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APPAO
Ensemble, imaginons la cardiologie de demain
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EMILE ROUX - GEORGES CLEMENCEAU



L'ambulatoire : à quel horizon ?

Angioplastie Ambulatoire: Tout ce que vous avez toujours voulu savoir !

Pr Emmanuel TEIGER

Interventional cardiology & Ambulatory Cardiac Care Unit
Cardiology department
Henri-Mondor Hospital University – Créteil - France

DÉCLARATION DE LIENS D'INTÉRÊT AVEC LA PRÉSENTATION

Intervenant : Emmanuel Teiger, Créteil




Je n'ai pas de lien d'intérêt à déclarer

L'ambulatoire : à quel horizon ?

- 1) Evidences cliniques
- 2) Satisfaction patient
- 3) Economie de santé



L'ambulatoire : à quel horizon ?

- 1) Evidences cliniques 
- 2) Satisfaction patient 
- 3) Rationnel économique 

A pilot study of coronary angioplasty in outpatients

Gerrit J Laarman, Ferdinand Kiemeneij, L Ron van der Wieken, Jan G P Tijssen, Jo S M Suwarganda, Ton Slagboom

***Conclusions*—Coronary angioplasty with miniature equipment passed through the brachial artery was a safe procedure with a high initial success rate. The results of this pilot trial suggest that with careful selection of patients before and after angioplasty PTCA can be performed safely in outpatients.**

(Br Heart 1994;72:12–15)

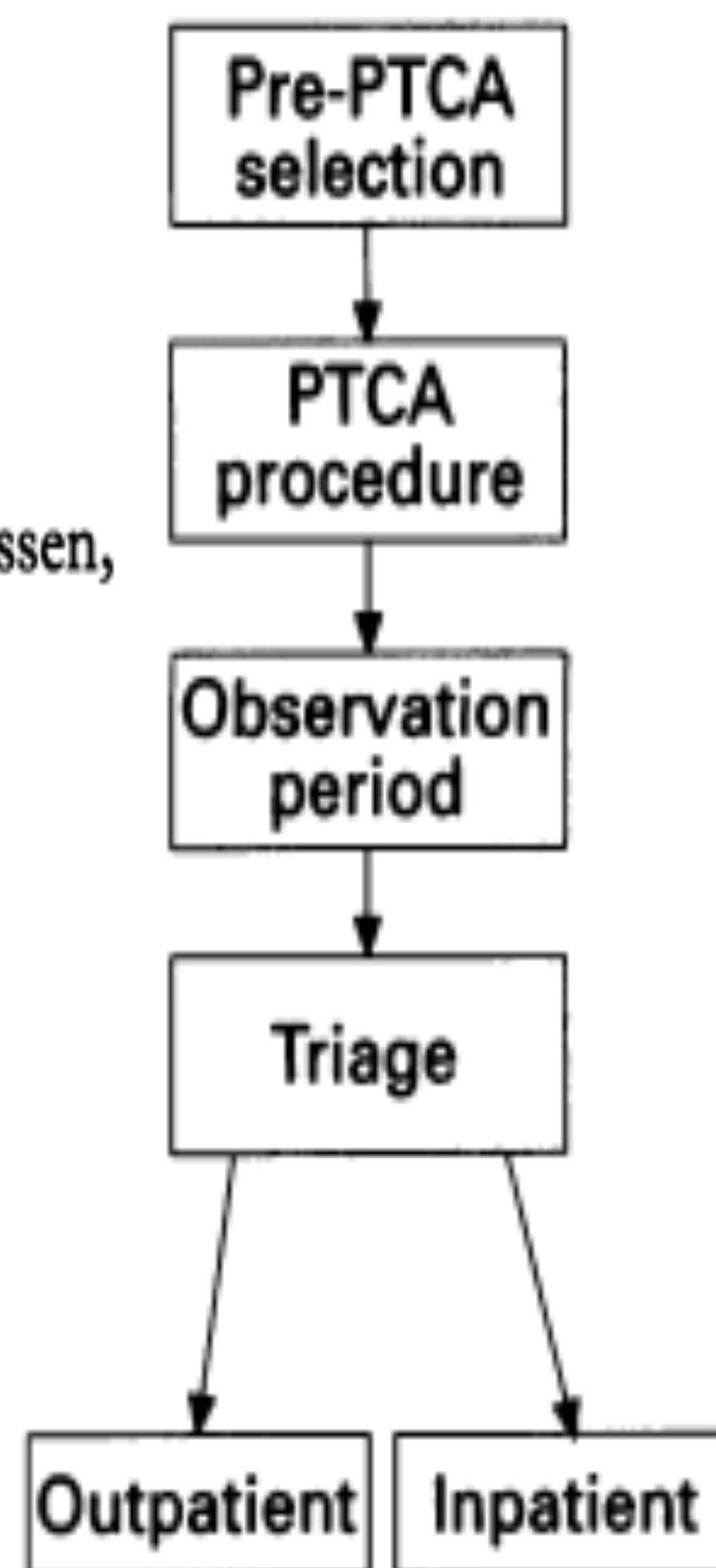


Figure Study protocol.

Catheterization and Cardiovascular Interventions 79:583–587 (2012)

A Single Center Experience With Same-Day Transradial-PCI Patients: A Contrast With Published Guidelines

Ian C. Gilchrist,^{*} MD, FACC, Denise A. Rhodes, RN, CRNP, and Helei

Ambulatory Transradial Percutaneous Coronary Intervention: A Safe, Effective, and Cost-Saving Strategy

Philippe Le Corvoisier,^{1,2,3*} MD, PhD, Barnabas Gellen,⁴ MD, PhD, Pierre-François Lesault,⁴ MD, Remy Cohen,⁵ MD, Stéphane Champagne,⁴ MD, Anne-Marie Duval,⁶ MD, Gilles Montalescot,⁷ MD, PhD, Simon Elhadad,⁵ MD, Isabelle Durand-Zaleski,⁸ MD, PhD, ID, PhD, and Emmanuel Teiger,^{2,4} MD, PhD

CORONARY ARTERY

Outpatient Coronary Angioplasty: Feasible and Safe

An Audit of Outcomes

Coronary Syndrome an

Ton Slagboom,^{*} MD, Ferdinand Kiemeneij, MD, PhD, Gert Jan Laarman, MD, PhD, and Ron van der Wieken, MD

EMILY C. HODKINSON, M.B.Ch.B., M.R.C.P.,¹ ADESH RAMSEWAK, M.B.B.S., M.R. JOHN CONLETH MURPHY, M.D., M.R. ANTHONY J. MCCLELLAND, M.D., M. COLM G. HANRATTY, M.D., F.R.C.P.I., SIMON J. WALSH, M.D., F.R.C.P.¹

From the ¹Cardiology Department, Belfast Health and Social Care Trust, Belfast, Northern Ireland; and the ²Cardiology Department, Southern Health and Social Care Trust, Craigavon, Northern Ireland.

CLINICAL RESEARCH

Interventional Cardiology

Same-Day Discharge After Percutaneous Coronary Intervention

A Meta-Analysis

Kimberly M. Brayton, MD, JD,^{*} Vishal G. Patel, MD,[†] Christopher Stave, MLS,^{*} James A. de Lemos, MD,[†] Dharam J. Kumbhani, MD, SM[†]

Stanford, California; and Dallas, Texas

Olivier F. Bertrand, MD, PhD; Robert Le Larochetiere, MD; Josep Rodes-Cabau, MD; Guy Proulx, MD; Onil Gleeton, MD; Can Manh Nguyen, MD; Jean-Pierre Déry, MD, MSc; Gérald Barbeau, MD; Bernard Noël, MD; Éric Larose, DVM, MD; Paul Poirier, MD, PhD; Louis Roy, MD;

for the Early Discharge After Transradial Stenting of Coronary Arteries (EASY) Study Investigators

Original Article

Reported Outcomes and Preferences for Same-Day Discharge After Percutaneous Coronary Intervention

Vol. 62, No. 4, 2013
ISSN 0735-1097/\$36.00
<http://dx.doi.org/10.1016/j.jacc.2013.03.051>

Original Article

Seung W. Choi, MD; Adel E. Farkouh, MD, MSc



Short Hospital Stay After PCI in Outpatient Study

(EPOS)
Gerlind S. Heyde, Karel T. Koch, Robbert J. de Winter, Marcel G.W. Dijkgraaf, Margriet I. Klees, Lea M. Dijkman, Jan J. Piek and Jan G.P. Tijssen

Recommandations américaines 2009 actualisées en avril 2018.

