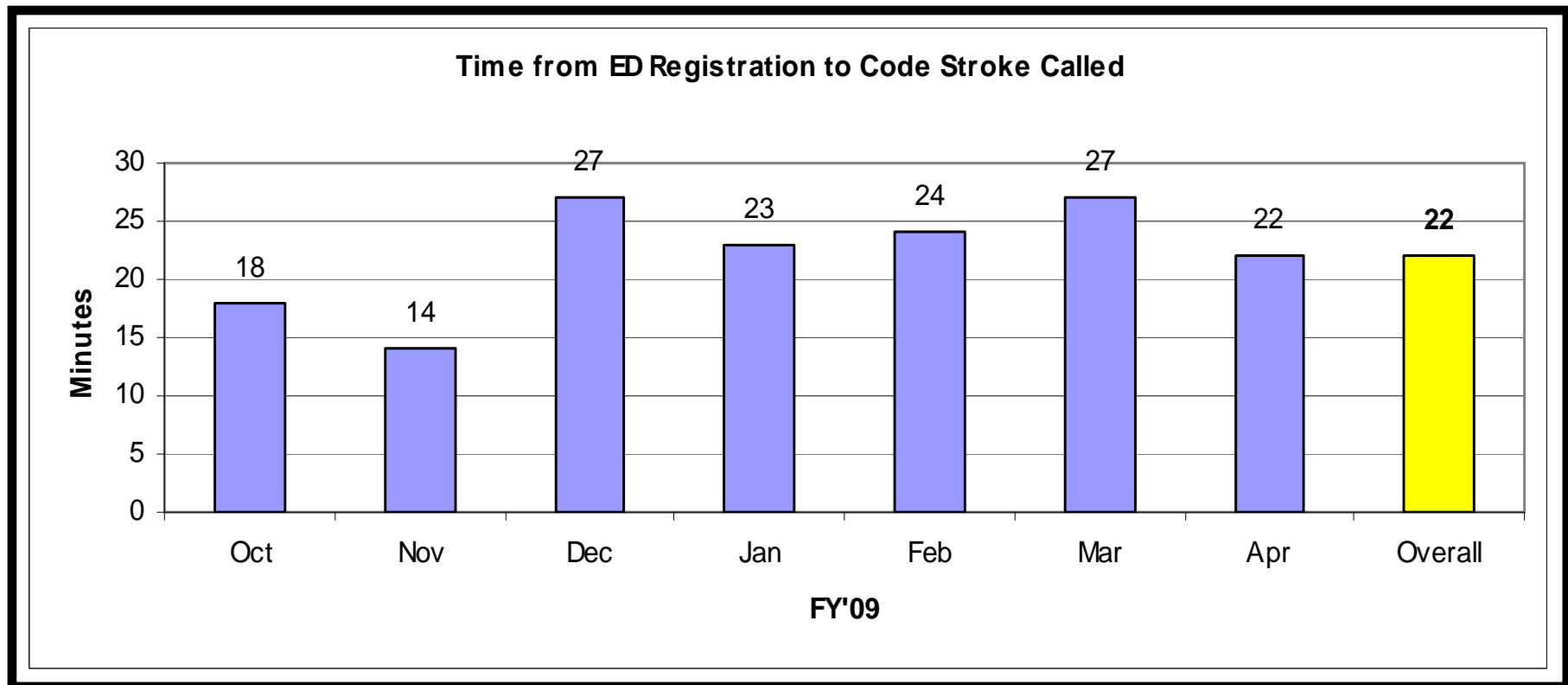
MRN	ED Reg	ED Registration Time	Code Stroke Call	Reg to Code Stroke
0482278	5/15/2009	15:09	17:39	2:30
2381088	5/15/2009	17:40	18:03	0:23
2217000	5/12/2009	11:21	11:33	0:12
2313439	5/6/2009	11:04	11:25	0:21
2379062	5/6/2009	23:07	23:13	0:06
2381050	5/6/2009	15:58	16:11	0:13
1167444	5/4/2009	22:29	22:41	0:12
1533121	5/3/2009	5:23	5:33	0:10
2380271	5/1/2009	21:45	22:16	0:31
0958724	5/19/2009	22:13	22:53	0:40
1259747	5/20/2009	23:20	0:01	0:41
0602301	5/20/2009	15:10	15:34	0:24
2384292	5/23/2009	10:00	10:04	0:04
1517892	5/24/2009	9:42	9:43	0:01

Data by doctor and clinical symptoms at onset

ED Doctor	Clinical Syndrome
DC	Bilateral leg weakness and old deficit
DC	TIA
DC	Acute speech deficit, s/p recent stroke (? old versus new)
ST	Altered mental status, ? seizure
DC	TIA
RF	Time of onset was ambiguous
TK	Recurrent speech changes

<u>Tentative</u> Conclusions

- One doctor needs some education
- Staff needs better education about patients presenting with TIA
- Some of the longer times were associated with significant clinical ambiguity about the diagnosis of stroke
- 7 of the 8 problems were on the evening shift (when the ED is busier) - ? Bottleneck at triage issue

This project is still a work in progress
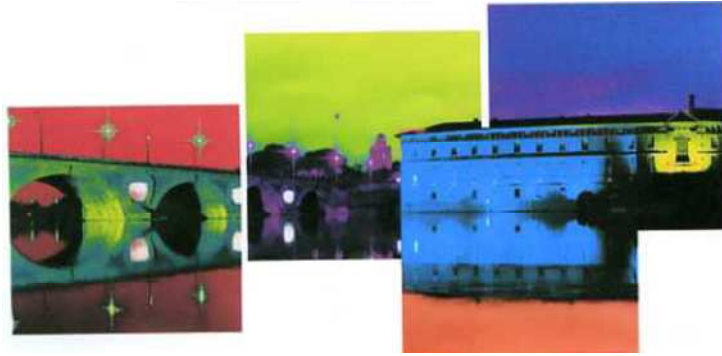
Conclusions

Create the culture of improvement
Promote this from the top
Create clear metrics; gather them accurately
Involve all parties in the process
Break down processes into component parts
Reduce variation

Above all, avoid jumping to conclusions !!