

Recent Advances in the Fight against Atherosclerosis in Korea

- Treatment of Hypercholesterolemia in CAD Patients

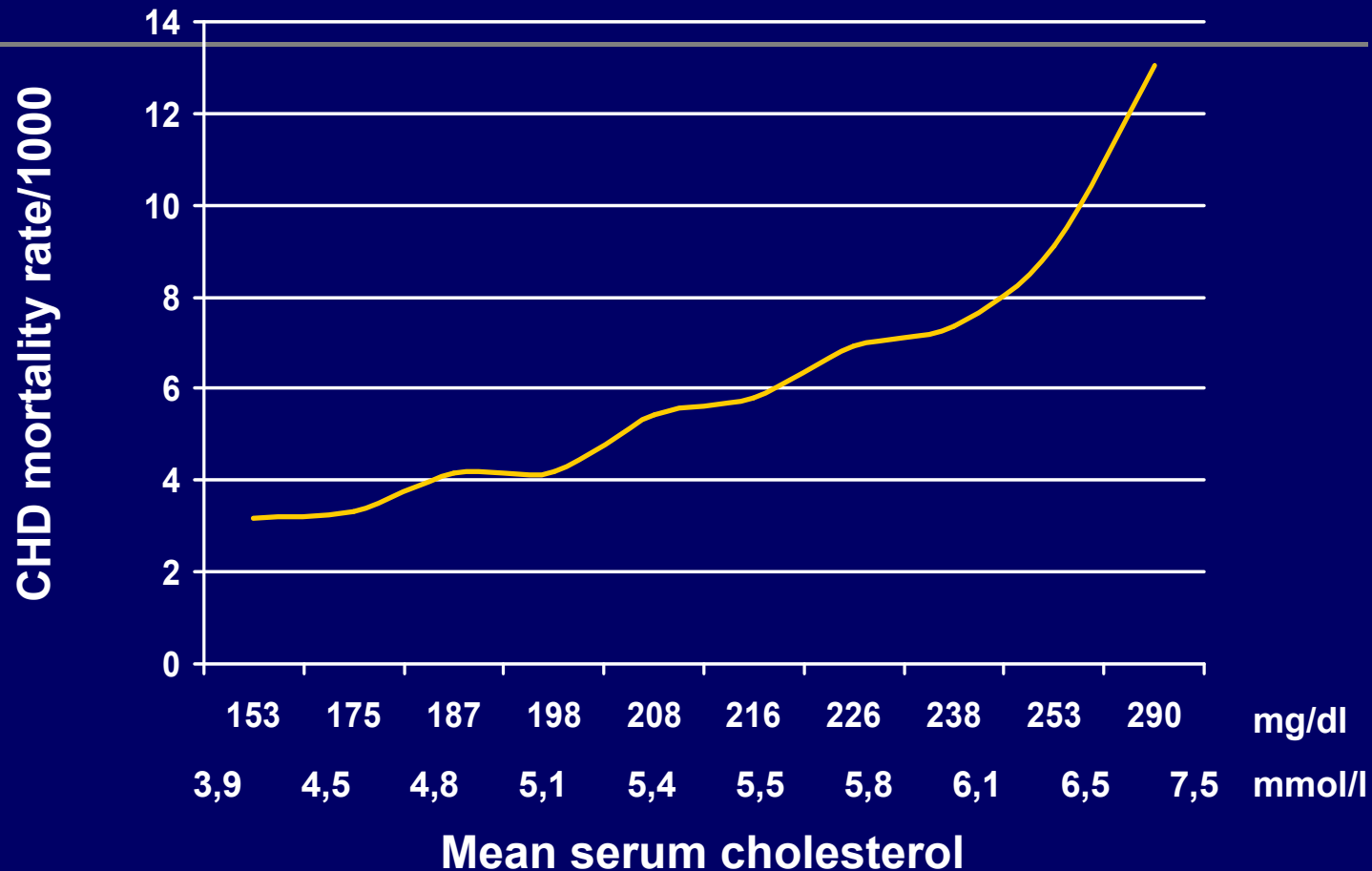
2007. 10. 11

Sang-Hyun Kim

On behalf of

Ten Center Study Investigators

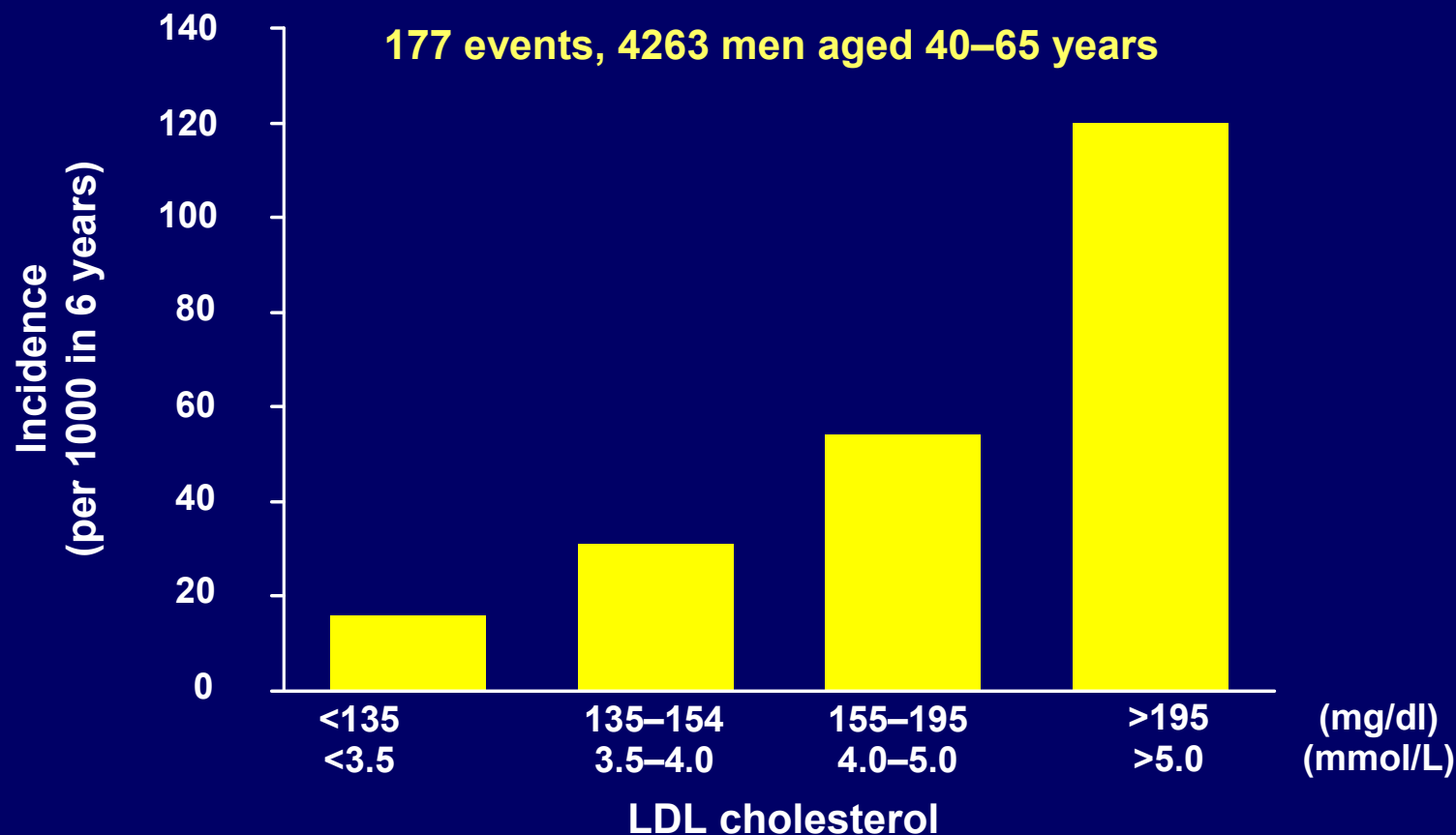
MRFIT: Total Cholesterol and CHD Mortality



Long-term mortality in 356,222 screened men, 35 to 57 years old,
who had not been hospitalized for myocardial infarction