Catheterization and Cardiovascular Interventions 73:847–858 (2009)

CORONARY ARTERY DISEASE

Clinical Decision Making

Defining the Length of Stay Following Percutaneous Coronary Intervention: An Expert Consensus Document From the Society for Cardiovascular Angiography and Interventions

Endorsed by the American College of Cardiology Foundation

Charles E. Chambers,¹ MD, Gregory J. Dehmer,² MD, David A. Cox,³ MD, Robert A. Harrington,⁴ MD, Joseph D. Babb,⁵ MD, Jeffrey J. Popma,⁶ MD, Mark A. Turco,⁷ MD, Bonnie H. Weiner,⁸ MD, and Carl L. Tommaso,^{9*} MD

Percutaneous coronary intervention (PCI) is the most common method of coronary revascularization. Over time, as operator skills and technical advances have improved procedural outcomes, the length of stay (LOS) has decreased. However, standardization in the definition of LOS following PCI has been challenging due to significant physician, procedural, and patient variables. Given the increased focus on both patient safety as well as the cost of medical care, system process issues are a concern and provide a driving force for standardization while simultaneously maintaining the quality of patient care. This document (1) provides a summary of the existing published data on same-day patient discharge following PCI, (2) reviews studies that developed methods to predict risk following PCI, and (3) provides clarification of the terms used to define care settings following PCI. In addition, a decision matrix is proposed for the care of patients following PCI. It is intended to provide both the interventional cardiologist as well as the facilities, in which they are associated, a guide to allow for the appropriate LOS for the appropriate patient who could be considered for early discharge or outpatient intervention. © 2009 Wiley-Liss, Inc.

Key words: percutaneous coronary angioplasty; outpatient; cost containment; quality improvement

¹Pennsylvania State University Hershey Medical Center, Hershey, Pennsylvania

²Cardiology Division, Texas A&M Health Science Center, College of Medicine, Cardiology Division Scott & White Healthcare, Temple, Texas

³Lehigh Valley Hospital, Allentown, Pennsylvania

⁴Division of Cardiology, Duke Clinical Research Institute, Durham, North Carolina

⁵East Carolina University Brody School of Medicine, Greenville, North Carolina

⁶Department of Medicine, Harvard Medical School, Boston, Massachusetts

⁷Washington Adventist Hospital, Takoma Park, Maryland

⁸St. Vincent Hospital, Harvard, Worcester, Massachusetts

⁹North Shore University Health System, Skokie, Illinois

Conflict of interest: Nothing to report.

*Correspondence to: Carl L. Tommaso, MD, Associate Professor of Medicine, Rush University Medical School, Director, Cardiac Catheterization Laboratory, The Skokie Hospital/North Shore University Health System, Suite 601, 9669 N. Kerton Avenue, Skokie, IL 60076. E-mail: carl_tommaso@msn.com

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DOI: 10.1002/ccd.27637

CLINICAL DECISION MAKING

WILEY

Length of stay following percutaneous coronary intervention: An expert consensus document update from the society for cardiovascular angiography and interventions

Arnold H. Seto, MD, MPA¹ | Adhir Shroff, MD² | Mazen Abu-Fadel, MD³ | James C. Blankenship, MD⁴ | Konstantinos Dean Boudoulas, MD⁵ | Joaquin E. Cigarroa, MD⁶ | Gregory J. Dehmer, MD⁷ | Dmitriy N. Feldman, MD⁸ | Daniel M. Kolansky, MD⁹ | Kusum Lata, MD¹⁰ | Rajesh V. Swaminathan, MD¹¹ | Sunil V. Rao, MD¹¹

¹Department of Medicine, Long Beach Veterans Affairs Healthcare System, Long Beach, California

²Department of Medicine, University of Illinois at Chicago, Chicago, Illinois

³Department of Internal Medicine, Section of Cardiovascular Medicine, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma

⁴Department of Cardiology, Section of Interventional Cardiology, Geisinger Medical Center, Danville, Pennsylvania

⁵Department of Medicine/Cardiovascular Medicine, The Ohio State University, Ohio

⁶Knight Cardiovascular Institute, Oregon Health & Science University, Portland, Oregon

⁷Department of Medicine (Cardiology Division) Texas A&M University College of Medicine, Scott & White Medical Center, Temple, Texas

⁸New York-Presbyterian Hospital, Weill Cornell Medical College, New York, New York

⁹Cardiovascular Medicine Division, University of Pennsylvania Perelman School of Medicine, Philadelphia, Pennsylvania

¹⁰Sutter Tracy Community Hospital, Sutter Medical Network, Tracy, California

¹¹Division of Cardiology, Duke Clinical Research Institute, Durham, North Carolina

Correspondence:

Arnold H. Seto, MD, MPA, Long Beach Veterans Affairs Medical Center, 5901 East 7th Street, 111C, Long Beach, CA 90822. Email: arnoldseto@vagov

Abstract

Since the publication of the 2009 SCAI Expert Consensus Document on Length of Stay Following percutaneous coronary intervention (PCI), advances in vascular access techniques, stent technology, and antiplatelet pharmacology have facilitated changes in discharge patterns following PCI. Additional clinical studies have demonstrated the safety of early and same day discharge in selected patients with uncomplicated PCI, while reimbursement policies have discouraged unnecessary hospitalization. This consensus update (1) clarifies clinical and reimbursement definitions of discharge strategies, (2) reviews the technological advances and literature supporting reduced hospitalization duration and risk assessment, and (3) describes changes to the consensus recommendations on length of stay following PCI (Supporting Information Table S1). These recommendations are intended to support reasonable clinical decision making regarding postprocedure length of stay for a broad spectrum of patients undergoing PCI, rather than prescribing a specific period of observation for individual patients.

KEYWORDS

outpatient, percutaneous coronary intervention, quality improvement, same-day discharge

Ambulatory Transradial Percutaneous Coronary Intervention: A Safe, Effective, and Cost-Saving Strategy

Philippe Le Corvoisier,^{1,2,3*} MD, PhD, Barnabas Gellen,⁴ MD, PhD,
 Pierre-François Lesault,⁴ MD, Remy Cohen,⁵ MD, Stéphane Champagne,⁴ MD,
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 Jean-Luc Dubois-Randé,^{2,6} MD, PhD, and Emmanuel Teiger,^{2,4} MD, PhD

