Canadian Cardiovascular Outcomes Research Team

Quality of Cardiac Care in Ontario

EFFECT (Enhanced Feedback for Effective Cardiac Treatment)

Phase 1. Report 1—January 2004

ICES Institute for Clinical Evaluative Sciences

Ontario's research resource for informed health care decision-making

Funded by

CIHR IRSC Canadian Institutes of Health Research / Instituts de recherche en santé du Canada

HEART AND STROKE FOUNDATION

Objectives of the EFFECT Study

- Set national cardiac care benchmarks for hospitals to work towards
- Produce cardiac care report cards for Ontario hospitals (heart attack – AMI, heart failure – CHF)
- Test usefulness of cardiac care report cards in improving the quality of cardiac care

EFFECT STUDY

Enhanced Feedback for Effective Cardiac Treatment Study

- Research conducted by Canadian Cardiovascular Outcomes Research Team (CCORT) based at ICES (Institute for Clinical Evaluative Sciences)
- Funded by the Canadian Institutes of Health Research and the Heart and Stroke Foundation

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Goals of the EFFECT Study

- Quality improvement
- Public accountability
- **NOT** how to choose a hospital when seeking cardiac care

Burden of Cardiac Disease

- Cardiovascular diseases are the leading cause of death in Canada (>78,000 deaths/year)
- Leading cause of hospitalization (18%)
- Economic burden of $18 billion per year (1998)

The Practice Gap

- Many new life-saving treatments developed for heart disease over the past two decades (thrombolytic drugs, statins, etc.)
- Uptake of these advances in clinical practice has been slow
- Result - A gap between ideal care and actual practice patterns

Clinical Data

- The EFFECT study is based upon high-quality clinical data collected by retrospective chart review by trained cardiology research nurses
- Advantages over administrative data are related to comprehensiveness and accuracy of the data
- Disadvantages are the time involved and cost of collecting these data

Study Design

- Phase I hospitals randomized into 2 feedback groups:
  - **A. Early Feedback Group (44 hospital corporations)**
    - **Receive results from Phase I chart review in January 2004**
  - B. Delayed Feedback Group (41 hospital corporations)
    - Receive results from Phase I chart review Fall 2004
- Phase II results in 2005/2006
- Comparison of Phase I and Phase II results

Inclusion Criteria

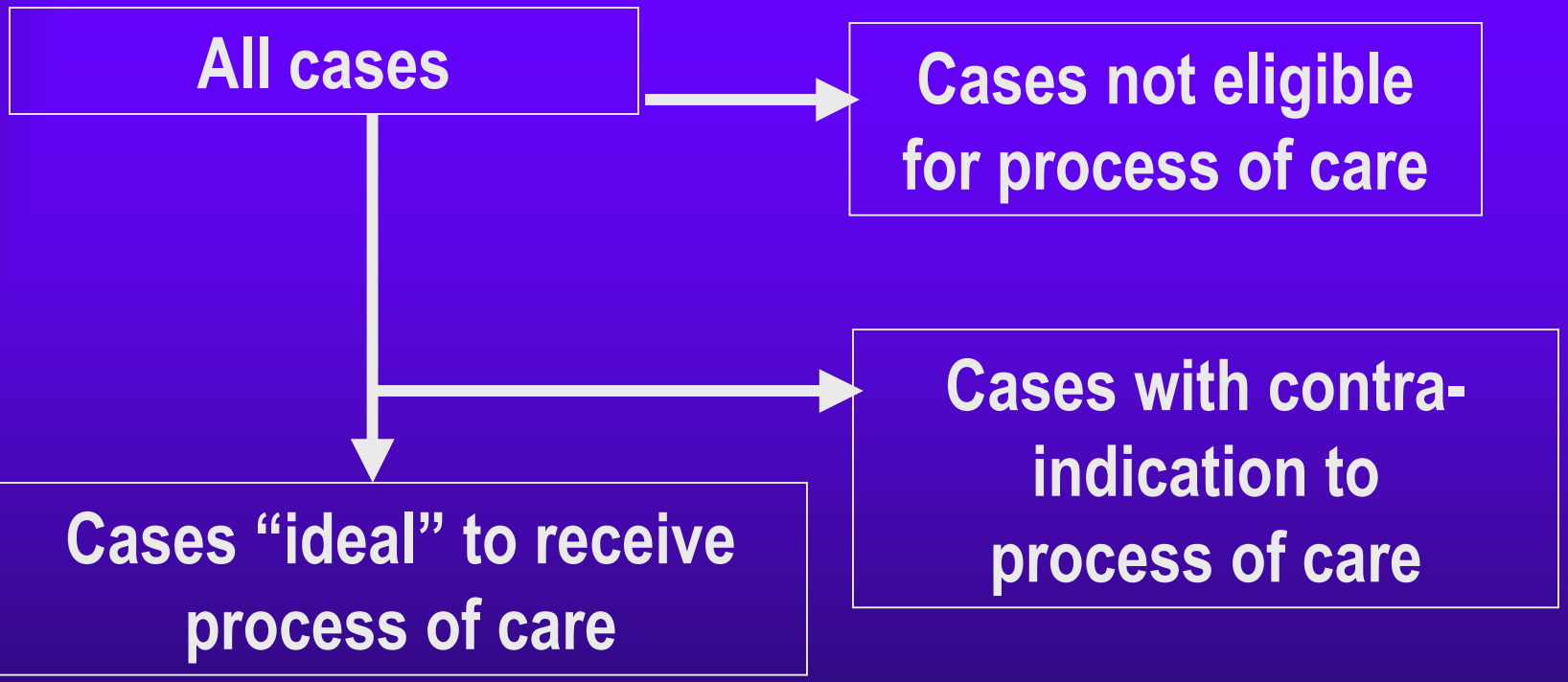
Patients

- First admission for heart attack (AMI), heart failure (CHF)

Hospitals

- Acute care hospitals in Ontario
  - **Treat a minimum volume of 30 cases/year**
  - **Provide 125 charts per AMI, CHF ± 10% for review**
- 85 hospital corporations (103 hospitals) participating

"Ideal Subset" Methodology



NB: All subsequent medication utilization slides refer to *Ideal* cases
Medication contraindications are noted in EFFECT Study—Phase I Report 1 Appendix C

Benchmarks

- Benchmarks reflect the minimum proportion of ideal patients who should receive a particular intervention
  - Defined by national expert panel
- Target levels may not be achievable at all hospitals
  - Diagnostic testing (cholesterol, echo) not available
  - Lack of cardiac catheterization lab

EFFECT STUDY

AMI Benchmarks*

PROCESS OF CARE QUALITY INDICATOR	MINIMUM TARGET LEVEL IN IDEAL CANDIDATES
ASA within six hours of hospital admission	≥90%
ASA prescribed at hospital discharge	≥90%
Median "door- to- needle" time for thrombolysis	≤30 min
Beta-blocker within 12 hours of admission	≥85%
Beta-blocker prescribed at discharge	≥85%
ACEI prescribed at discharge	≥85%
Lipid measurement within 24 hours of admission	≥85%
Statin prescribed at discharge	≥70%

*Defined by CCORT/CCS AMI Quality Indicator Expert Panel
Data for highlighted indicators appear in subsequent slides

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CHF Benchmarks*

PROCESS OF CARE QUALITY INDICATOR	MINIMUM TARGET LEVEL IN IDEAL CANDIDATES
ACEI at discharge	≥85%
Beta-blocker at discharge	≥50%
Warfarin for atrial fibrillation at discharge	≥85%
LV function in hospital or prior to admission	≥75%
Weights measured (≥50% days)	≥90%
Discharge instruction: medications	≥90%
Discharge instruction: salt/fluid restriction	≥90%
Discharge instruction: daily weights	≥90%
Discharge instruction: symptoms of worsening heart failure	≥90%
Discharge instruction: re follow-up appointment	≥90%

* Defined by CCORT/CCS CHF Quality Indicator Expert Panel

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Key Terms

- Thrombolytics: "Clot-busting drugs"
- Door-to-Needle time:
  - Time (minutes) from arrival in emergency department (door) to when thrombolysis infusion (needle) was started.
- Cardiac medications:
  - ASA (aspirin): prevents blood clots
  - Beta-blockers: slow the heart/relieves angina
  - ACE-Inhibitors: lower blood pressure
  - Statins: lower cholesterol

EFFECT STUDY

Key Findings: Myocardial Infarction (Heart Attack)