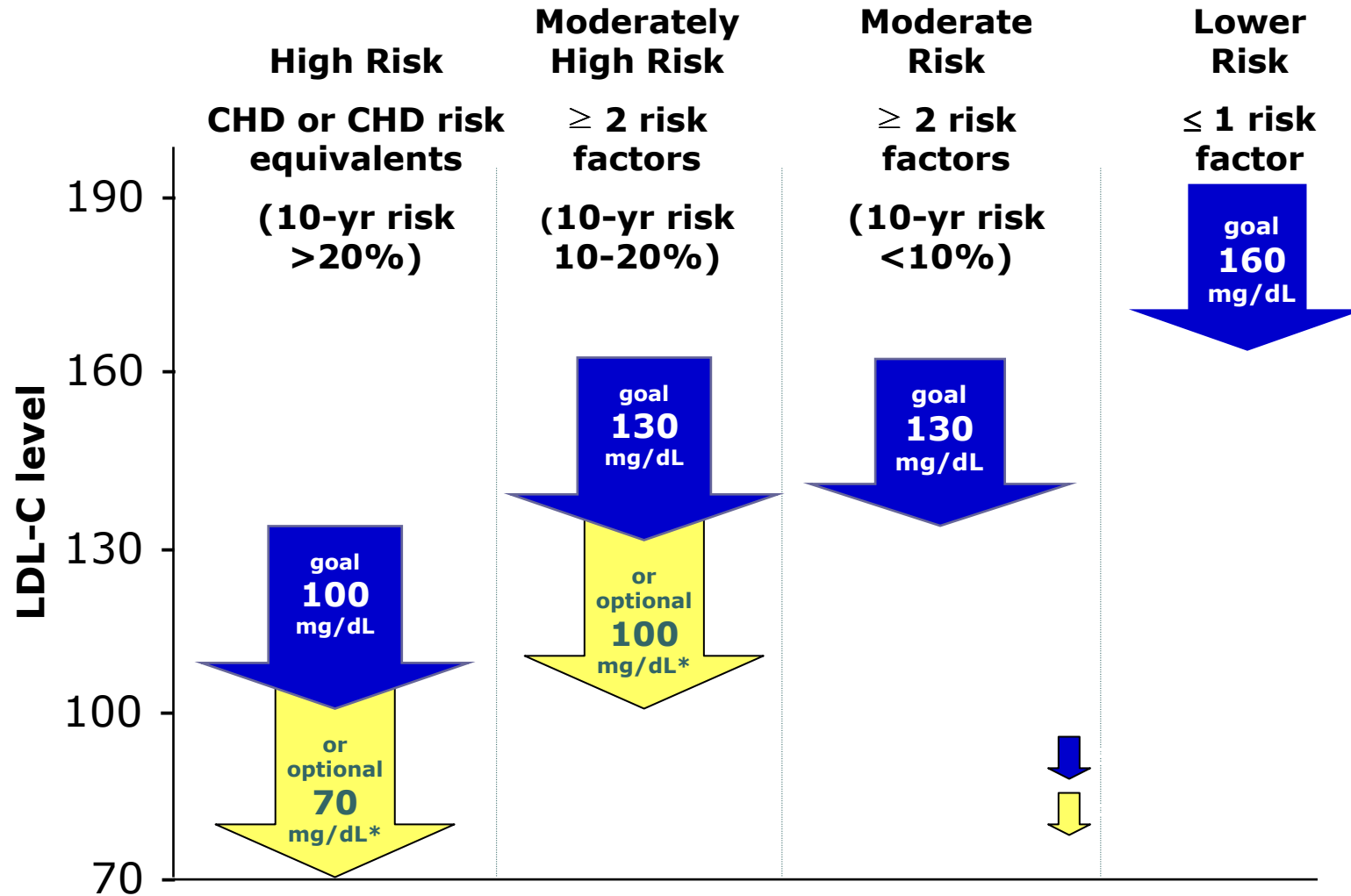
Stamler J et al. JAMA 1986;256(20):2823-2828.

Prospective Cardiovascular Münster Study: CHD Risk by LDL Cholesterol



Assmann G, Schulte H. In *Lipid Metabolism Disorders and Coronary Heart Disease*. 2nd ed. Munich: Medizin, 1993:19-67.

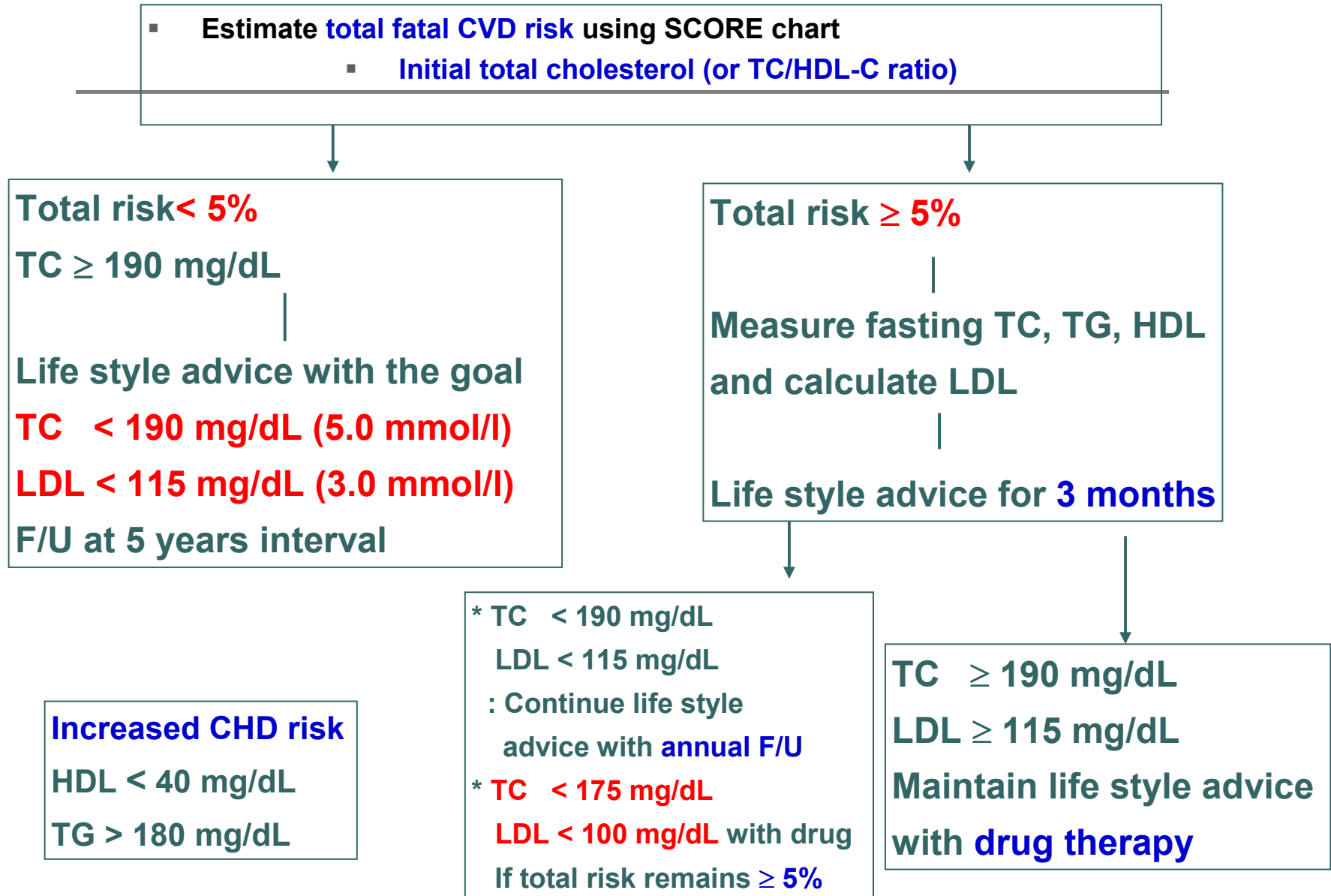
NCEP ATP III: LDL-C Goals (2004 Modifications)