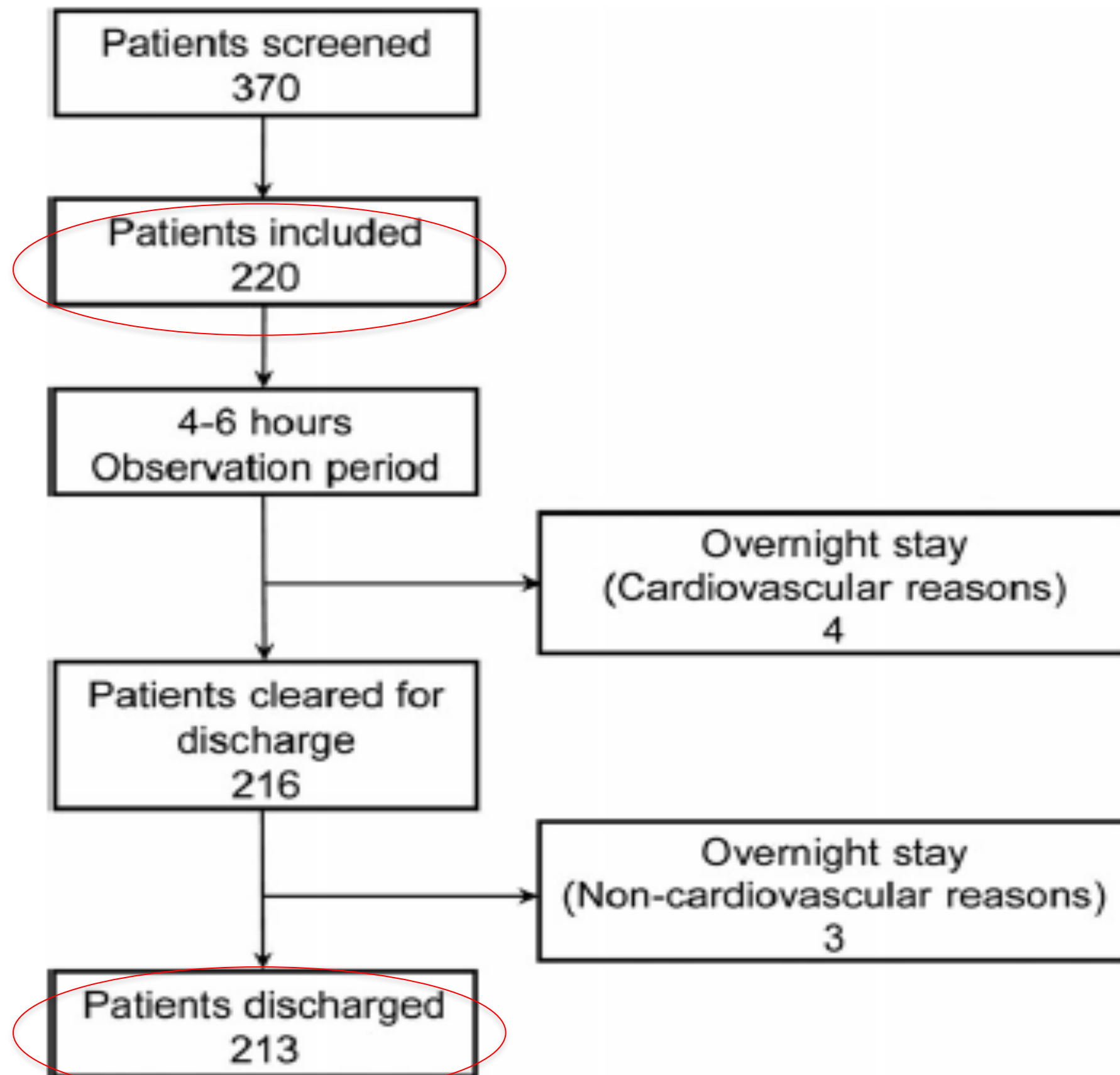


TABLE IV. Follow Up Data 24 hr and 1 Month After Ambulatory Percutaneous Coronary Intervention

	24 hr (n = 213)	1 month (n = 213)
Any MACCE	0 (0)	1 (0.5)
Death, n (%)	0 (0)	0 (0)
Myocardial infarction, n (%)	0 (0)	1 (0.5)
Cardiac surgery, n (%)	0 (0)	0 (0)
Repeat PCI, n (%)	0 (0)	0 (0)
Stroke, n (%)	0 (0)	0 (0)
Readmission, n (%)	0 (0)	4 (1.9)
Seek medical care without readmission, n (%)	0 (0)	7 (3.3)
Markers of myocardial injury		
CPK > 2 times the upper limit, n (%)	1 (0.5)	na
Troponin I > upper limit, n (%)	69 (33.5)	na
Troponin I > 3 times the upper limit, n (%)	43 (20.9)	na
Troponin I > 1 µg/L, n (%)	11 (5.3)	na



Outcome and safety of same-day discharge after PCI: a 10 year single centre experience

Purpose of the study and methods

Evaluate the early outcome (24h) of the SDD patients with SIHD (all-comer population) in 10 years of activity in our Ambulatory Cardiac Care Unit

1635 patients undergone a PCI (1/4/2007 -> 31/4/2017)

60 patients (3,7%) with adverse events during PCI

52 patients (3,2%) with adverse events 4-6h after PCI

450 patients (27,5%) for monitoring (without adverse events)

Physician preference: long PCI procedures, renal function monitoring / end of PCI after 3pm...

Social reasons: leaving >1h from the hospital / alone at home / doubts on compliance...)

1073 patients (65,6%) – SDD patients

Results – Baseline and PCI characteristics *(1035 SDD patients)*


Age (mean ± SD)	62 ± 40
Sex M (%)	88
BMI	27,2 ± 4,4
Hypertension (%)	56
Diabetes (%)	30
Tobacco use (%)	50
PCI for SIHD/ACS (%)	96,3 / 3,7

Ad-hoc PCI (%)	91
Radial artery use (%)	97
2-vessel / 3-vessel disease (%)	36 / 15
LAD PCI (%)	44
LCx PCI (%)	31
Stents / patient (<i>mean ± SD</i>)	1,5±0,8
DES (%)	83,5

Primary outcome, MACCE (n)	0
Death	0
Myocardial infarction	0
Stroke	0
Repeat PCI	0
Urgent cardiac surgery	0
Major vascular complications	0

Secondary outcome, n (%)	2 (0,19)
Readmission n (%)	2 (0,19)