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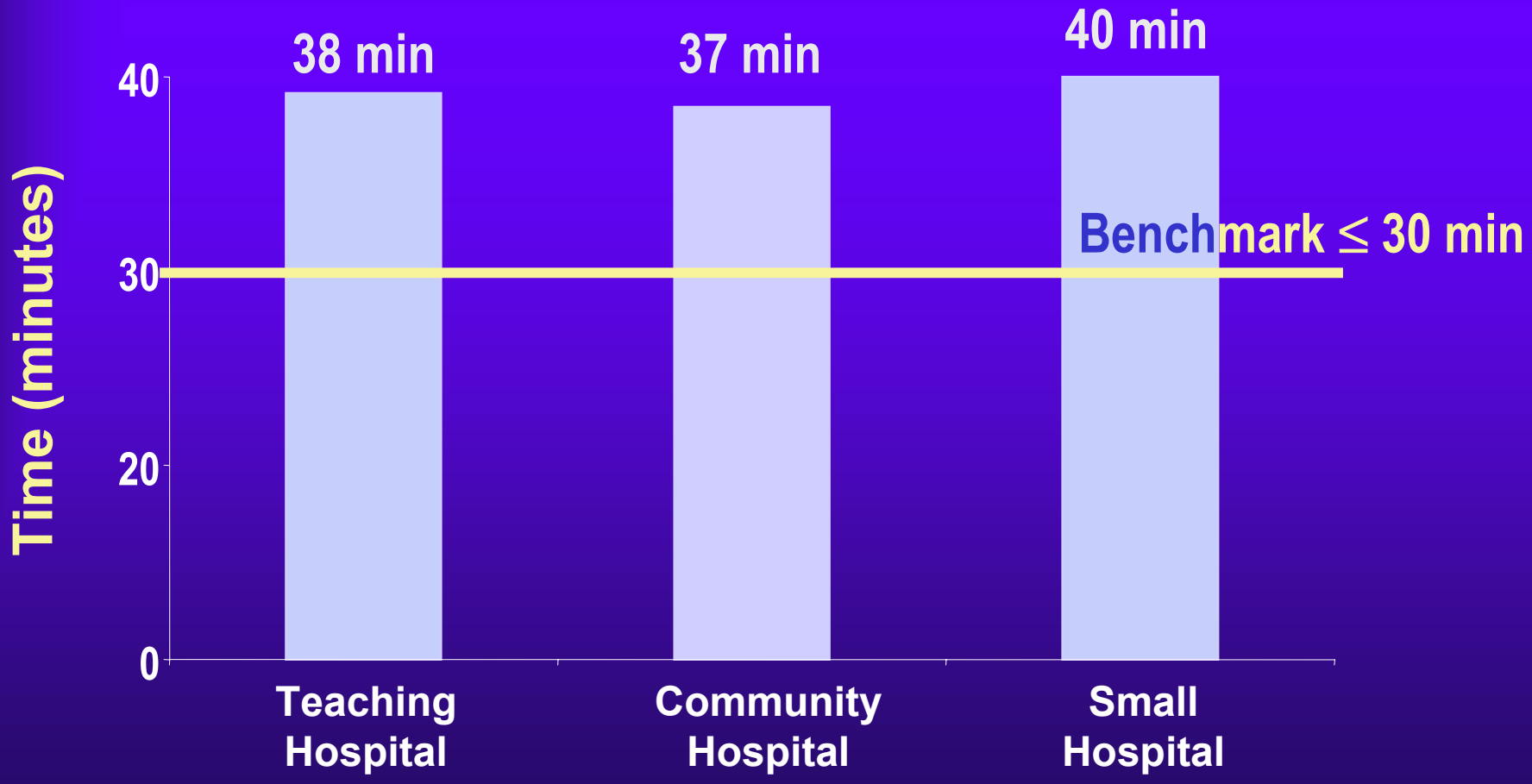
Cardiac Risk Factors

- Most (80%) Ontario heart attack patients have at least one modifiable cardiac risk factor
  - 33% were current smokers
  - 44% were hypertensive (i.e. high blood pressure)
  - 31% had hyperlipidemia (e.g. high cholesterol)
  - 26% were diabetic

EFFECT STUDY

Door-to-Needle time for thrombolytic therapy



Ontario average = 37 min

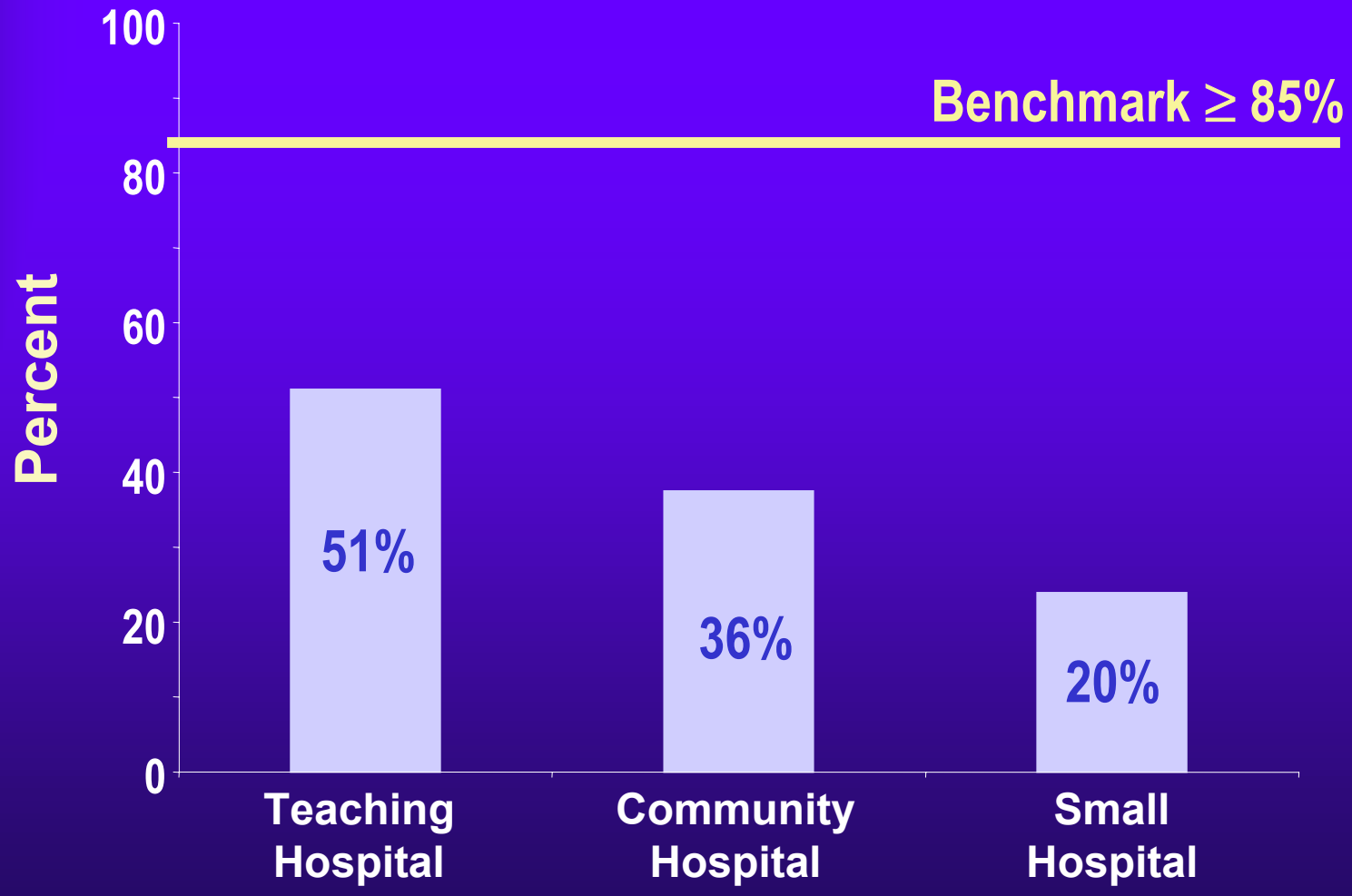
12/44 hospitals met benchmark

Door-to-Needle Time

- Was **11 minutes less** when Emergency physician made decision to administer thrombolytic therapy
- Was **10 minutes less** when thrombolytic therapy was administered in Emergency Department rather than in CCU/ICU