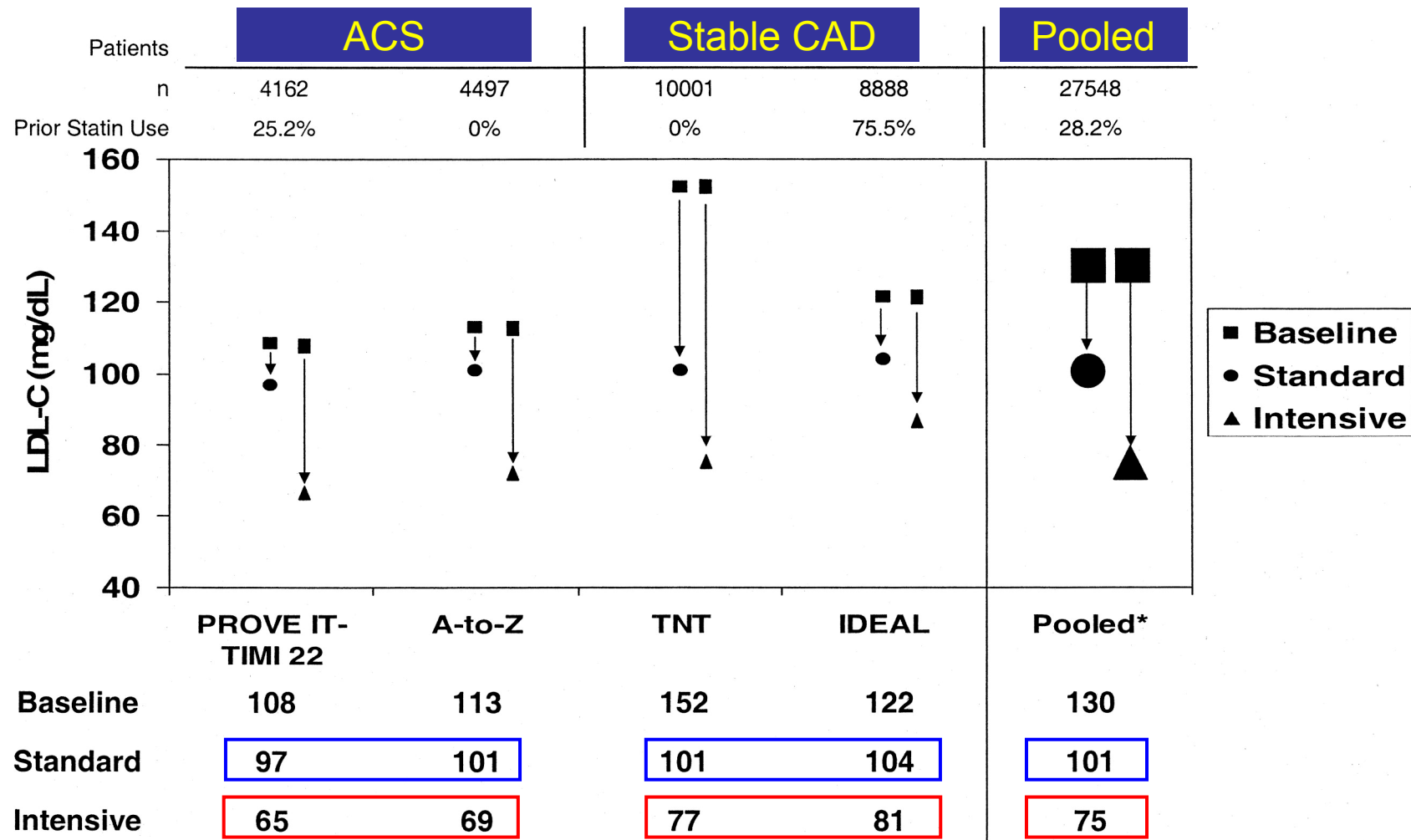
*Therapeutic option

70 mg/dL = 1.8 mmol/L; 100 mg/dL = 2.6 mmol/L; 130 mg/dL = 3.4 mmol/L; 160 mg/dL = 4.1 mmol/L

Third European guideline (2003)



Meta-analysis of Aggressive Lipid Lowering Therapy Reduction in LDL cholesterol



Western studies to assess the rate of target goal achievement

American College of Cardiology Evaluation of
Preventive Therapeutics project (ACCEPT)

Am J Cardiol 1997;80(8B):45H-52H.

Lipid Treatment Assessment Project (L-TAP)

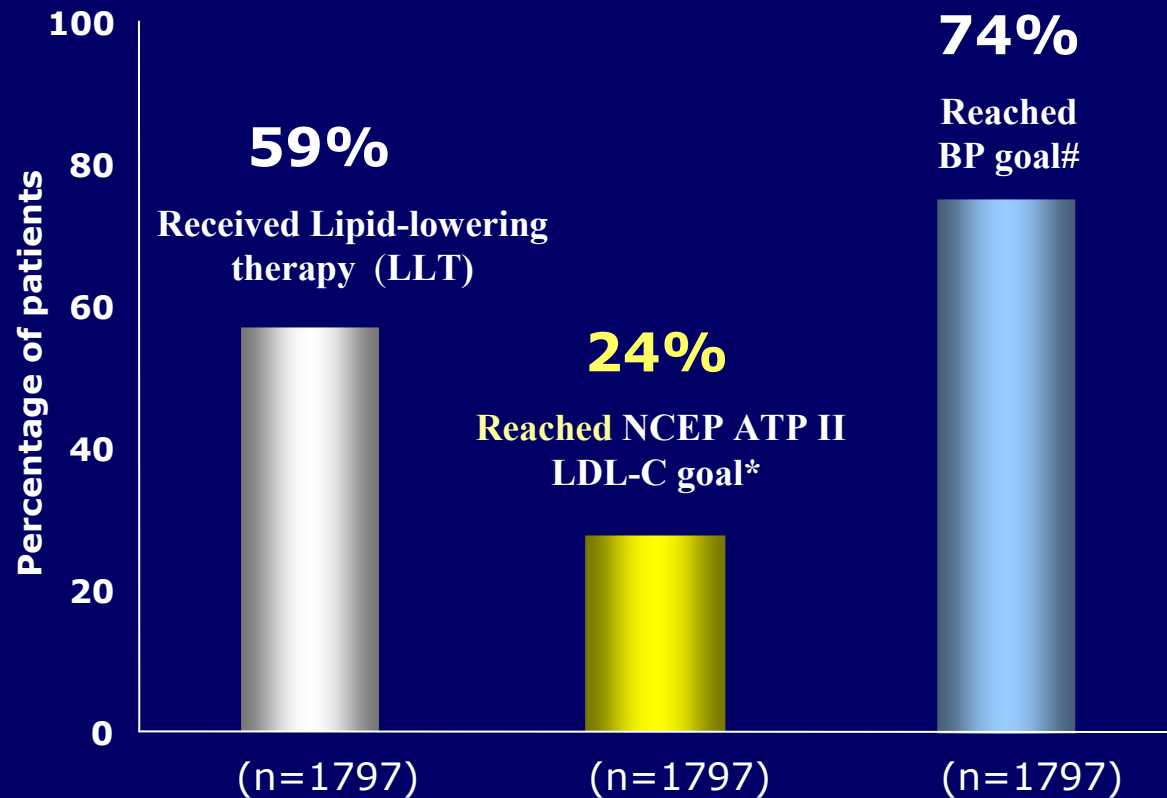
Arch Intern Med 2000;160:459-467.

European Action on Secondary Prevention through
Intervention to Reduce Events (EUROASPIRE II)

EUROASPIRE II Euro Heart Survey Programme

Euro Heart J 2001;22:554-772.

ACCEPT : Achieving NCEP ATP II Goal on Lipid-modifying Therapy in 1,797 CAD patients