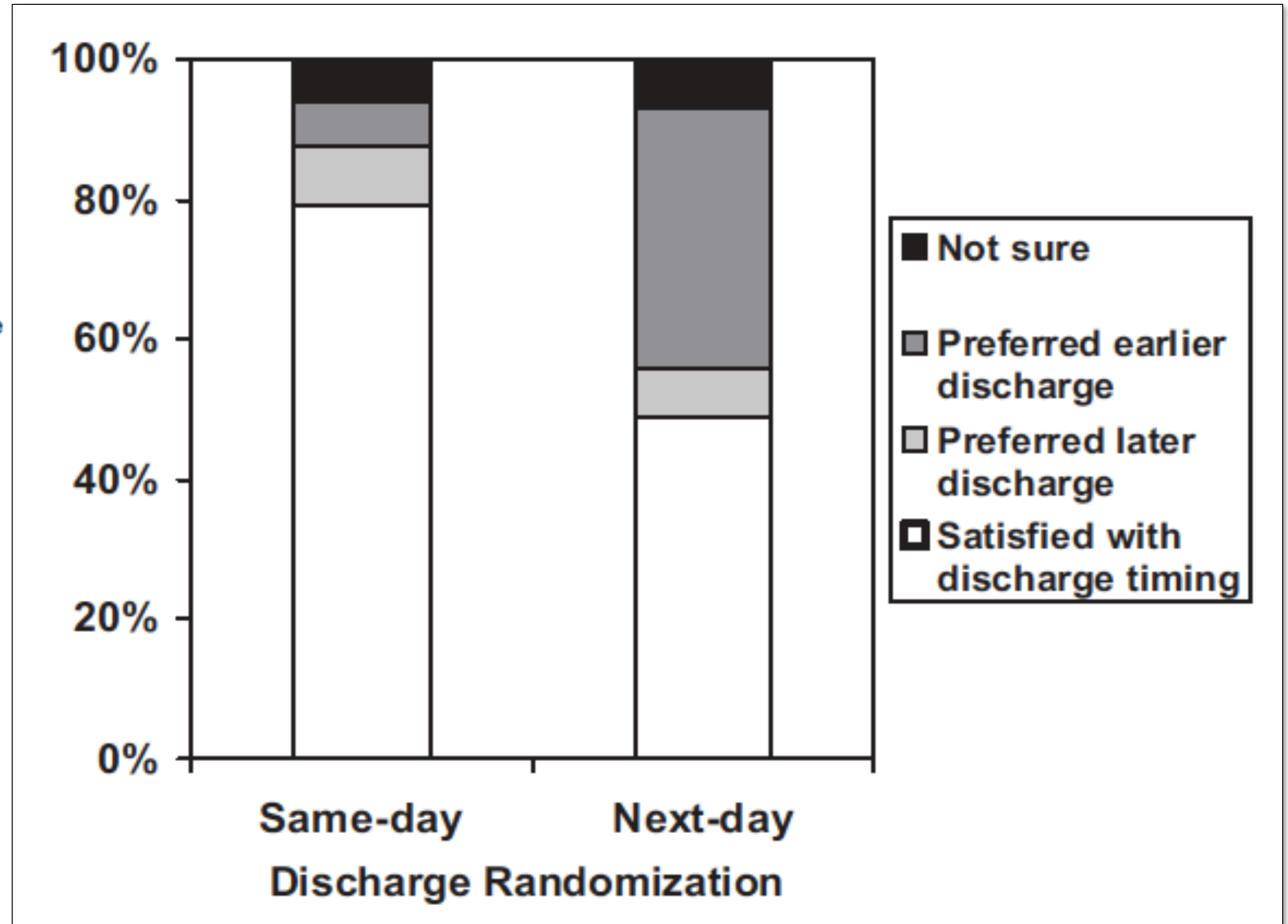
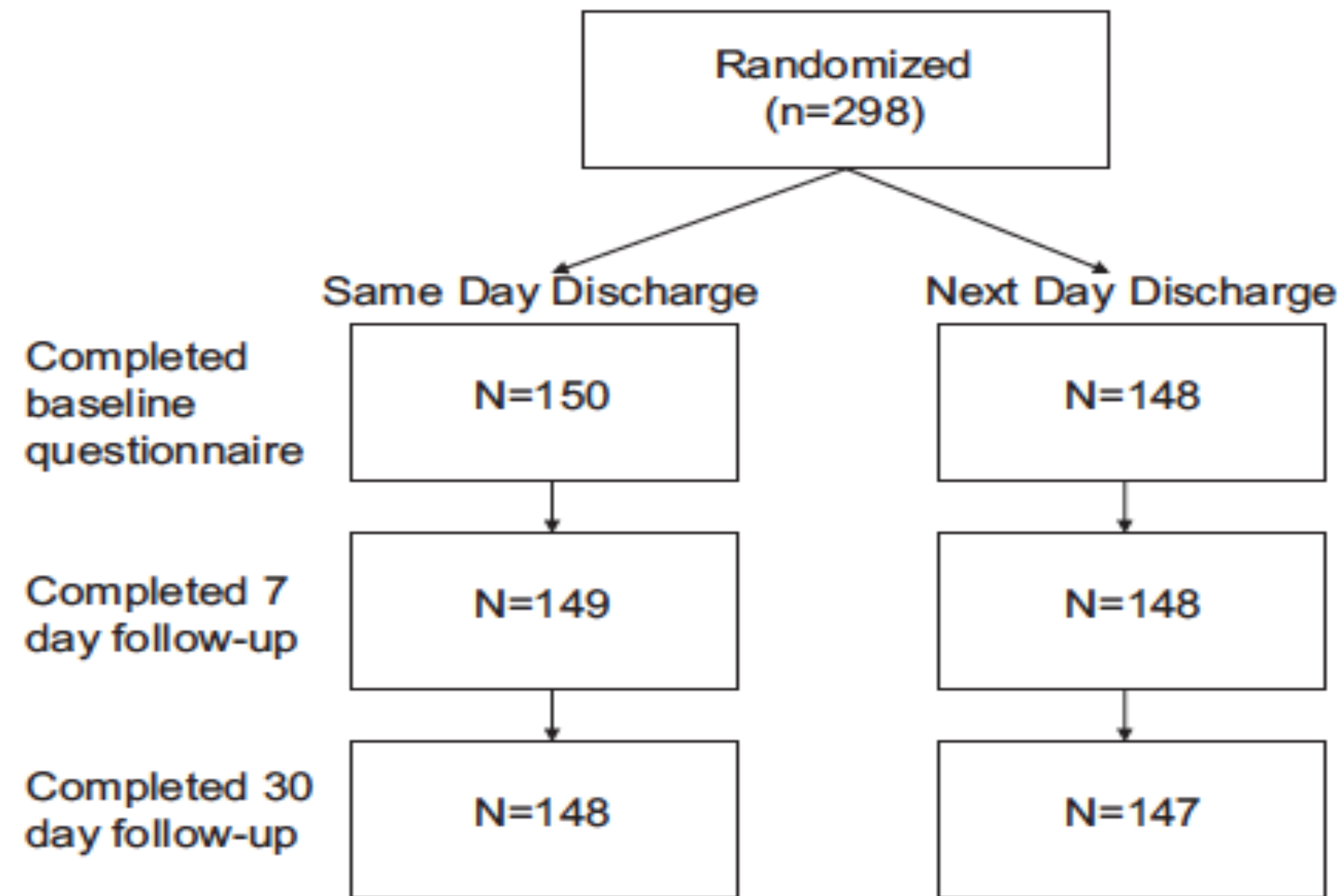
L'ambulatoire : à quel horizon ?

- 1) Evidences cliniques ✓
- 2) Satisfaction patient ✓
- 3) Rationnel économique 

Assessing Patient-Reported Outcomes and Preferences for Same-Day Discharge After Percutaneous Coronary Intervention

Results From a Pilot Randomized, Controlled Trial

Michael Kim, MD; Paul Muntner, PhD; Samin Sharma, MD; James W. Choi, MD; Robert C. Stoler MD; Mark Woodward, PhD; Devin M. Mann, MD; Michael E. Farkouh, MD, MSc



Randomized Trial Comparing Same-Day Discharge With Overnight Hospital Stay After Percutaneous Coronary Intervention

Results of the Elective PCI in Outpatient Study (EPOS)

Gerlind S. Heyde, MD; Karel T. Koch, MD, PhD; Robbert J. de Winter, MD, PhD;
Marcel G.W. Dijkgraaf, PhD; Margriet I. Klees, RN; Lea M. Dijkman, MSc;
Jan J. Piek, MD, PhD; Jan G.P. Tijssen, PhD

- 88% of the patients completed the patients satisfaction questionnaires: on a scale of 0 to 100, same-day discharge patients gave a 5.0 higher mean score for the discharge procedure (78.6) compared with overnight-stay patients (73.6; $p=0.001$)
- In case of repeat PCI, patients randomized to SDD would prefer SDD in 73% of the cases versus 27% of overnight-stay
Heyde et al. Circulation 2007;115:2299-2306

Le Corvoisier et al. Catheterization and Cardiovascular Interventions 2013

- In our study, 96% of the patients were willing to accept ambulatory PCI should they require another PCI procedure.