EFFECT STUDY

Lipid testing within 24 hours of admission

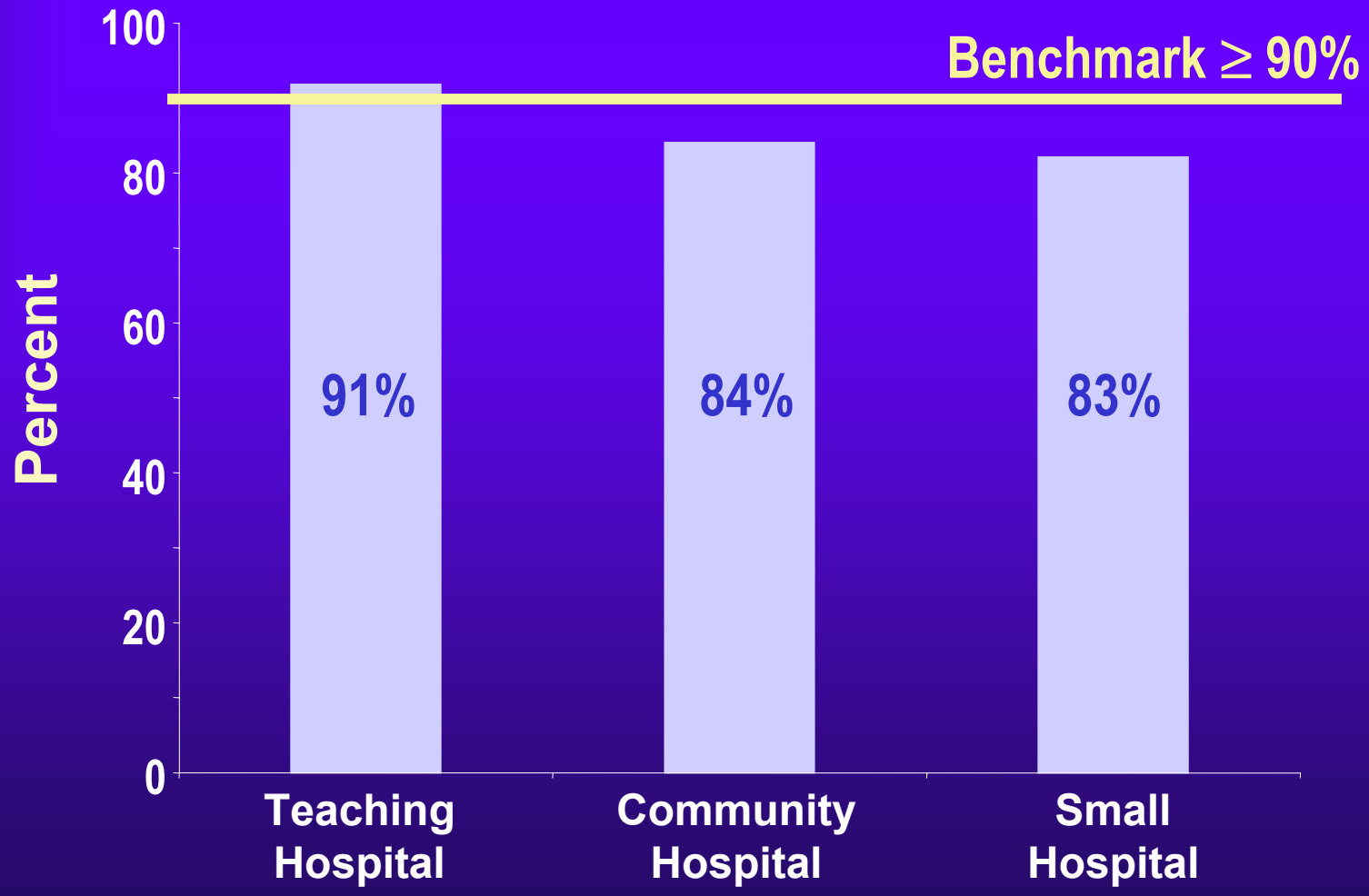


Ontario average = 36%

1/44 hospitals met benchmark

EFFECT STUDY

Aspirin prescribed after heart attack

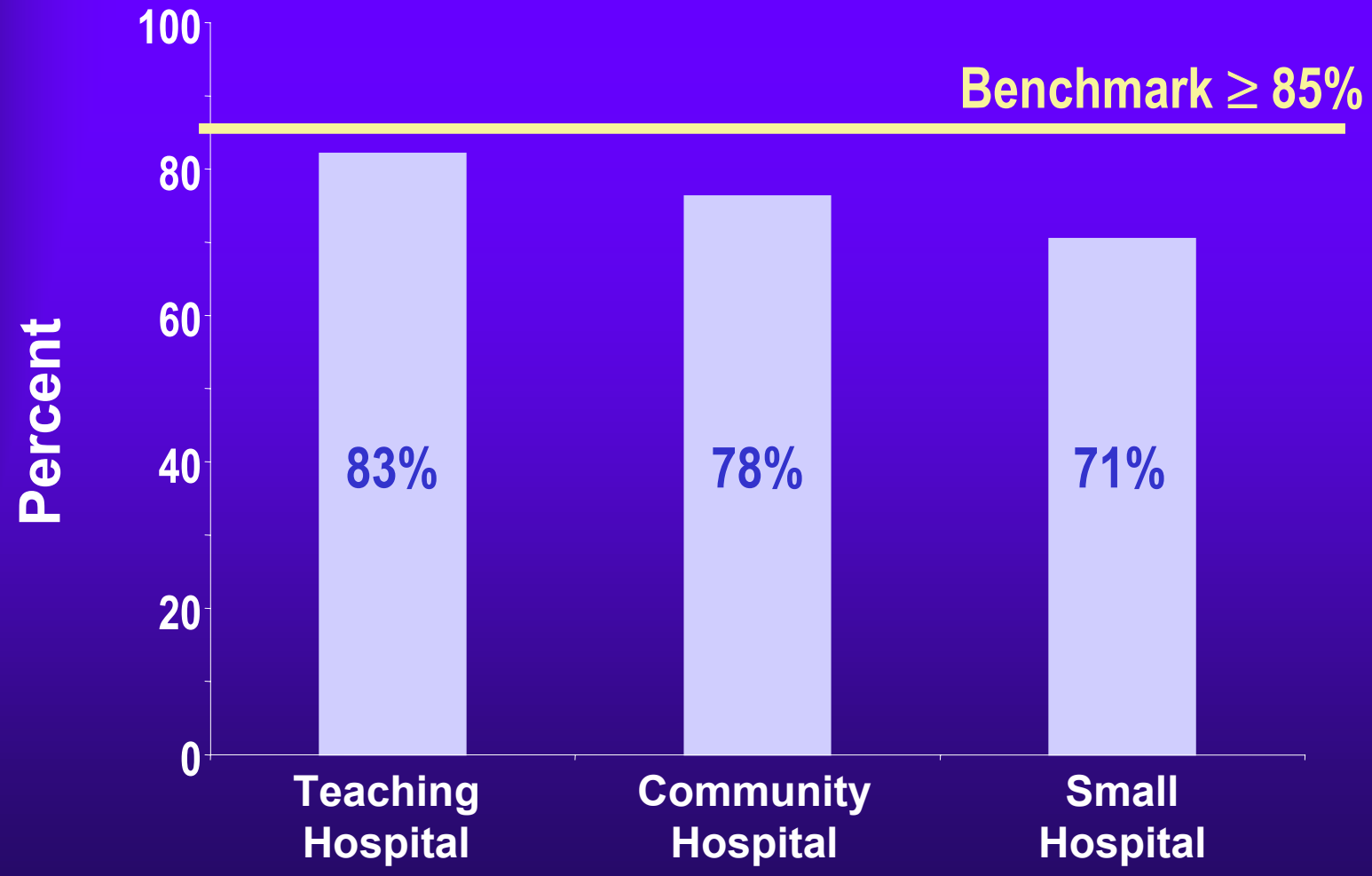


Ontario average = 85%

10/44 hospitals met benchmark

EFFECT STUDY

Beta-blockers prescribed after heart attack

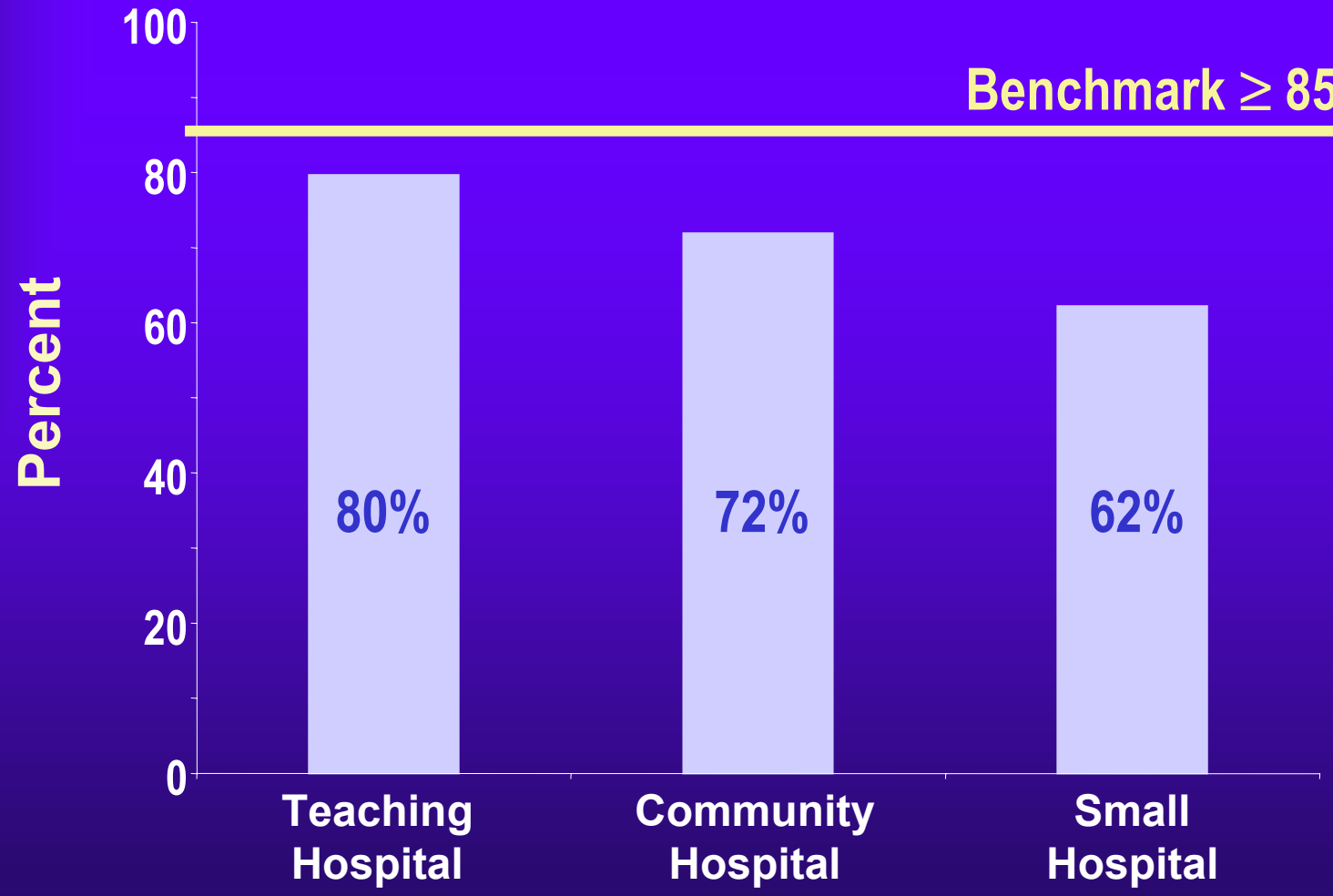


Ontario average = 78%

9/44 hospitals met benchmark

EFFECT STUDY

ACE Inhibitors prescribed after heart attack*