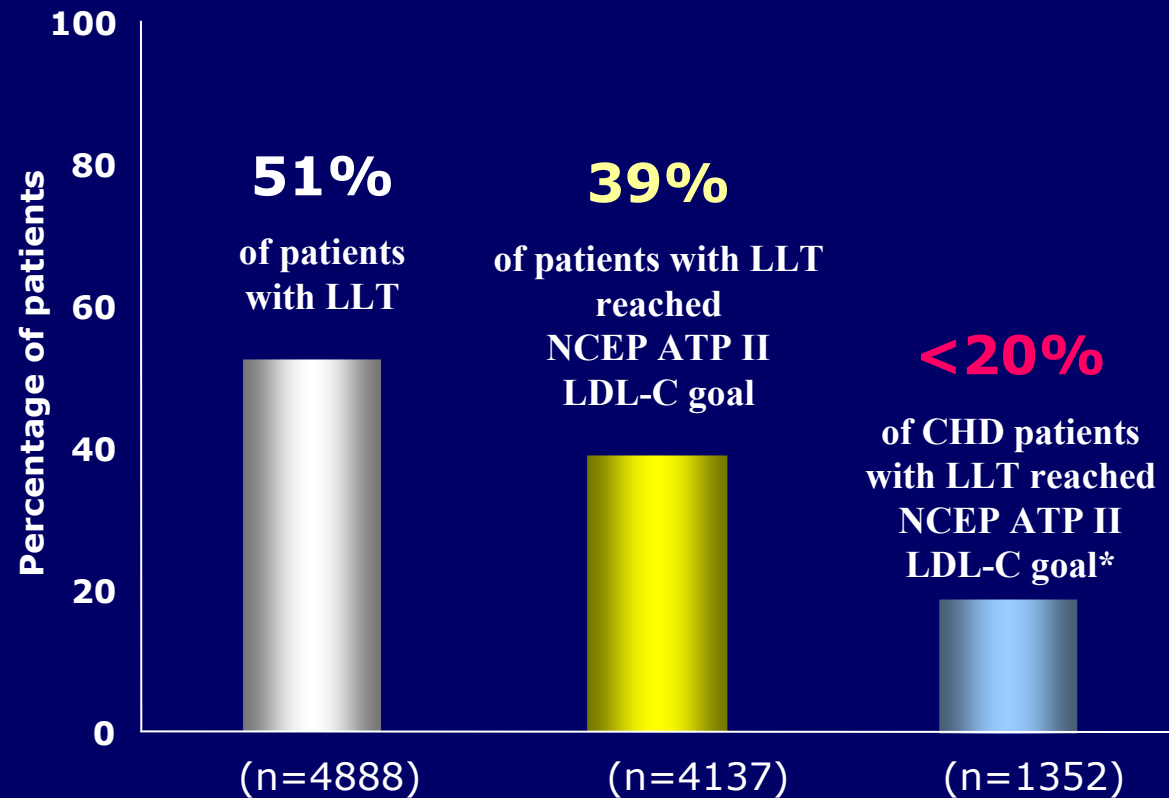
* LDL-C < 100 mg/dL

SBP < 140 mmHg

Am J Cardiol 1997;80(8B):45H-52H.

Circulation 1997;96(8S):733-I

L-TAP: Achieving NCEP ATP II Goal on Lipid-modifying Therapy in 4,888 patients

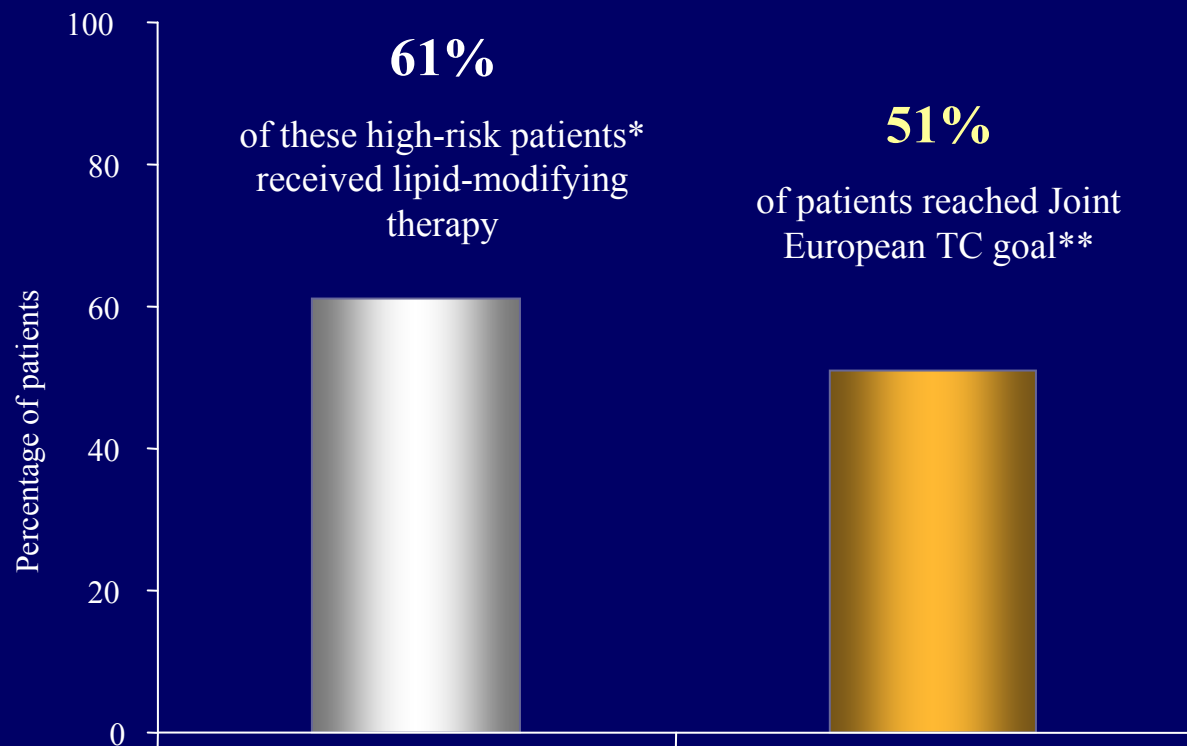


* LDL-C <100 mg/dL

Pearson TA et al. Arch Intern Med 2000;160:459-467.

EUROASPIRE II: Achieving Joint European TC Goal

*CABG, PTCA, MI or ischaemia, ** TC <5 mmol/L



5,000 patients
15 European countries

*EUROASPIRE II Euro Heart Survey Programme.
Euro Heart J 2001;22:554–772.*

REALITY :

Return on Expenditure Achieved for Lipid Therapy

- Objectives
 - To evaluate **treatment gap** of lipid management in **real clinical practice** of **Korea**
 - To assess **treatment pattern** associated with **goal achievement** among patients on lipid lowering therapy (LLT)

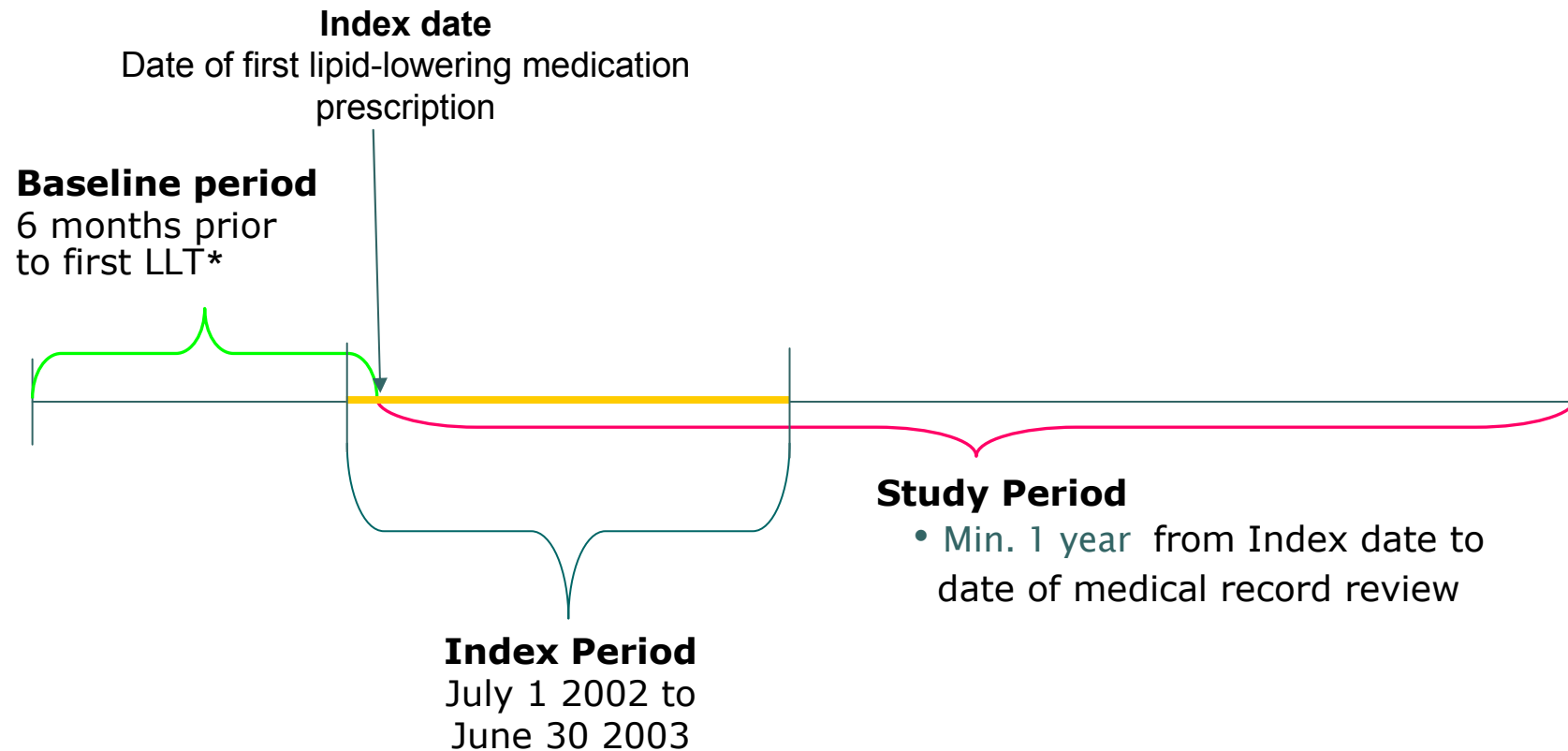
Method

- **Design**
 - : multi-center retrospective review of medical records
- **Study investigators : 100 investigators** across Korea
 - 30 General Internists working at clinic
 - 30 Endocrinologist working for General Hospitals
 - 40 Cardiologist working for General Hospitals
- **Study population**
 - : 5 patients/investigator
 - : data of total 500 patients were analyzed