Radial Lounge



PRÉSENTATION DE LA STRUCTURE ET DE L'ORGANISATION DE L'HÔPITAL DE JOUR DE CARDIOLOGIE INTERVENTIONNELLE

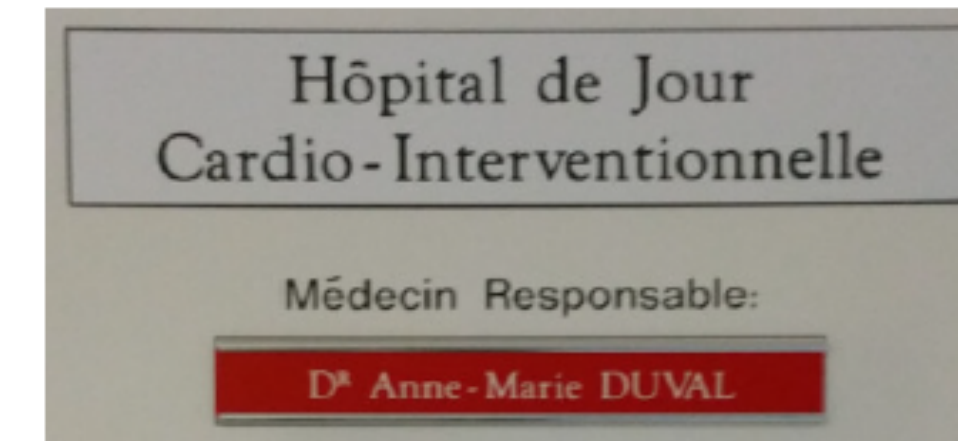
- **Responsable médical :** Dr Anne-marie Duval
- **Cadre de l'HDJ :** Ingrid May
- **Pôles concernés :** CARAVAN (Cardiologie – Réanimation – Vasculaire – Anesthésie) et Pôle FIT (Fonction Imagerie Thérapeutique)

- **Locaux :** 8^{ème} étage (nouveau depuis août 2015)
- **Capacité :** 5 chambres simples ou doubles (7 lits + 2 fauteuils) soit la possibilité d'accueillir **9 patients par jour**
- **Horaires d'ouverture :** 8h à 18h

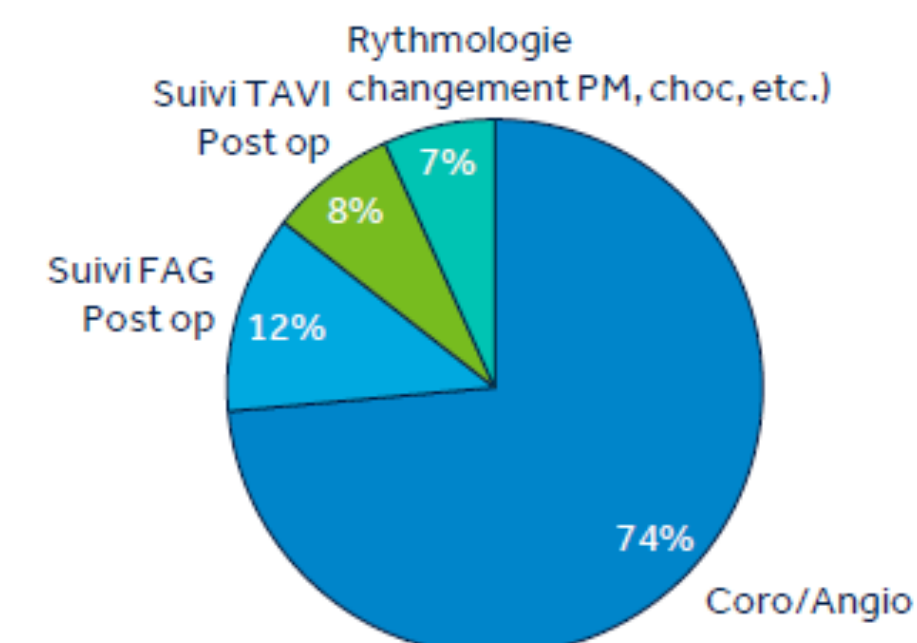
- **Patients hébergés :** coro/angio (74%), suivi FAG (12%) et suivi TAVI (8%) rythmo (7%)

- **Personnel :**
 - 1 cardiologue référent par jour (Dr Duval ou Dr Akakpo ou Dr Boukantar ou Dr Rubimbura)
 - 1 à 2 IDE de 8h à 18h
 - 1 AS de 10h à 18h
 - 1 secrétaire médicale

- **Equipements particuliers :**
 - ECG / Tensiomètre / Echographie
 - Télémétrie si besoin pour un patient en post op (système partagé avec l'HDS)
 - Chariot d'urgence



HDJ – réparation des patients programmés
(Données sept 2015 n = 76)



Nouveau service Hdj au 8^{ème}



Chariot d'urgence



Chambre individuelle avec possibilité d'accueillir un accompagnant



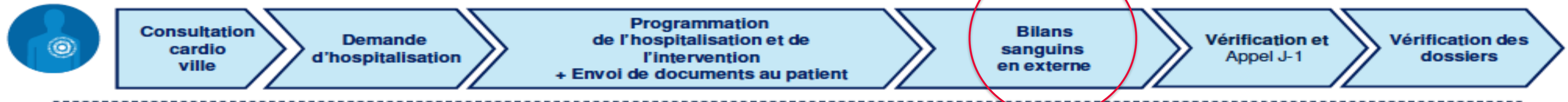
Fauteuil patient



Organization of the ambulatory angiography and PCI

Les grandes étapes du parcours

Pré-hospitalisation



Hospitalisation



Sortie et suivi post op



L'ambulatoire : à quel horizon ?

1) Evidences cliniques



2) Satisfaction patient



3) Rationnel économique



Ambulatory Transradial Percutaneous Coronary Intervention: A Safe, Effective, and Cost-Saving Strategy