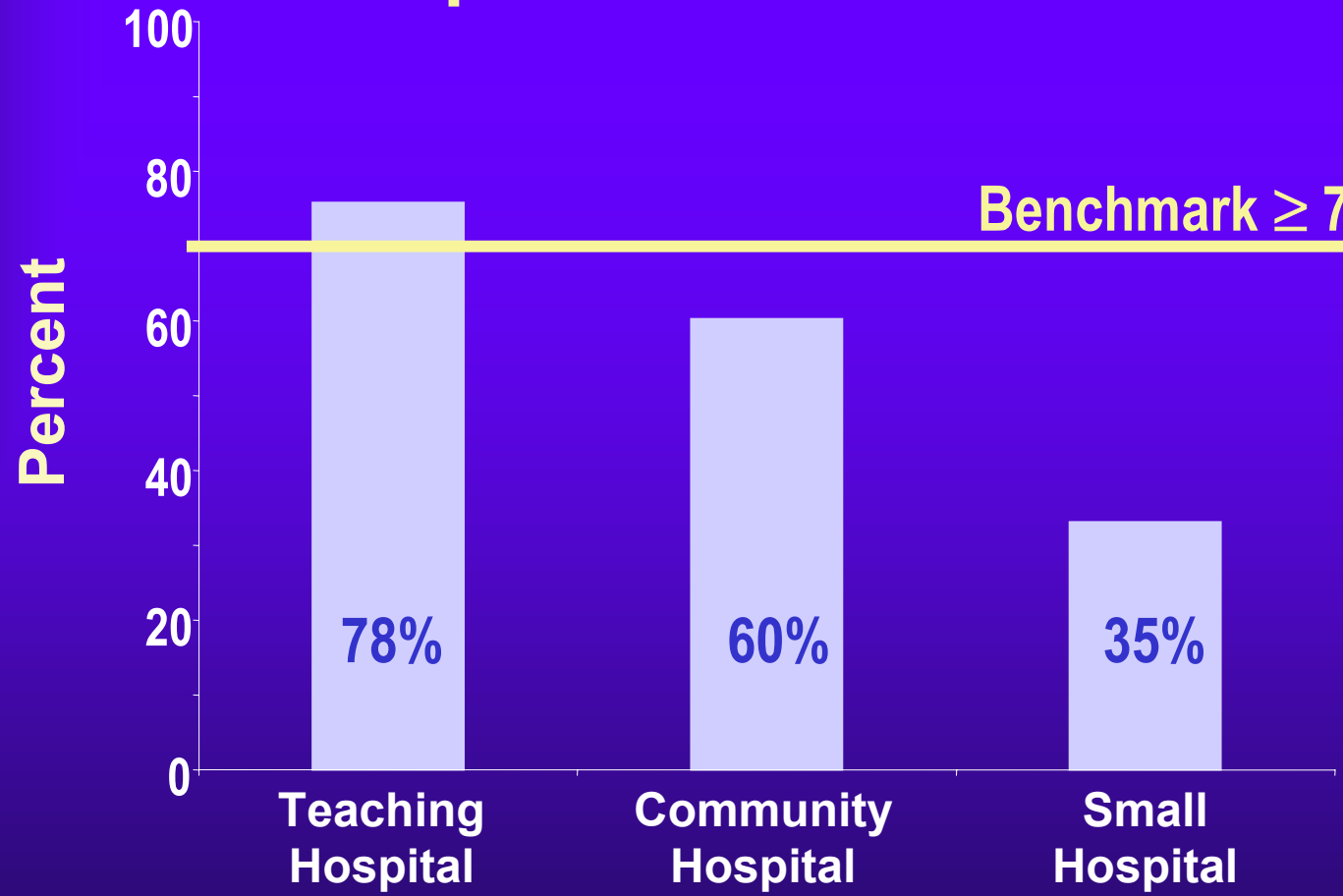
Ontario average = 72%

5/44 hospitals met benchmark

*Refers to cases with LV dysfunction

EFFECT STUDY

Statins prescribed after heart attack*



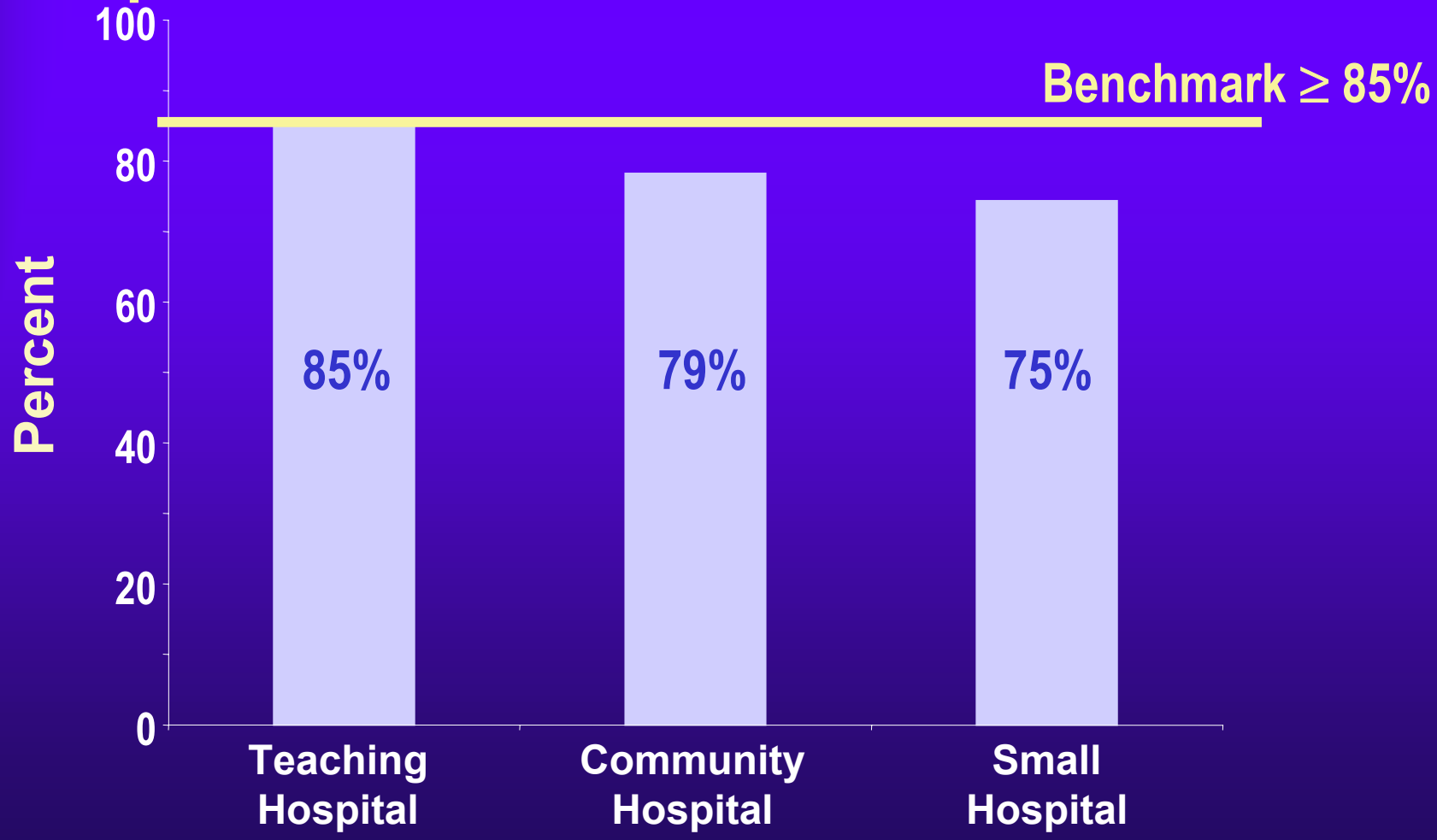
Ontario average = 61%

15/44 hospitals met benchmark

*Refers to cases with total serum cholesterol level on admission of > 5.2 mmol/L or LDL > 3.4 mmol/L

EFFECT STUDY

Patients receiving 4 recommended secondary prevention medications after heart attack