Inclusion Criteria

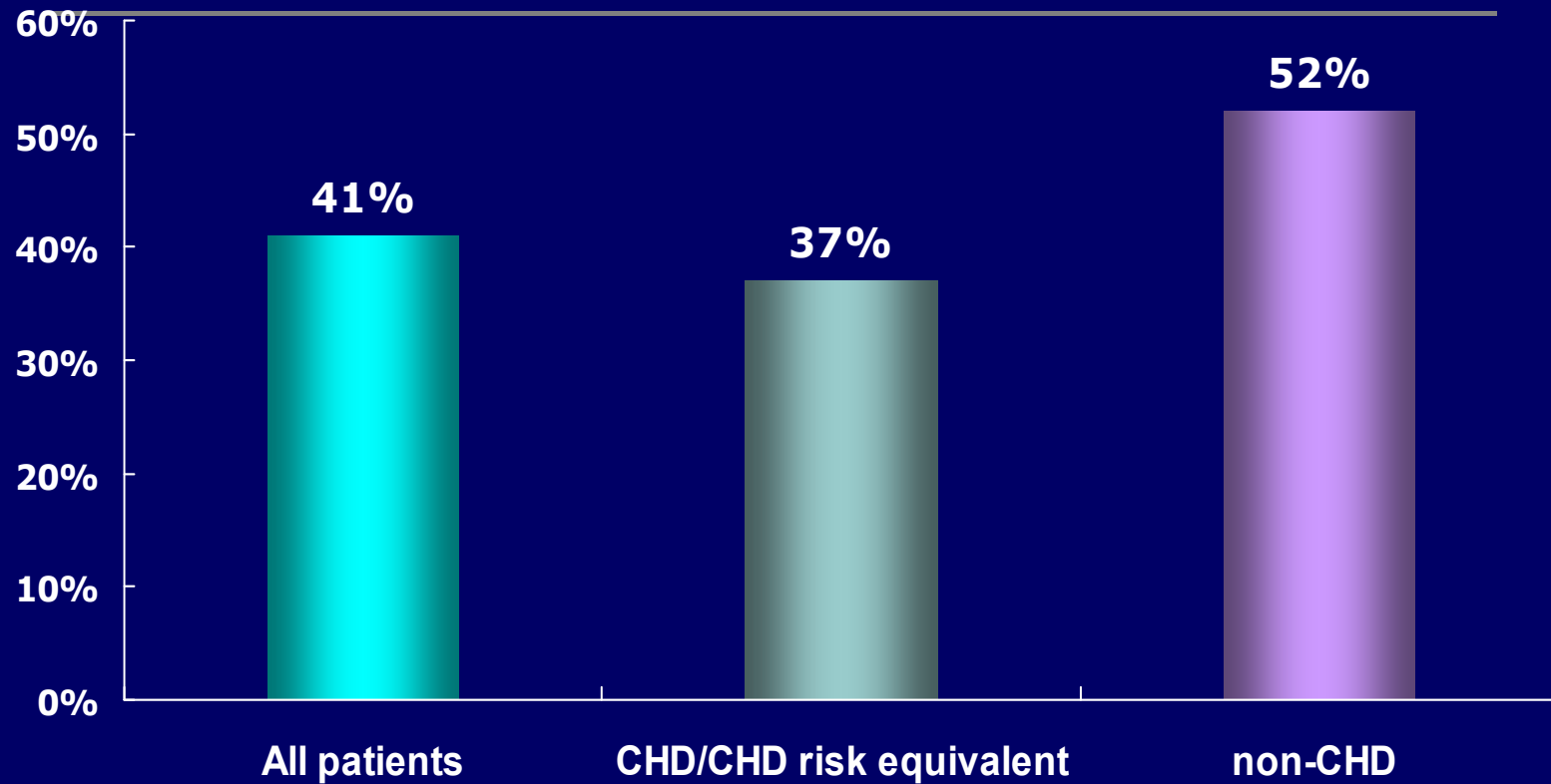
- **During Baseline period : Enrolled patients**
(up to six months prior to first LLT)
 - Aged from 18 to 75 years
 - did not receive any lipid lowering therapy for previous 6 months
 - minimum one measurement of TC and LDL-C
 - any one of the following risk factors:
 - Diabetes
 - Hypertension ($\geq 140/90$ mm Hg)
 - history of myocardial infarction (MI)
 - Ischemic heart disease