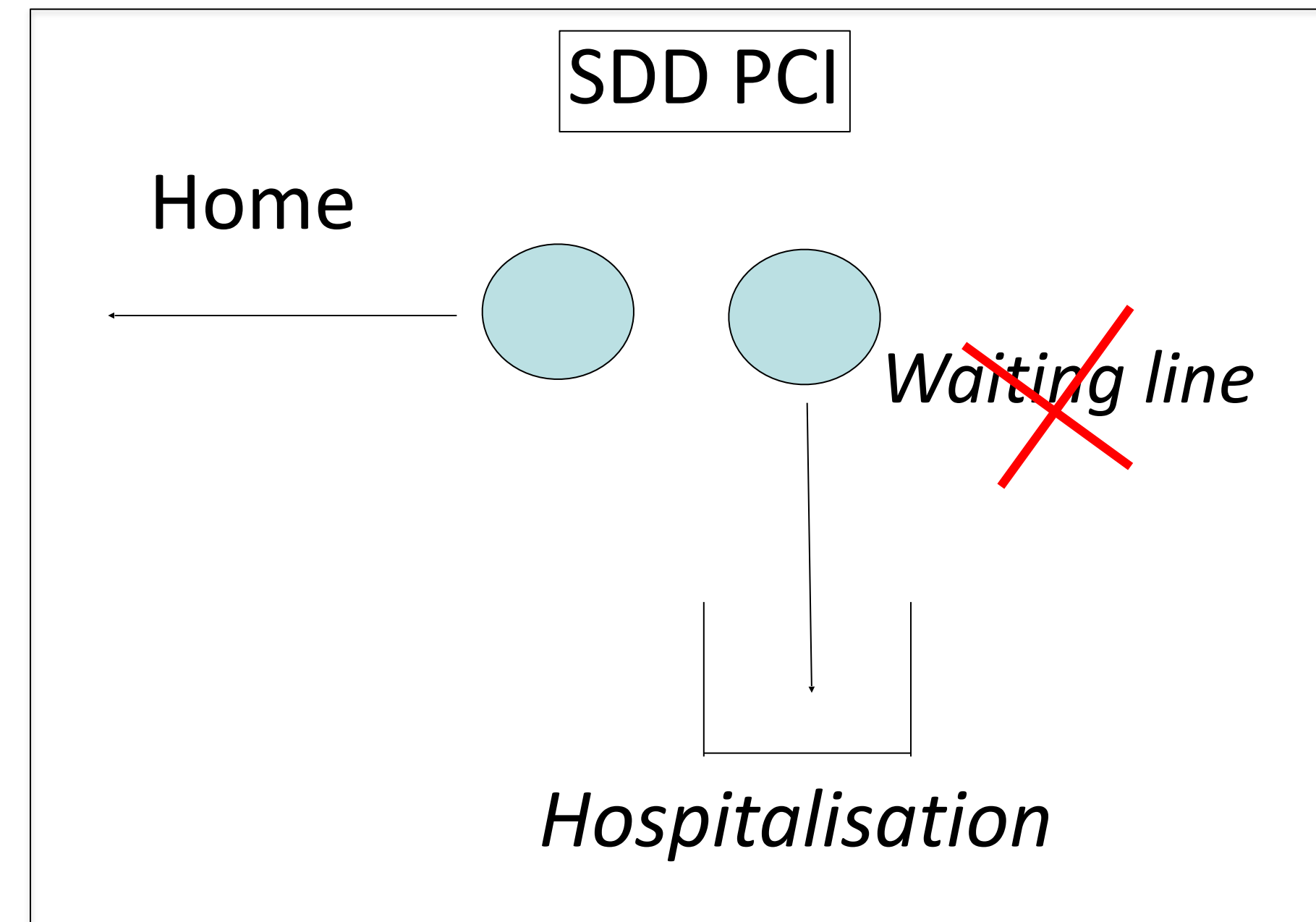
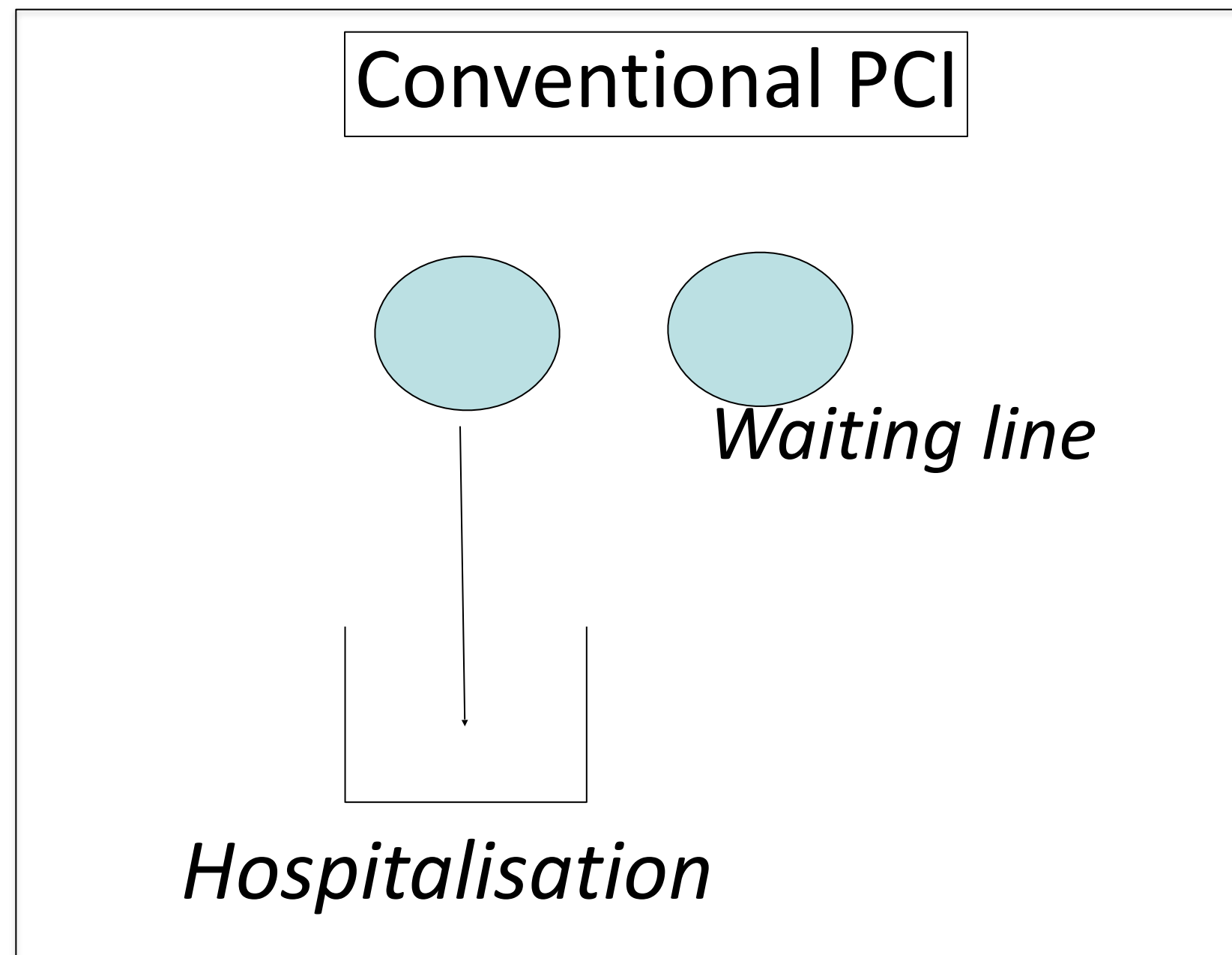
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TABLE I. Unit Costs of Hospital Resources

Item	Cost/unit
Bare metal stent ¹⁷	€390
Drug eluting stent ¹⁷	€1,483
Procedural cost (excluding stents) ¹⁶	€518
Personnel cost (day shift) ¹⁶	€270
Overheads and bed charges per day ¹⁶	€281

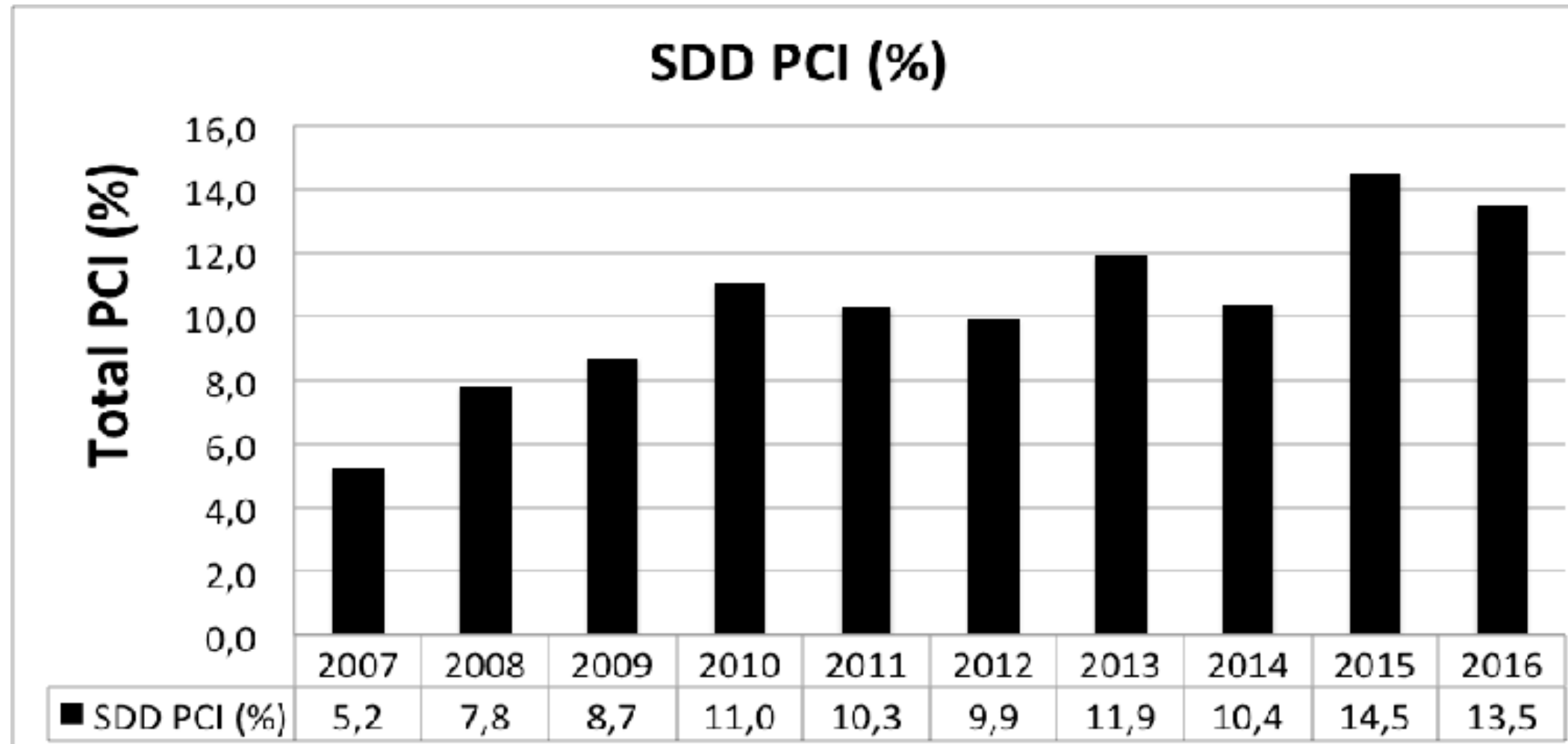
Ambulatory PCI (N = 220)	€	P value*
Patients with same-day home discharge (N = 213)	€1,214 ± 96	
Personnel (medical and nursing)	€270	
Tests, drugs, supplies, imaging, transport	€663	
Overheads & bed charges	€281	
Patients with overnight or prolonged stay (N = 7)	€1,634 ± 85	
Personnel (medical and nursing)	€285	
Tests, drugs, supplies, imaging, transport	€918	
Overheads & bed charges	€431	
All patients (N = 220)	€1,230 ± 98	<10⁻⁶
Conventional PCI (N = 1,820)		
All patients (N = 1,820)	€2,304 ± 1,814	
Personnel (medical and nursing)	€855	
Tests, drugs, supplies, imaging, transport	€918	
Overheads & bed charges	€531	