Ontario average = 79%

6/44 hospitals met benchmark

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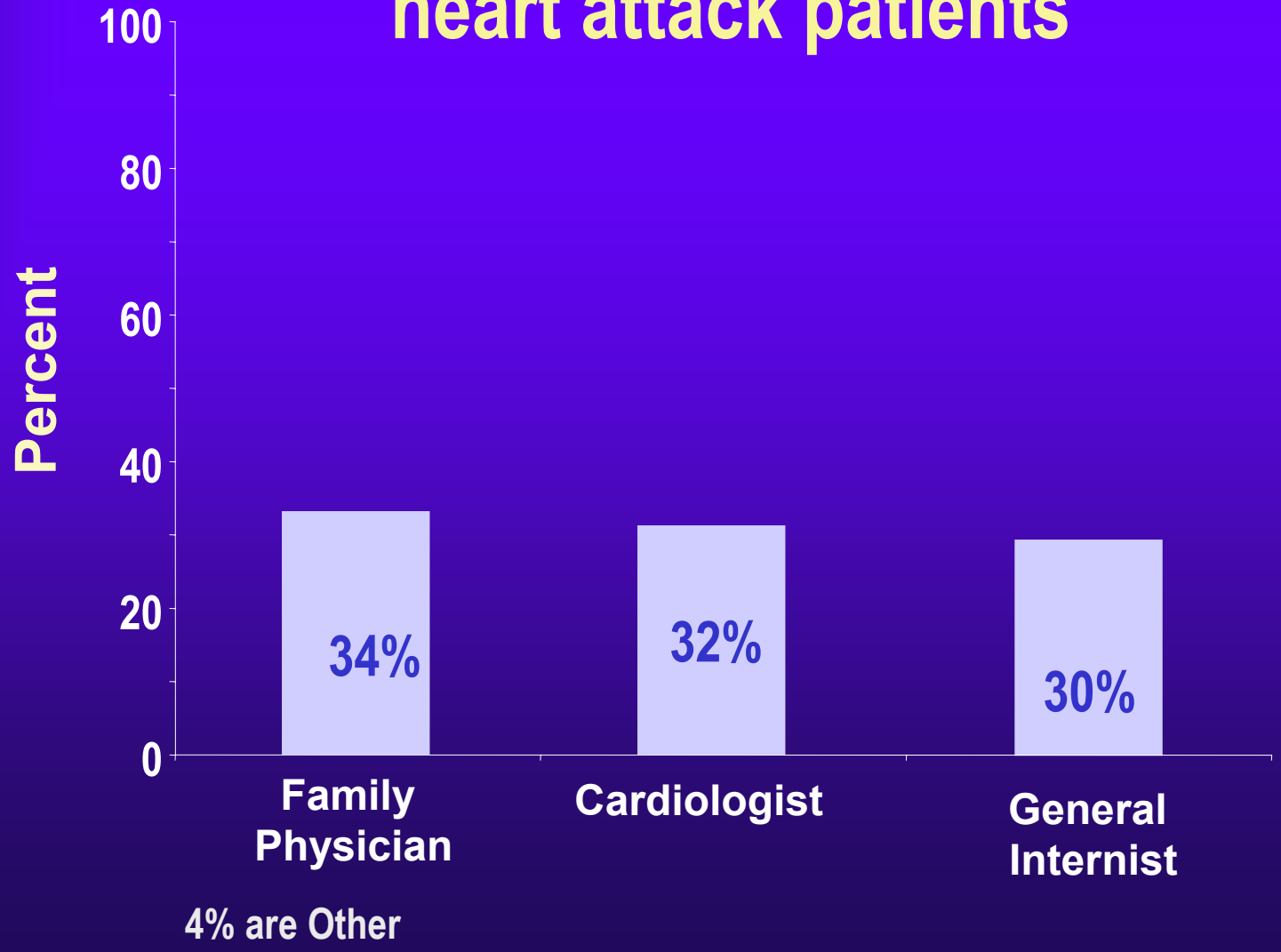
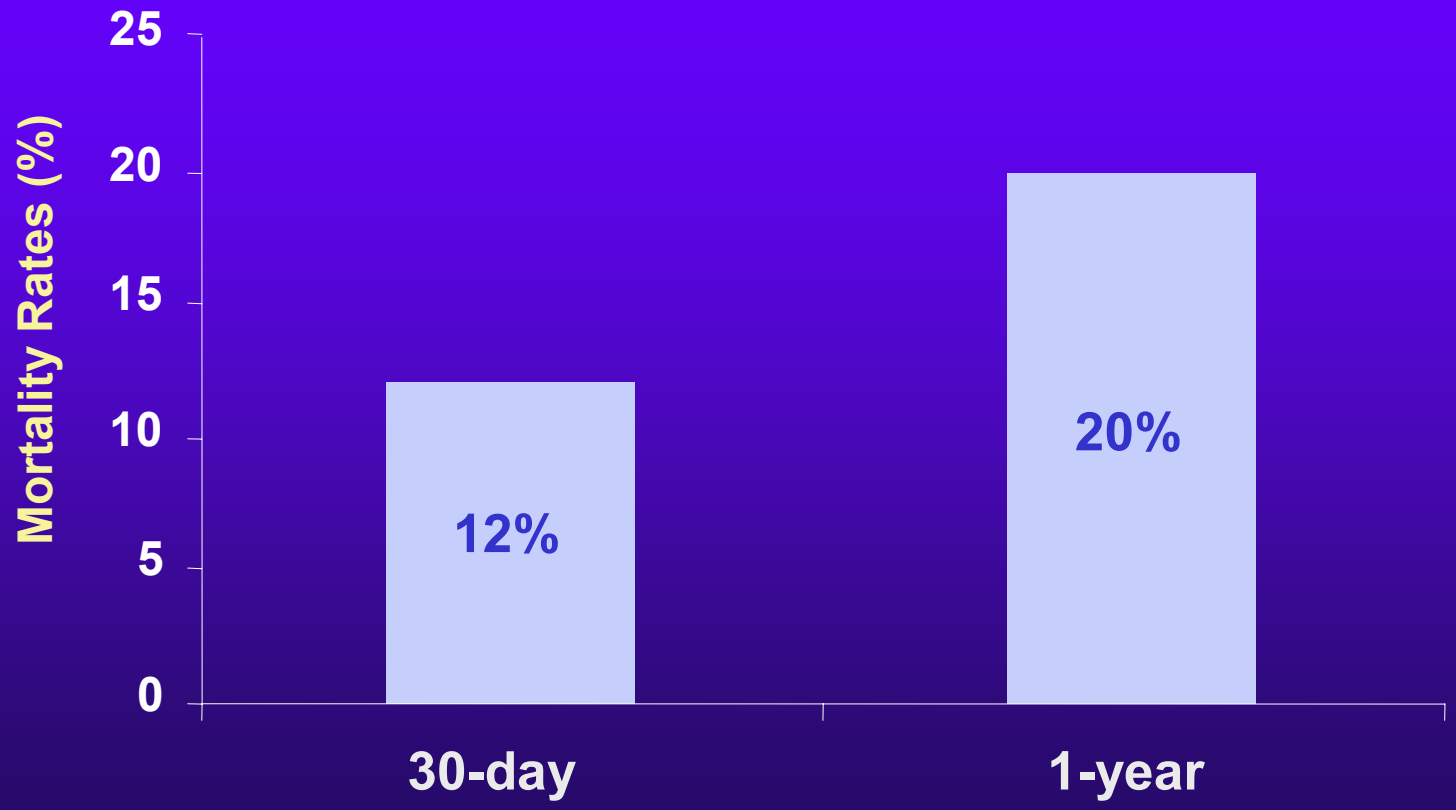
Type of physician caring for heart attack patients



4% are Other

EFFECT STUDY

Heart attack patient mortality rates



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Estimated number of lives saved with maximum utilization of drugs in ideal patients

Medication	Actual Use	Lives Saved with 100% Utilization
ASA	85%	25
Beta-blockers	78%	52
ACE-Inhibitors	72%	131
Statins	61%	43
Overall	79%	250

17,061 new heart attack patients each year in Ontario

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EFFECT STUDY

Key Findings: Heart Failure

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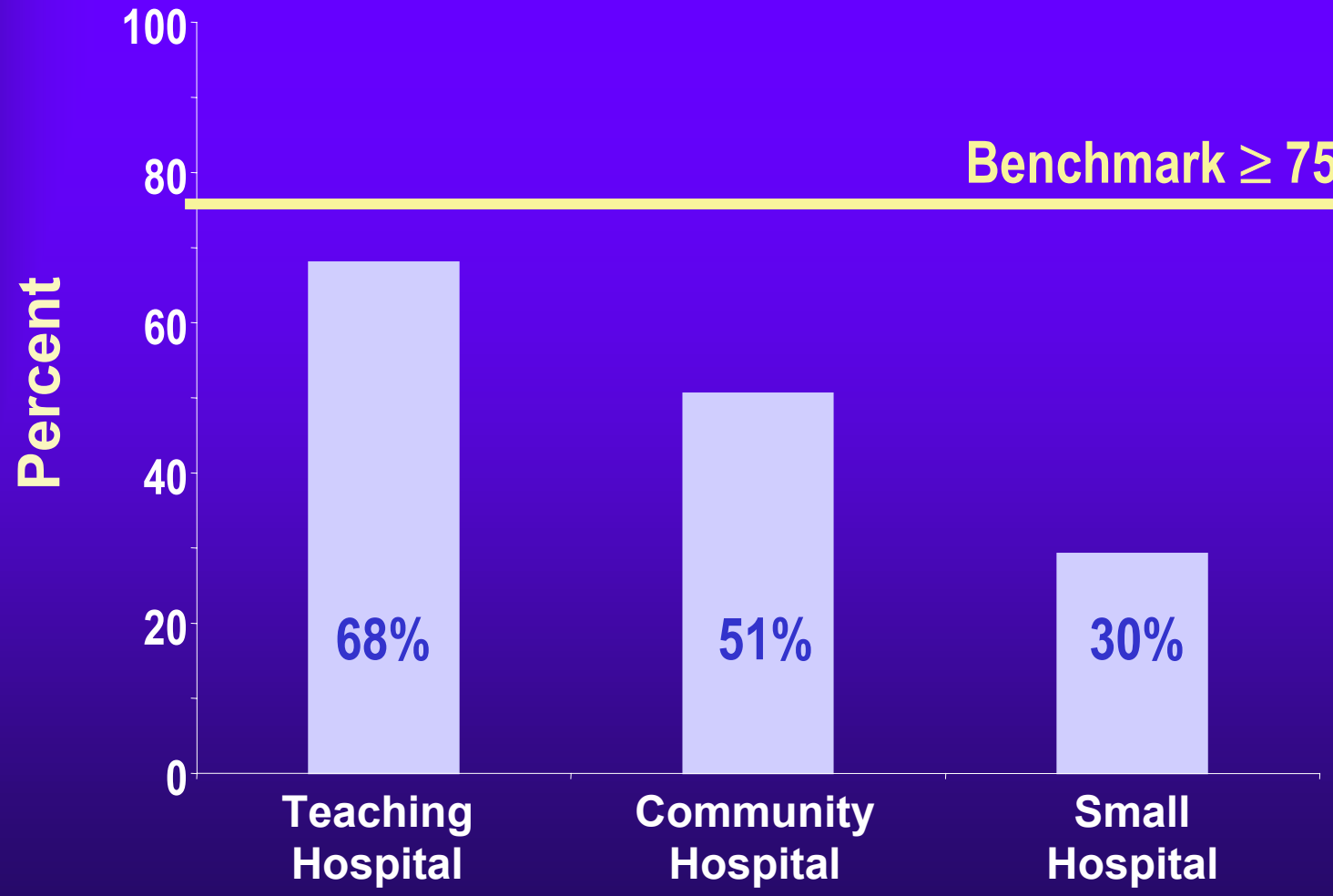
Cardiac Risk Factors