“REALITY” 연구 흐름도



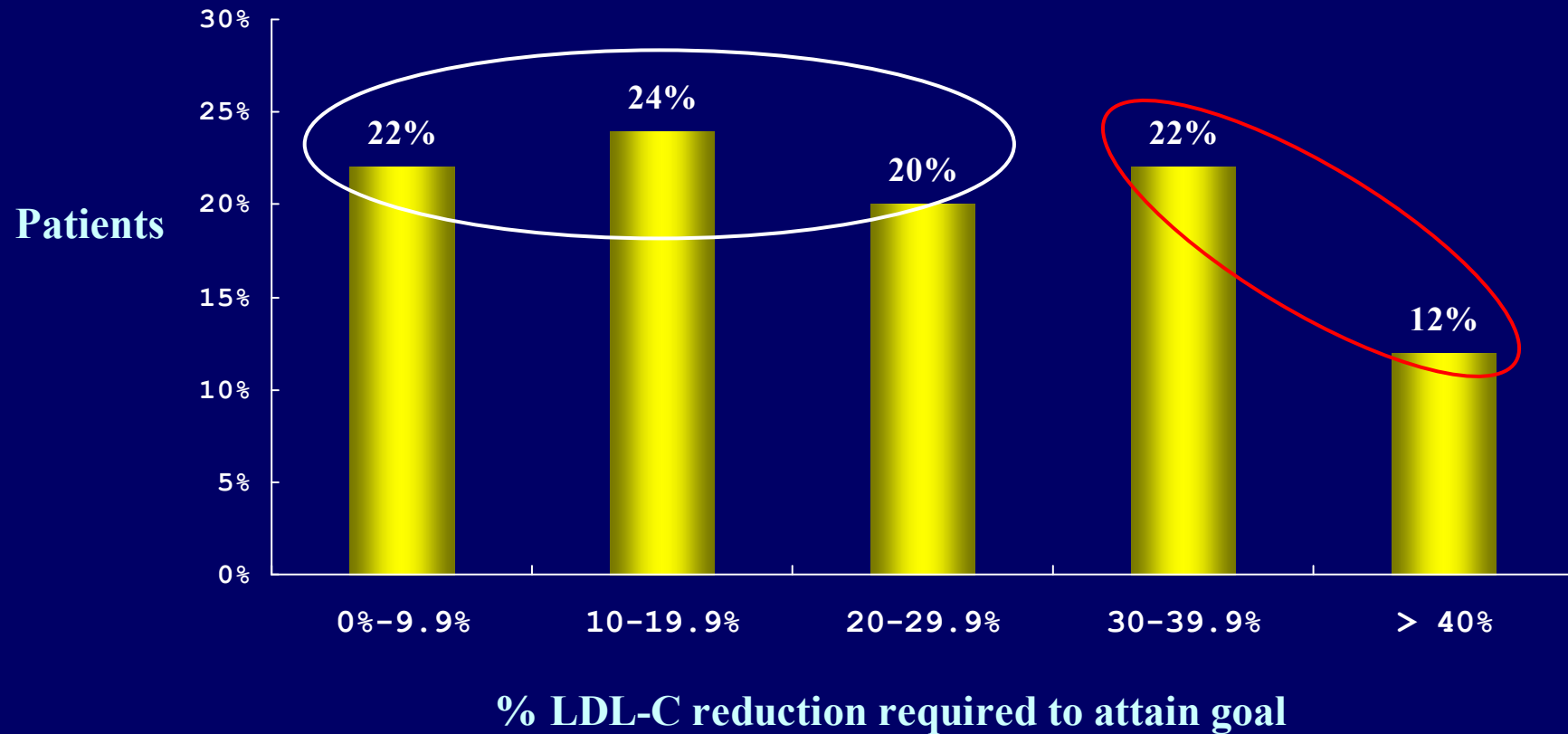
* LLT : lipid-lowering therapy

REALITY: 치료 목표치 도달률

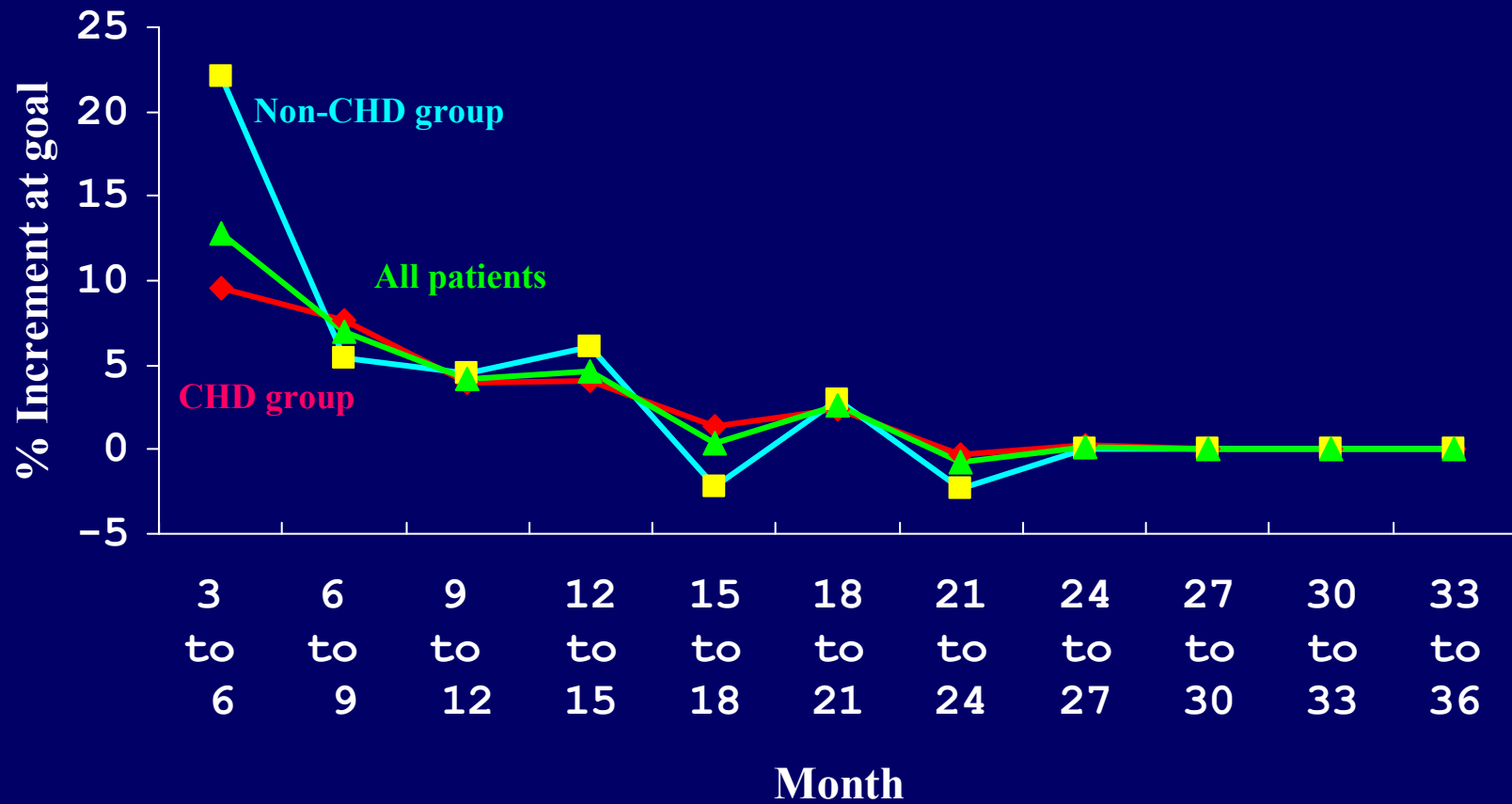


% of Patients attaining a treatment goal

LDL-C Reduction Required at Study End for Patients not at Goal



Incremental Goal Attainment Over Time for All, CHD and non-CHD patients



Logistic Regression Model for Goal Attainment

Variables	OR	95% CI
Patient with baseline LDL-C < 130 mg/dL	1.783	1.162-2.735
Patient without a change in potency	0.299	0.139-0.642
Patient with CHD or CHD equivalent	0.445	0.288-0.688
Patient with baseline LDL-C > 190mg/dL	0.283	0.155-0.516

**Current Status of Management
for Hyperlipidemia of CAD patients
in 10 university hospitals in Korea**

Hyo-Soo Kim, MD

On behalf of

10 Center study investigators

Objective of this study

To identify
current treatment pattern for hyperlipidemia,
& treatment gap to target goal
for CAD patients
in 10 university hospitals in Korea

Study description

- Retrospective
- Multi-center (10 centers)
- Non-interventional

Inclusion criteria

- Patients with CAD confirmed by
 - ✓ CAG ; stenosis more than 50% or
 - ✓ Myocardial stress test ; positive or
 - ✓ Medical record ; s/p PTCA(PCI), s/p CABG, s/p MI
- OPD F/U within recent 6 months at any center among 10 hospitals of Korea

Data collection(1)

◆ DM

- FBS \geq 126mg/dL 2회 이상, 또는
- 혈당강하제나 인슐린 투여 중,
- 또는 DM으로 명기되어 있는 경우

◆ HTN

- 140/90mmHg 이상 2회 이상
- 또는 고혈압 약제 복용 중 또는 Hypertension으로 명기되어 있는 경우

◆ Lipid lowering medication

- Statin, Fibrate, Resin 등 모든 종류를 명기

◆ Lipid lab

- lipid drug 사용 이전 후를 명기,
- 가장 최근의 검사 결과를 적고 검사결과가 없을 경우에는 NA (not available) 로 표기

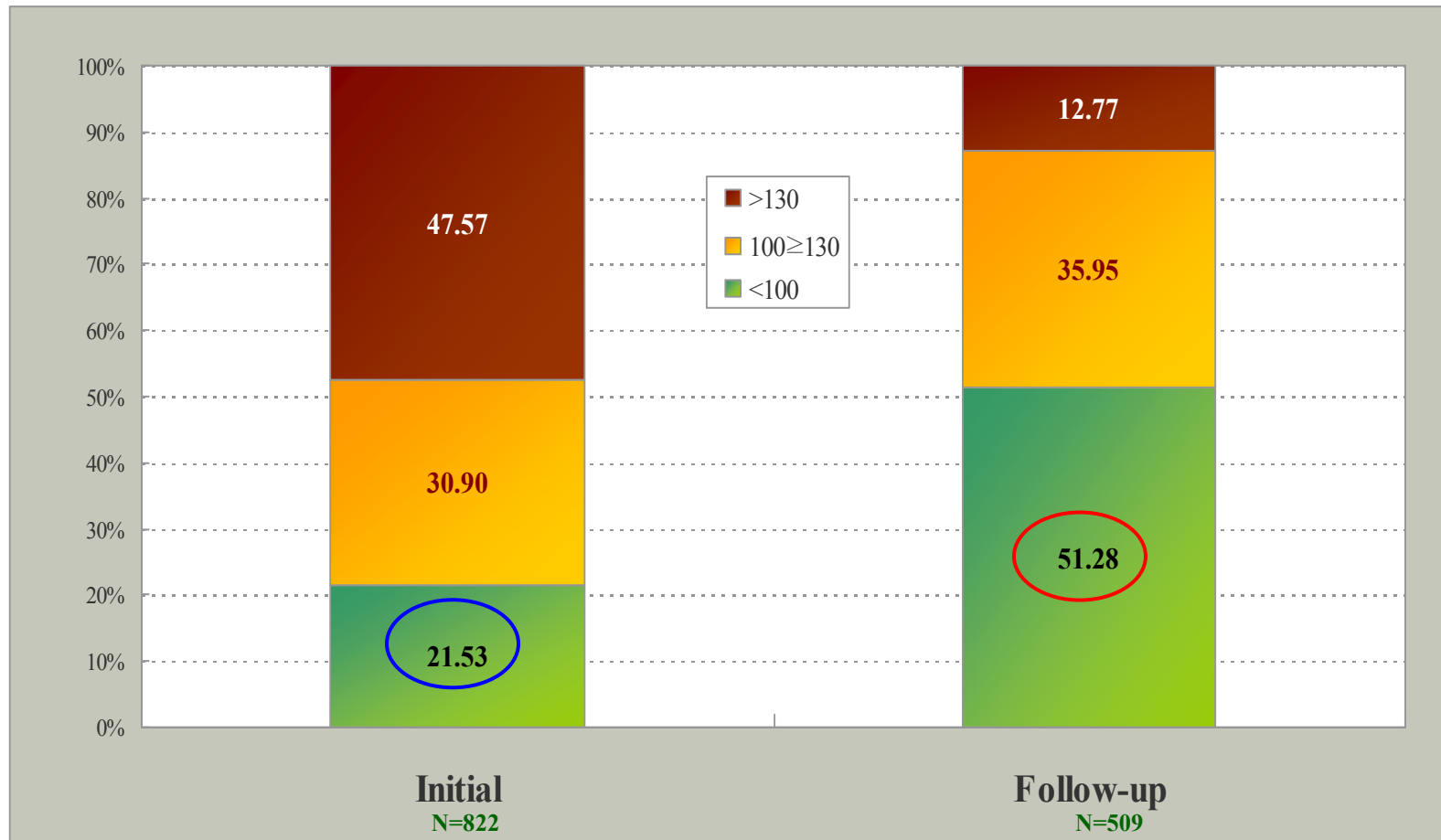
Data collection(2)