«Opportunity bed » concept

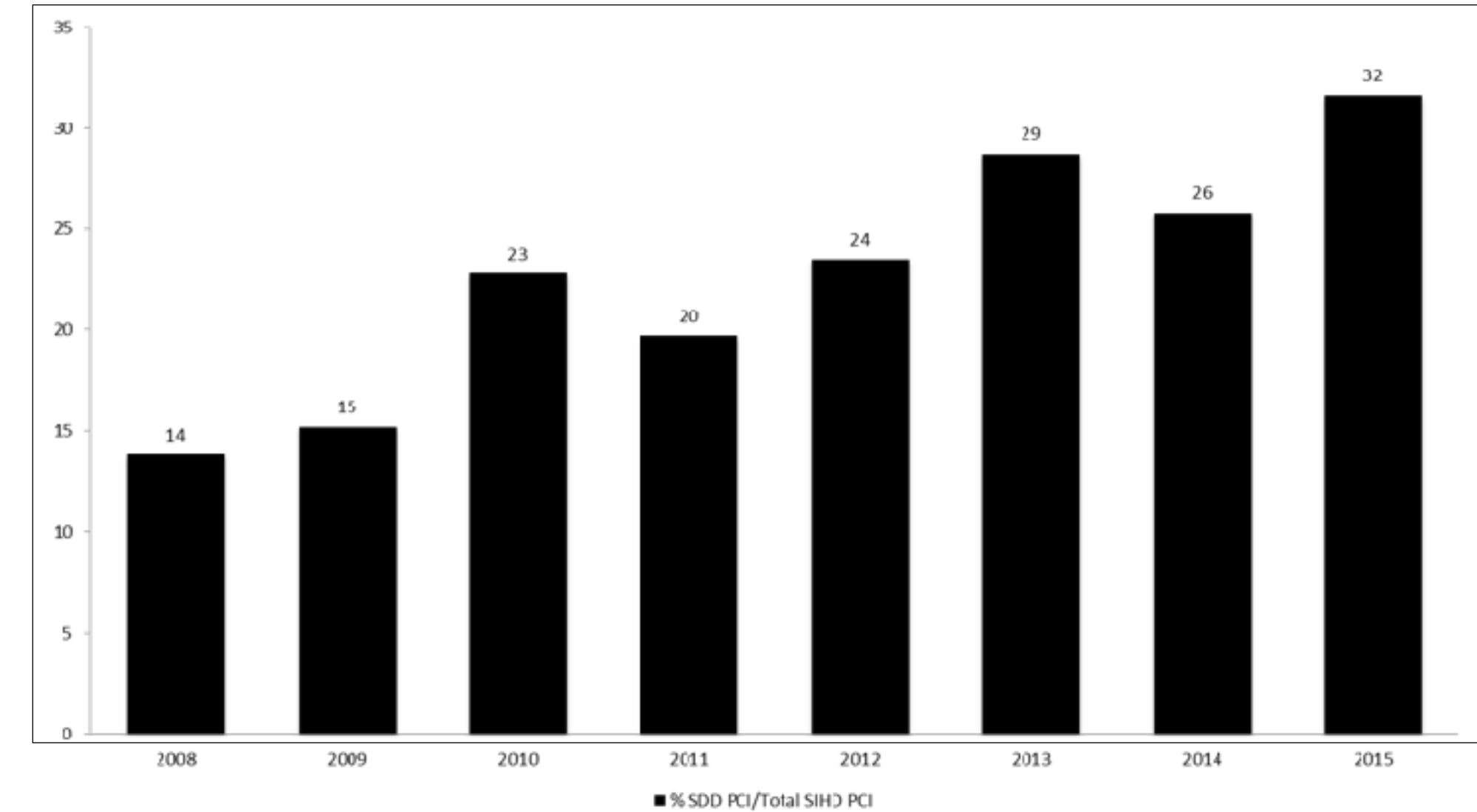


The differences in savings depends on the standard of care used (transradial vs transfemoral approach), healthcare prices (public/private/mixed) and type of reimbursement.

Impact of SDD PCI on total number of PCI performed in our hospital



Total PCI



PCI for stable angina

13,5% x 1200 PCI procedures (2016):
162 hospitalizations saved

Same-day discharge: 1523 €
Conventional PCI (2 nights): 2518 €

995 € saving/patient (995x 162)= 161190 €
+
2 bed-nights free/patient for hospitalization
(2x162= 324 night-beds/year)

GACI

12/03/2019
13h01

Groupe Athérome et Cardiologie Interventionnelle
de la Société Française de Cardiologie

Chers amis, Chers collègues,

Une bonne nouvelle pour l'ambulatoire.

Les tarifs 2019 ayant été publiés au Journal Officiel ce matin, j'ai le plaisir de vous confirmer que le ministère, dans son souci d'inciter aux prises en charge en ambulatoire, a procédé à la modification de tarifs évoquée auparavant.

Ainsi le séjour pour angioplastie coronaire sera payé au même prix par l'assurance maladie, que la prise en charge ait comporté 0, 1, 2, 3 ou 4 nuitées.