- Many (71%) Ontario heart failure patients have at least one modifiable cardiac risk factor
  - 12% were current smokers
  - 48% were hypertensive (i.e. high blood pressure)
  - 19% had hyperlipidemia (e.g. high cholesterol)
  - 34% were diabetic

EFFECT STUDY

LV function measurement in heart failure patients



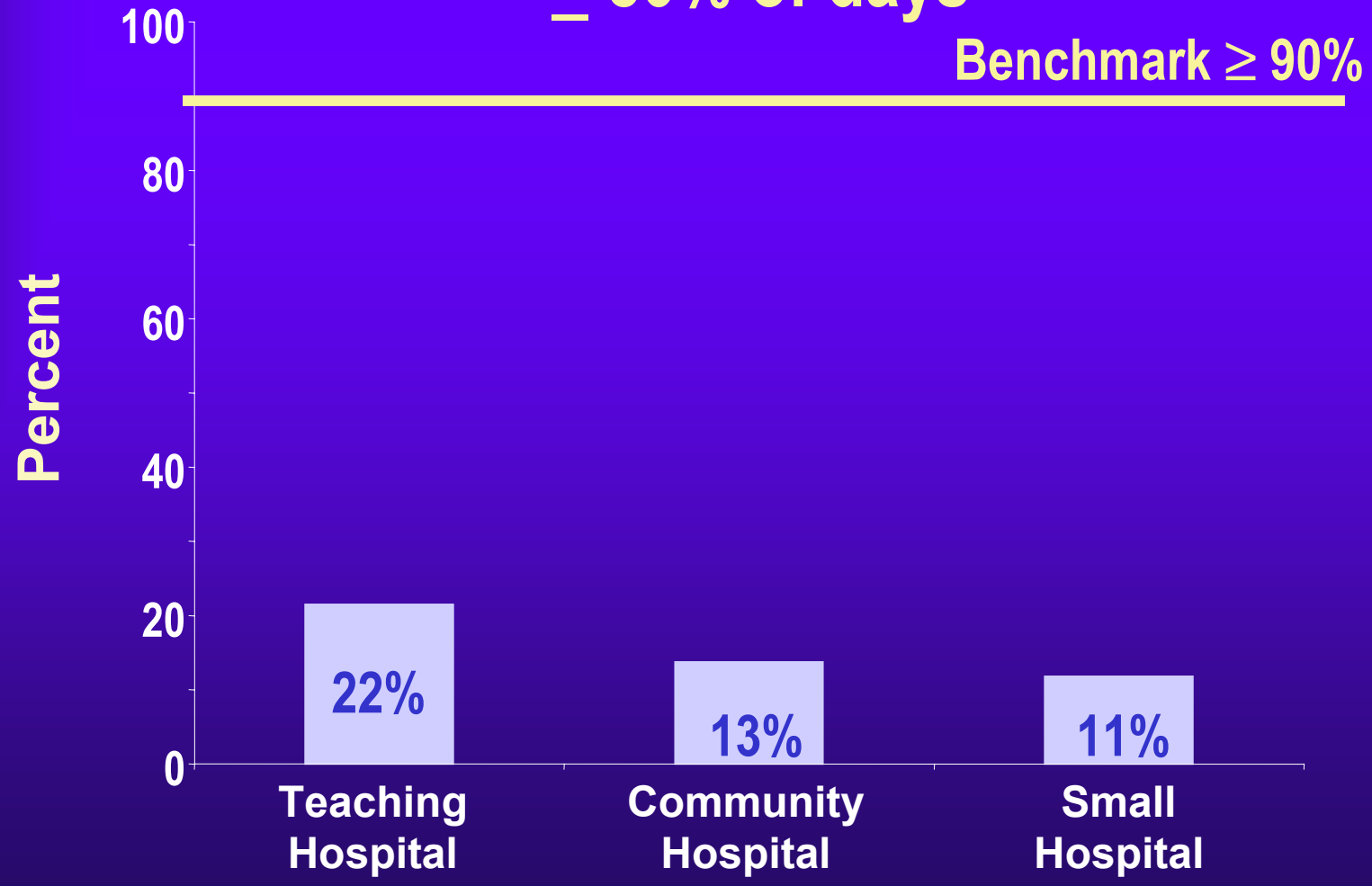
Ontario average = 52%

6/44 hospitals met benchmark

LV = Left Ventricular

EFFECT STUDY

Daily weights recorded in heart failure patients ≥ 50% of days

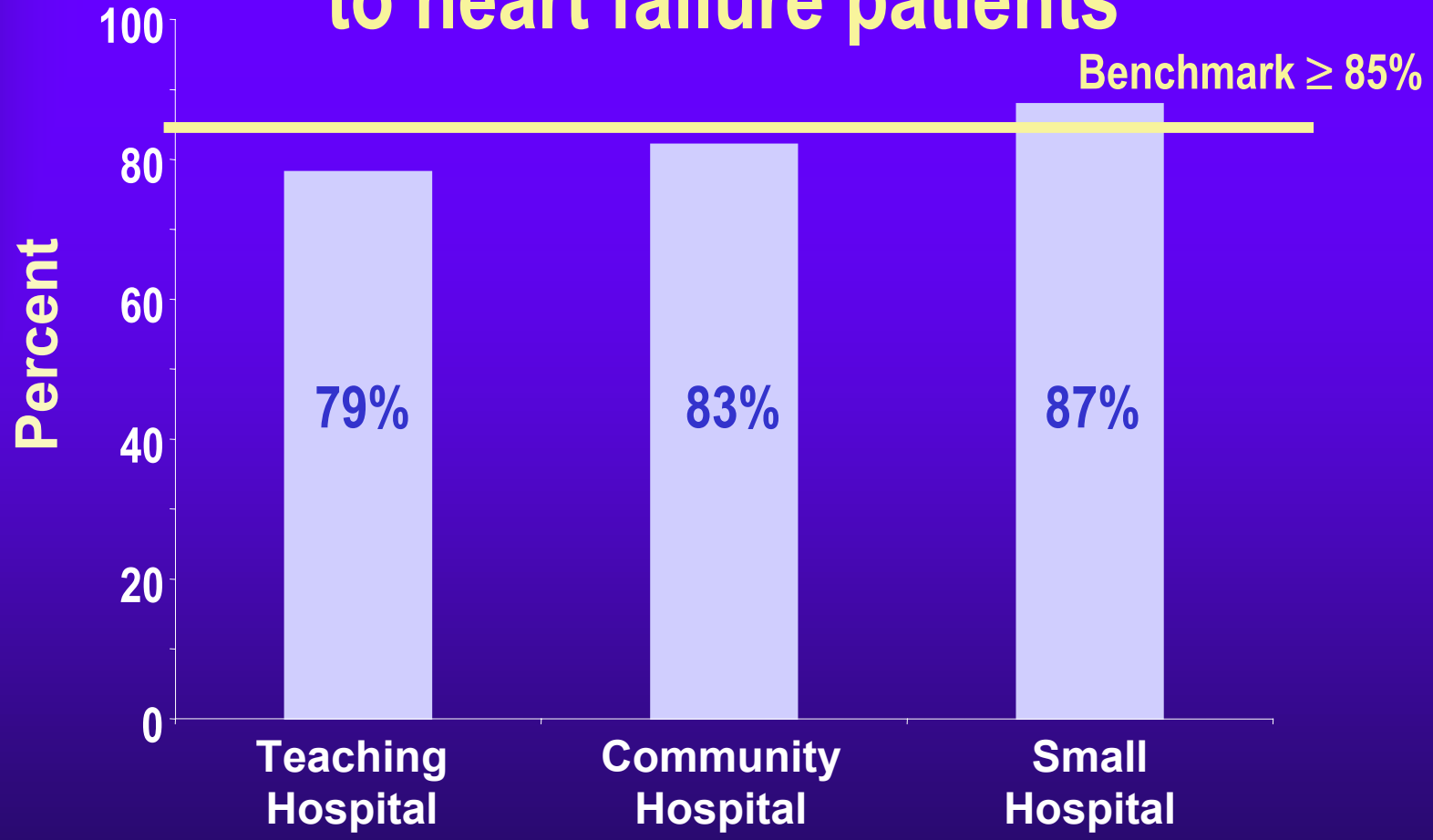


Ontario average = 14%