- 관상동맥질환 환자인 경우
 - ✓ 질병 번호 ICD i20-25에 해당되는 환자의 목록을 추출한 후 최근 외래 진료 받은 환자부터 병록 검토를 시행
 - ✓ Inclusion 여부 확인
 - ✓ 순차적으로 의무 기록을 검토하도록 한다(각 센터마다 3인 이상의 의사, 의사마다 30인 이상의 환자를 추출하는 것을 기준).
 - ✓ 진단이 불명확한 경우는 배제
 - ✓ 대상 숫자를 채울 때까지 계속
- 의사 자신이 조사할 대상 환자를 골라내도록 하는 방법은 금지
- 다른 연구를 위하여 모집한 명부에서 환자를 추출하는 것은 금지

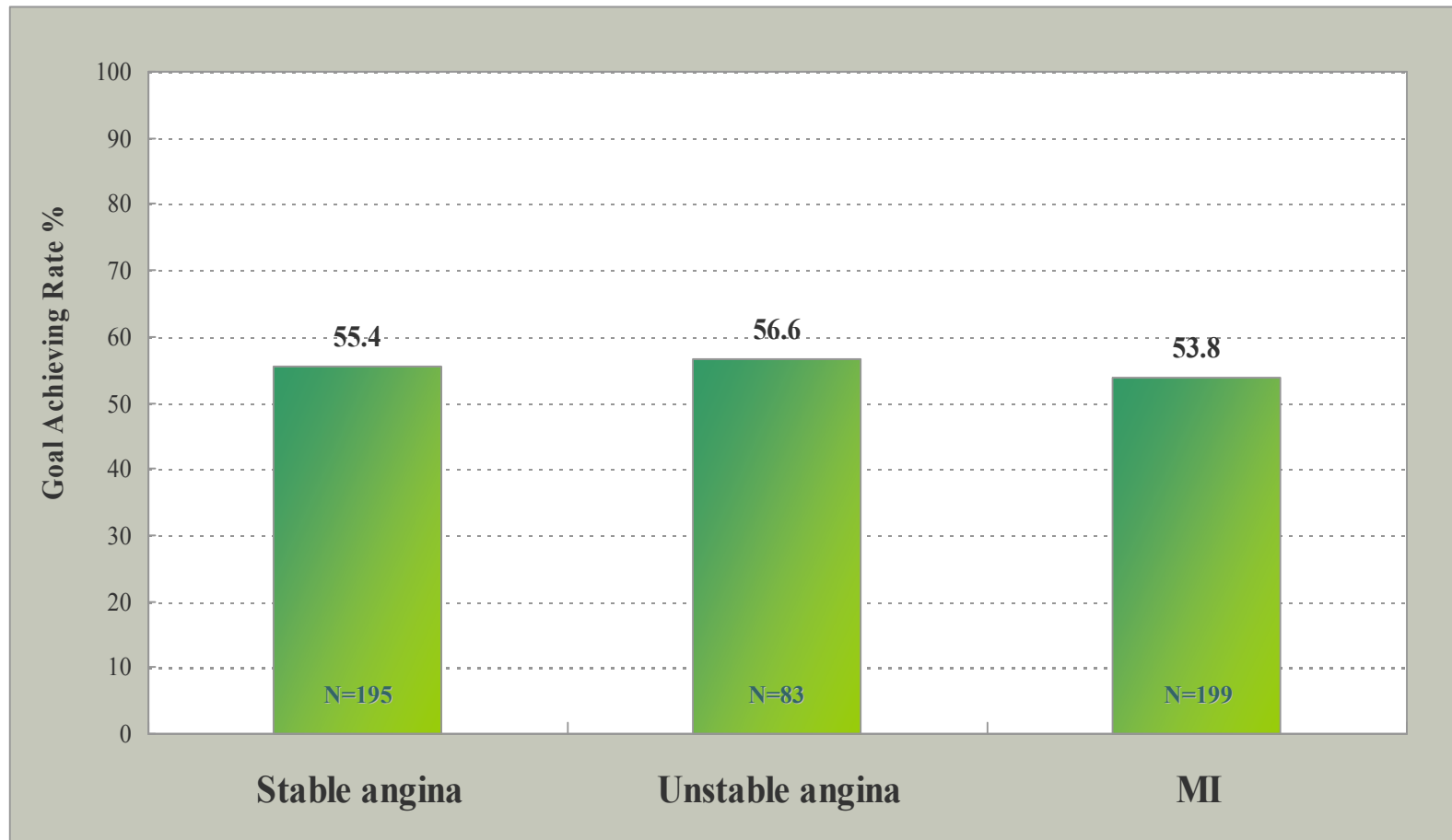
Investigators

Center	Investigator	Total n (%)
경북대병원	채성철	93 (8.87)
고대안암병원	임도선	150 (14.31)
동아의대	김영대	100 (9.54)
보라매병원	김상현	100 (9.54)
삼성메디컬센터	성지동	100 (9.54)
서울대병원	김효수	106 (10.11)
성빈센트병원	백상홍	100 (9.54)
아산병원	한기훈	101 (9.64)
연세대학교	조홍근	98 (9.35)
전남대병원	안영근	100 (9.54)
Total		1,048 (100.00)

LDL-C Distribution in Whole Patients at Initial & F/U Point



Rate of Target Goal achievement [LDL-C<100] depending on CHD type



Current status of management of hyperlipidemia for CAD patients under OPD F/U in 2004 in Korea

“10-60% Rule”

- 10% : LDL-C reduction rate in pts without medication
- 20% : rate of TGA at initial time point in CAD pts
- 30% : LDL-C reduction rate in pts with medication
- 40% : rate of pts without lipid drugs
- 50% : rate of TGA at F/U time point in CAD pts
- 60% : rate of pts with lipid drugs

**2007 Study on Treatment Gap
of Management for Hyperlipidemia
of CAD Patients
in 10 Center-Hospitals of Korea**

(10 center follow-up study ; revisited)

2007. 10. 11

Sang-Hyun Kim, Ji-Dong Sung, Hyo-Soo Kim

On behalf of

Ten Center Study Investigators

Background & Purpose

- 국내 10개 대학병원에서 2003-4년도에 순환기내과 진료를 받은 총 1,048명의 관동맥질환자를 조사
 - 치료 간극의 존재와 정도를 확인
 - 치료 후 치료 목표 도달률이 50% 수준
 - Discussion
 - 비순환기 내과 또는 1차 의료 기관 등 다른 진료 환경에서의 치료 간극에 대한 추가 연구
 - 치료 목표 도달률을 높이기 위한 노력 필요
- Follow up study of 10-center study
 - 관동맥질환 환자 군에 대하여 동일한 역학조사를 재시행
 - 3-4년간 콜레스테롤 치료지침에 대한
 - 의료인의 인식 변화
 - 콜레스테롤 치료에 대한 환자의 인식도 및 관심도 변화
 - New drug with high potency 추가로 ‘치료 간극’에 어떠한 변화가 있었는지 확인