Pour rappel: tarifs 2018

	PUBLIC	PRIVE
Niveau 1	2442,73	1875,15
Niveau T	1733,91	1336,75

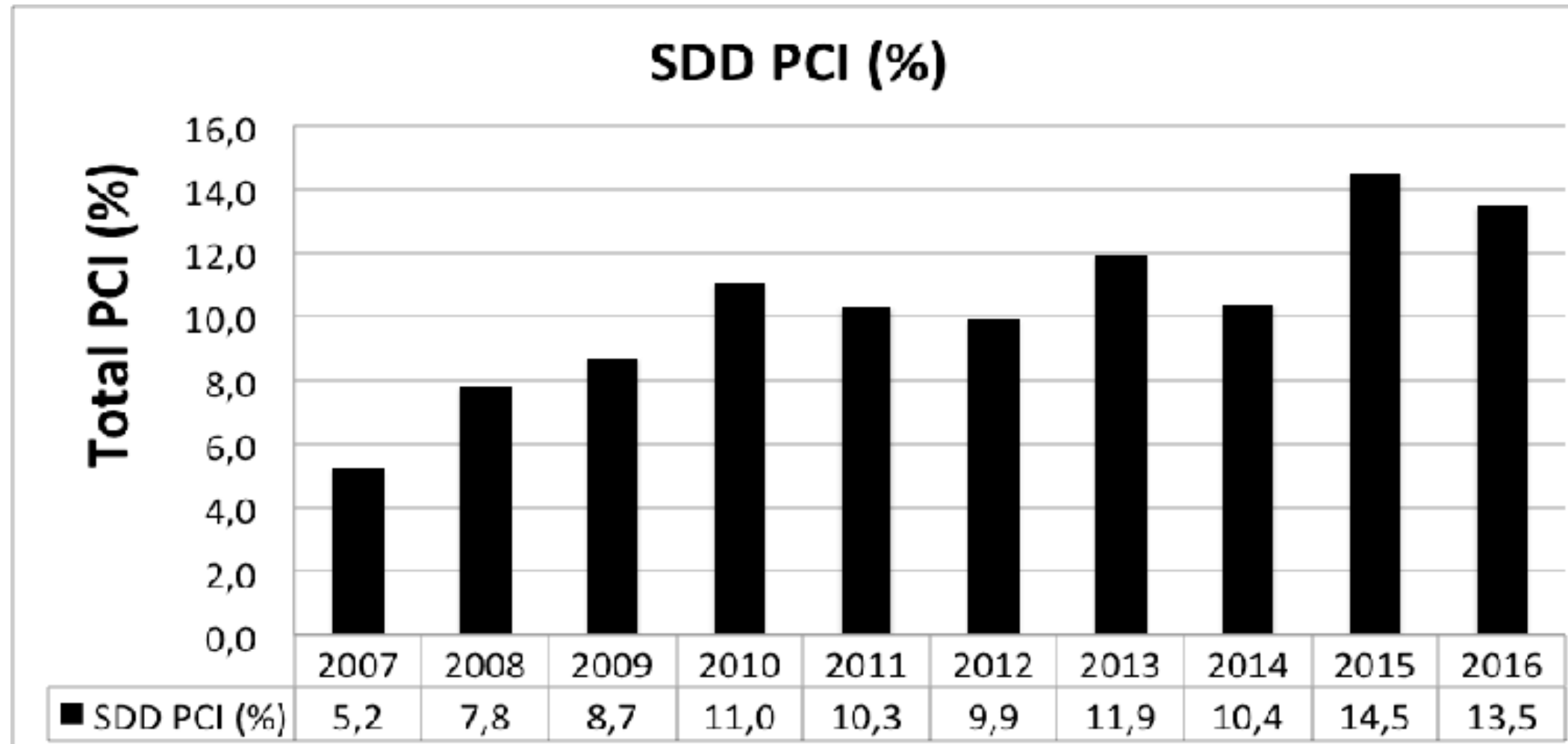
TARIFS 2019

	PUBLIC	PRIVE
Niveau 1	2216,94	1714,81
Niveau T		

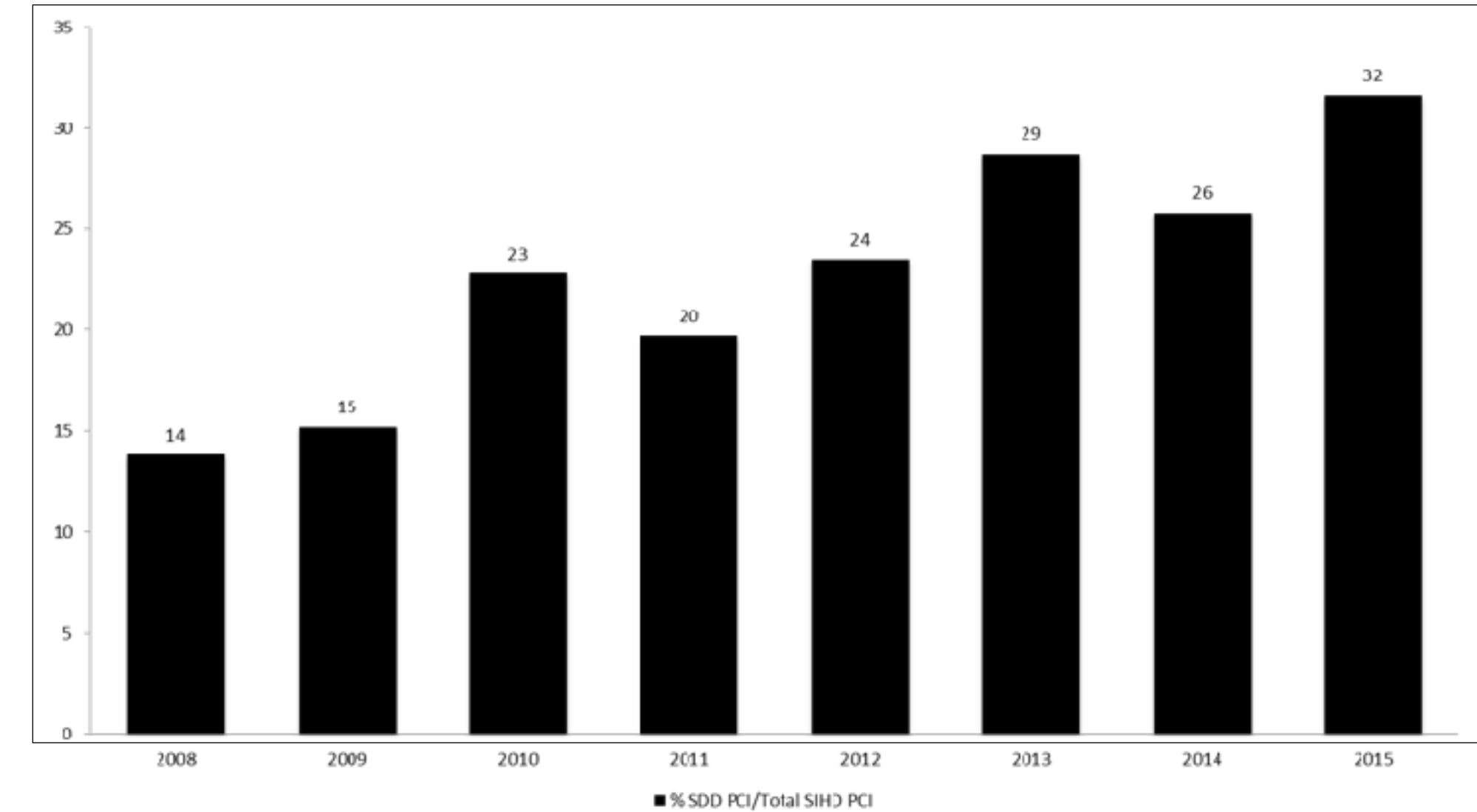
Amicalement

Philippe Commeau

Impact of SDD PCI on total number of PCI performed in our hospital



Total PCI



PCI for stable angina

20,0% x 1200 PCI procedures (2018):
240 hospitalizations saved

Same-day discharge: 2216,94 €
Conventional PCI (2 nights): 2216,94 €

0 € saving/patient (0x 162)= 0 €
+
2 bed-nights free/patient for hospitalization
(2x240)= 480 night-beds/year

L'ambulatoire : à quel horizon ?

- **MAINTENANT !!!!!**