0/44 hospitals met benchmark

EFFECT STUDY

ACE Inhibitors prescribed at discharge to heart failure patients*



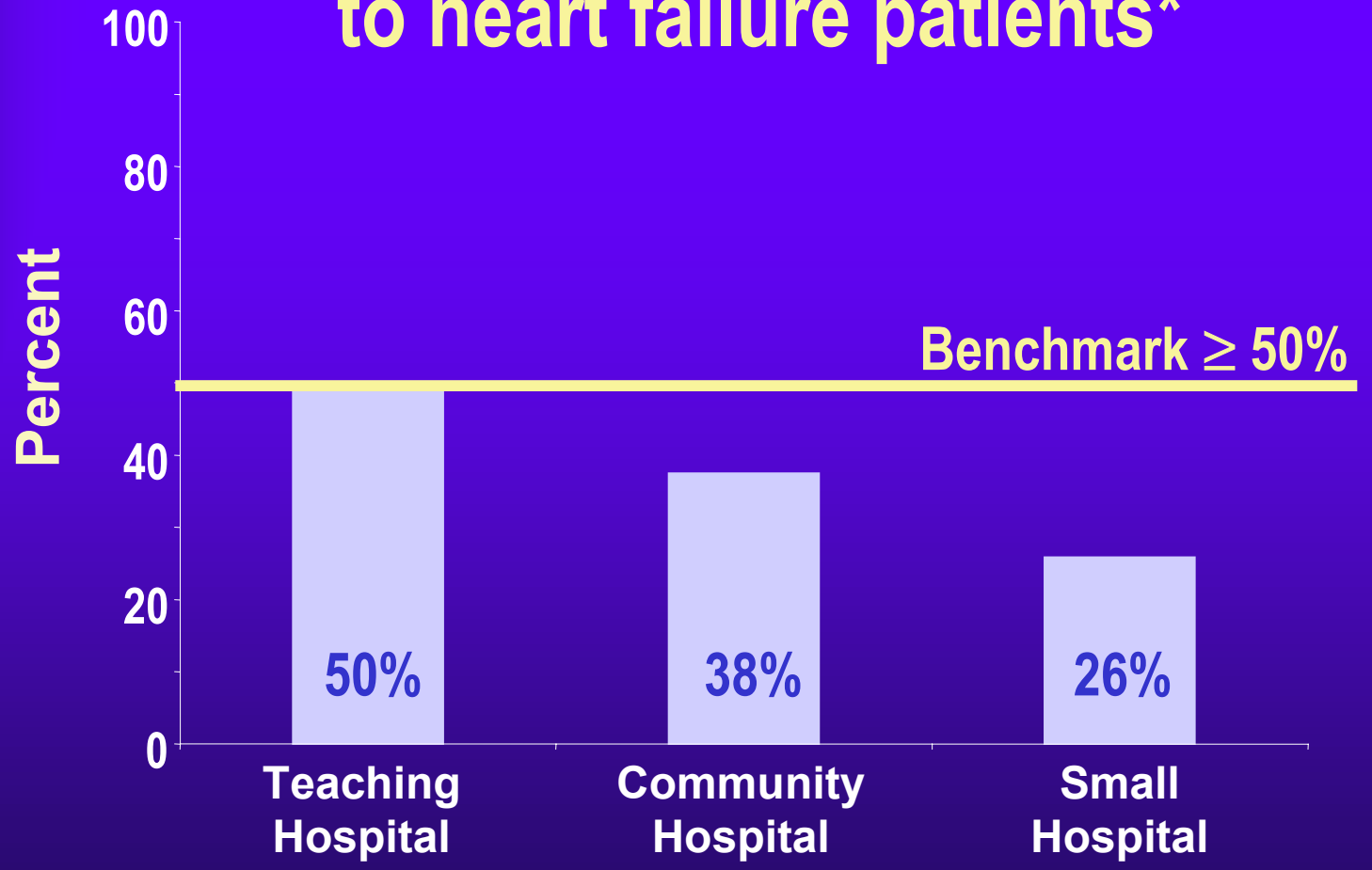
Ontario average = 82%

16/44 hospitals met benchmark

*Refers to cases with LV systolic dysfunction

EFFECT STUDY

Beta-blockers prescribed at discharge to heart failure patients*



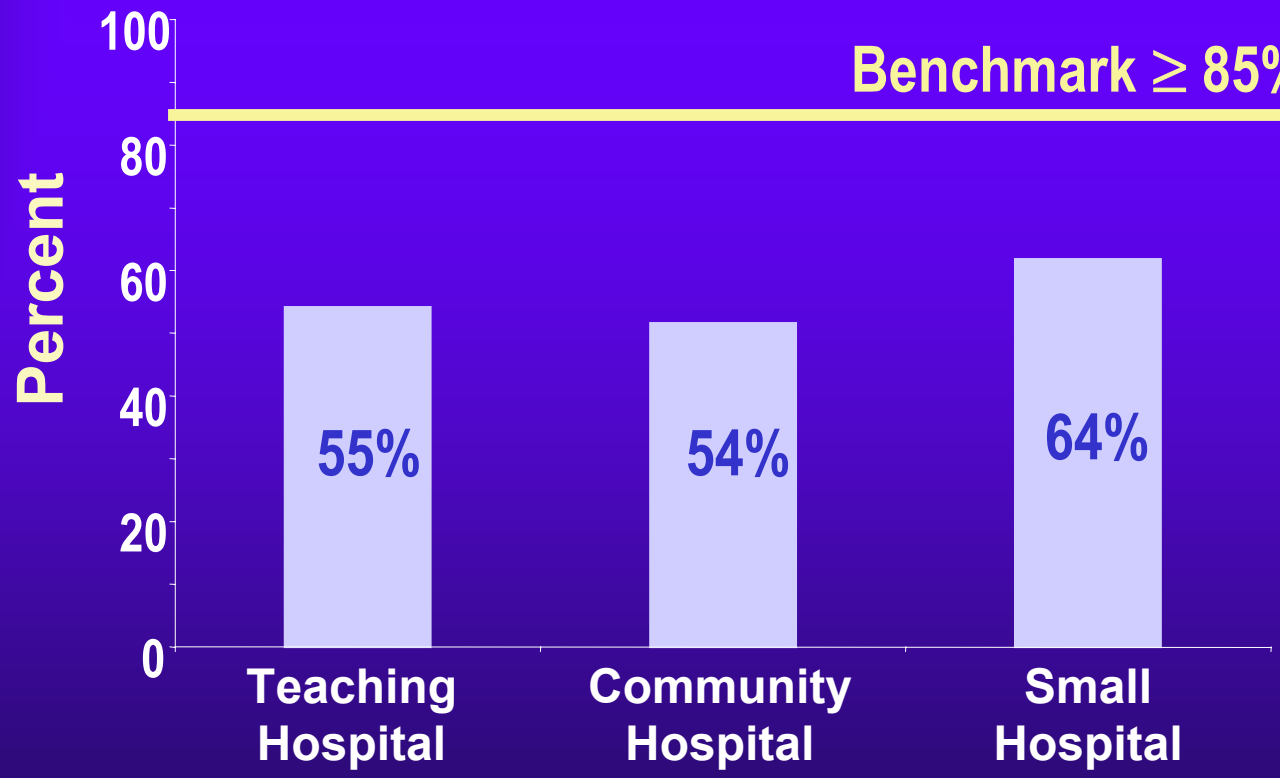
Ontario average = 39%

13/44 hospitals met benchmark

*Refers to cases with LV systolic dysfunction

EFFECT STUDY

Warfarin prescribed at discharge to heart failure patients with Atrial Fibrillation

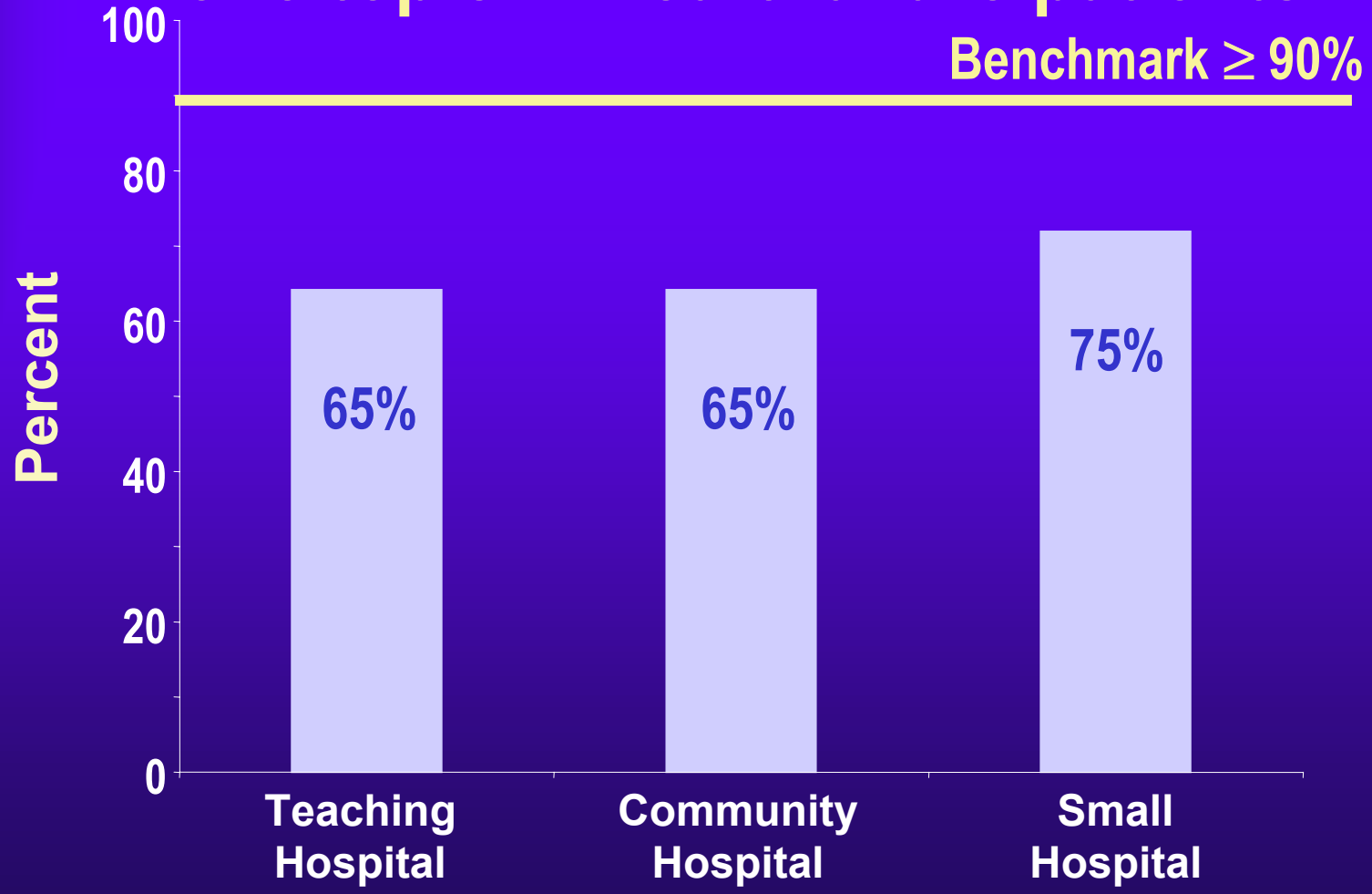


Ontario average = 55%

0/44 hospitals met benchmark

EFFECT STUDY

Documented counselling on at least one topic in heart failure patients

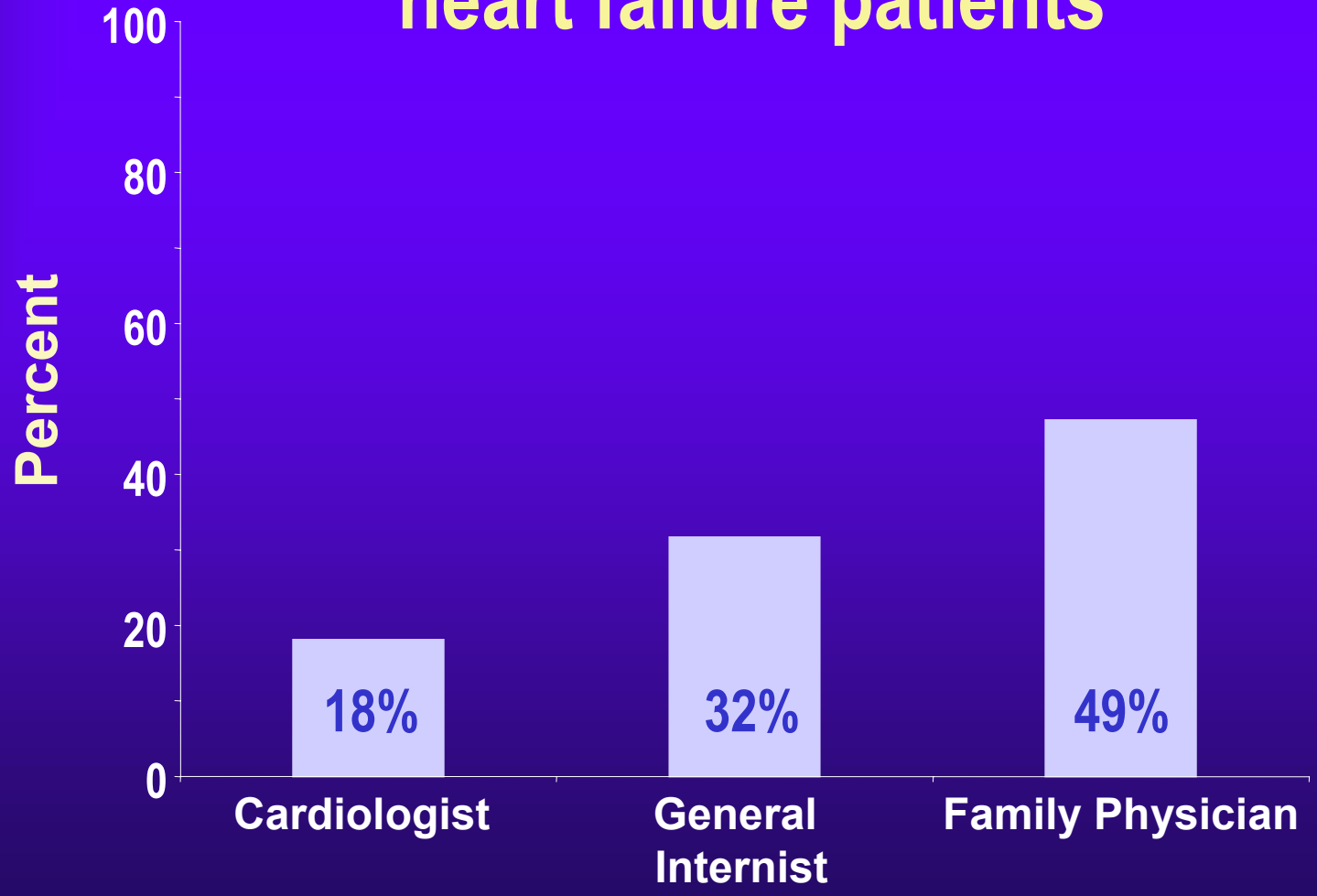


Ontario average = 66%

8/44 hospitals met benchmark

EFFECT STUDY

Type of physician caring for heart failure patients



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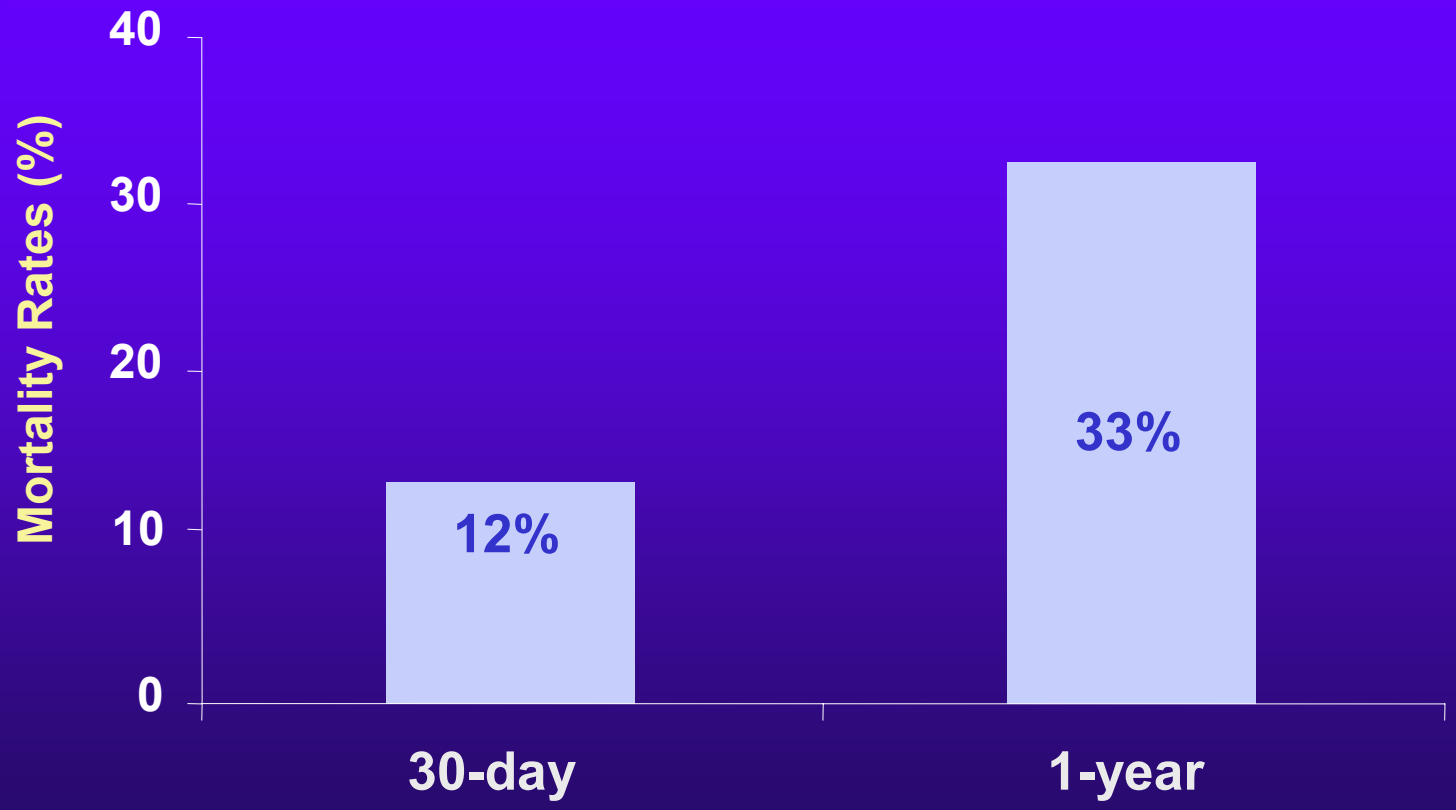
EFFECT STUDY

Heart failure patient mortality rates



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EFFECT STUDY

Estimated number of lives saved with maximum utilization of heart failure drugs in ideal patients

Medication	Actual Use	Lives Saved with 100% Utilization
Beta-blockers	39%	117
ACE-Inhibitors	82%	39
Overall	-	156

13,903 new heart failure patients each year in Ontario

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Key Recommendations

- Standard hospital admission orders and discharge plans for all heart attack patients
- ER physicians should be trained and allowed to give thrombolytics/clot-busting drugs to heart attack patients

Key Recommendations

- Physicians need to focus on increasing beta-blocker use in heart failure patients
- Continued measurement and monitoring of EFFECT quality indicators in all hospitals

Conclusions

- Overall, quality of cardiac care is good to excellent for **most indicators**
- Opportunities for improvement exist at all hospitals
- Quality improvement activities could lead to reduction in cardiovascular death rates