Methods

(10 center follow-up study;revisited)

Inclusion criteria

- Patients with CAD confirmed by
 - ✓ CAG ; stenosis more than 50% or
 - ✓ Myocardial stress test ; positive or
 - ✓ Medical record ; s/p PTCA(PCI), s/p CABG, s/p MI
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Data collection(1)

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◆ HTN

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◆ Lipid lowering medication

- Statin, Fibrate, Resin 등 모든 종류를 명기

◆ Lipid lab

- lipid drug 사용 이전 후를 명기,
- 가장 최근의 검사 결과를 적고 검사결과가 없을 경우에는 NA (not available) 로 표기

Data collection(2)

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 - ✓ 질병 번호 ICD i20-25에 해당되는 환자의 목록을 추출한 후 최근 외래 진료 받은 환자부터 병록 검토를 시행
 - ✓ Inclusion 여부 확인
 - ✓ 순차적으로 의무 기록을 검토하도록 한다(각 센터마다 3인 이상의 의사, 의사마다 30인 이상의 환자를 추출하는 것을 기준).
 - ✓ 진단이 불명확한 경우는 배제
 - ✓ 대상 숫자를 채울 때까지 계속
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- 다른 연구를 위하여 모집한 명부에서 환자를 추출하는 것은 금지

Results

10 center study in 2004

VS

**10 center follow-up study; revisited
in 2007**

2004 VS 2007

Study centers

Center	2004	
	N	(%)
경북대병원	93	(8.87)
고려대안암병원	150	(14.31)
동아대병원	100	(9.54)
보라매병원	100	(9.54)
삼성서울병원	100	(9.54)
서울대학교병원	106	(10.11)
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서울아산병원	101	(9.64)
연세신촌세브란스병원	98	(9.35)
전남대병원	100	(9.54)
Total	1,048	(100.0)

Center	2007	
	N	(%)
경북대병원	100	(10.0)
고려대안암병원	100	(10.0)
동아대병원	100	(10.0)
보라매병원	100	(10.0)
삼성서울병원	100	(10.0)
서울대학교병원	100	(10.0)
가톨릭대강남성모병원	100	(10.0)
서울아산병원	100	(10.0)
연세신촌세브란스병원	100	(10.0)
전남대병원	100	(10.0)
Total	1,000	(100.0)

2004 VS 2007

Demographics

Sex	2004		2007		p-value
	N	(%)	N	(%)	
Male	695	(66.57)	665	(66.50)	0.9729
Female	349	(33.43)	335	(33.50)	
Total	1,044	(100.00)	1,000	(100.0)	

Age	2004		2007		p-value
	N	(%)	N	(%)	
Mean ± SD (yrs)	63.32	± 9.89	60.61	± 10.33	0.0688
min ~ max	33.00	~ 94.00	26.00	~ 95.00	
low-<40	11	(1.05)	21	(2.10)	
40-<50	93	(8.91)	137	(13.70)	
50-<60	235	(22.51)	267	(26.70)	
60-<70	433	(41.48)	382	(38.20)	
70-<80	230	(22.03)	166	(16.60)	
80-<90	38	(3.64)	26	(2.60)	
90-high	4	(0.38)	1	(0.10)	
Total	1,044	(100.00)	1,000	(100.00)	

2004 VS 2007

Demographics

Height	2004		2007		p-value
N(%)	900	(85.88)	489	(49.80)	
Mean ± SD (cm)	163.42	± 8.29	163.49	± 8.60	0.877
min ~ max	134.50	~ 186.00	138.00	~ 185.0	
Weight	2004		2007		p-value
Mean ± SD (Kg)	66.32	± 10.20	66.19	± 11.05	
min ~ max	30.00	~ 115.00	33.00	~ 109.0	
low-<50	34	(3.69)	31	(6.2)	
50-<60	202	(21.93)	110	(22.1)	0.8296
60-<70	356	(38.65)	174	(34.9)	
70-<80	242	(26.28)	117	(23.5)	
80-<90	75	(8.14)	26	(11.2)	
90-high	12	(1.30)	10	(2.0)	
Total	921	(100.00)	498	(100.0)	
BMI	2004		2007		p-value
N(%)	900	(85.88)	498	(49.80)	
Mean ± SD (cm)	24.80	± 2.91	24.69	± 3.17	0.5107
min ~ max	13.00	~ 39.00	16.00	~ 37.00	

2004 VS 2007

Demographics

Blood pressure	2004				2007				p-Value	
	SBP		DBP		SBP		DBP		SBP	DBP
N(%)	1,025	(97.81)	1,025	(97.81)	958	(95.80)	958	(95.80)		
Mean±SD(mmHg)	128.20	± 14.57	76.04	± 9.31	126.67	± 17.17	75.68	±10.56	0.0043	0.0204
min ~ max	82.00	~ 172.0	40.00	~ 110.5	84.0	~ 182.0	47.0	~ 116.0		

Education	2004		2007		p-Value
	N	(%)	N	(%)	
Primary school	284	(40.57)	105	(28.7)	<.0001
Middle school	217	(31.00)	38	(10.4)	
High school	179	(25.57)	121	(33.1)	
College and Over	20	(2.86)	102	(27.9)	
Total	700	(100.00)	366	(100.0)	

Ejection Fraction	2004		2007		p-Value
	N(%)		N(%)		
N(%)	895	(85.40)	795	(79.50)	0.0037
Mean ± SD (%)	57.19	± 11.75	55.84	± 11.46	
min ~ max	13.96	~ 86.00	6.00	~ 93.00	

2004 VS 2007

Medical history

Cardiac diagnosis and treatment history (복수 응답 가능)	2004		2007		p-Value
	N	(%)	N	(%)	
Stable angina	472	(45.04)	163	(16.30)	<.0001
- CAG-proven	399	(38.07)	158	(15.80)	
- stress test only	29	(2.77)	5	(0.50)	
History of Myocardial Infarction	444	(42.37)	361	(36.10)	0.0043
History of unstable angina	273	(26.05)	486	(48.60)	<.0001
Congestive heart failure	55	(5.25)	25	(2.50)	0.0013
Others	121	(11.55)	117	(11.70)	0.9133

Hospitalization	2004		2007		p-Value
	N	(%)	N	(%)	
Yes	917	(93.86)	903	(90.3)	0.0034
No	60	(6.14)	97	(9.7)	
Total	977	(100.0)	1,000	(100.0)	

2004 VS 2007

Medical history

Co-morbidity	2004		2007		p-Value
	N	(%)	N	(%)	
History of stroke	64	(6.11)	33	(3.3)	0.0028
History of peripheral artery disease	25	(2.39)	6	(0.6)	0.0009
Others	126	(12.02)	39	(3.9)	<.0001

History of treatment and procedure	2004		2007		p-Value
	N	(%)	N	(%)	
Thrombolysis	68	(6.49)	51	(5.1)	0.1794
PCI	643	(61.35)	704	(70.4)	<.0001
CABG	59	(5.63)	259	(25.9)	<.0001

2004 VS 2007

Risk factors

Diabetes mellitus	2004		2007		p-Value
	N	(%)	N	(%)	
Yes	315	(30.09)	293	(29.30)	0.8133
No	722	(68.96)	695	(69.50)	
Unknown	10	(0.96)	12	(1.20)	
Total	1,047	(100.0)	1,000	(100.0)	

Hypertension	2004		2007		p-Value
	N	(%)	N	(%)	
Yes	598	(57.28)	732	(73.20)	<.0001
No	441	(42.24)	262	(26.20)	
Unknown	5	(0.48)	6	(0.60)	
Total	1,044	(100.0)	1,000	(100.0)	

Smoking	2004		2007		p-Value
	N	(%)	N	(%)	
Non-smoker	478	(47.00)	491	(49.10)	<.0001
Ex-smoker	248	(24.39)	258	(25.80)	
Occasional smoker	23	(2.26)	60	(6.00)	
Habitual smoker	190	(18.68)	140	(14.00)	
smoking status not available	78	(7.67)	51	(5.10)	
Total	1,017	(100.0)	1,000	(100.0)	

2004 VS 2007

Medication

Current Medication	2004		2007		p-Value
	N	(%)	N	(%)	
ACE inhibitor	434	(41.41)	318	(31.80)	<.0001
Angiotensin II receptor blocker	253	(24.14)	397	(39.70)	<.0001
Aspirin	969	(92.46)	839	(83.90)	<.0001
Beta blocker	676	(64.50)	544	(54.40)	<.0001
Anti-platelet agents other than aspirin	499	(47.61)	728	(72.80)	<.0001

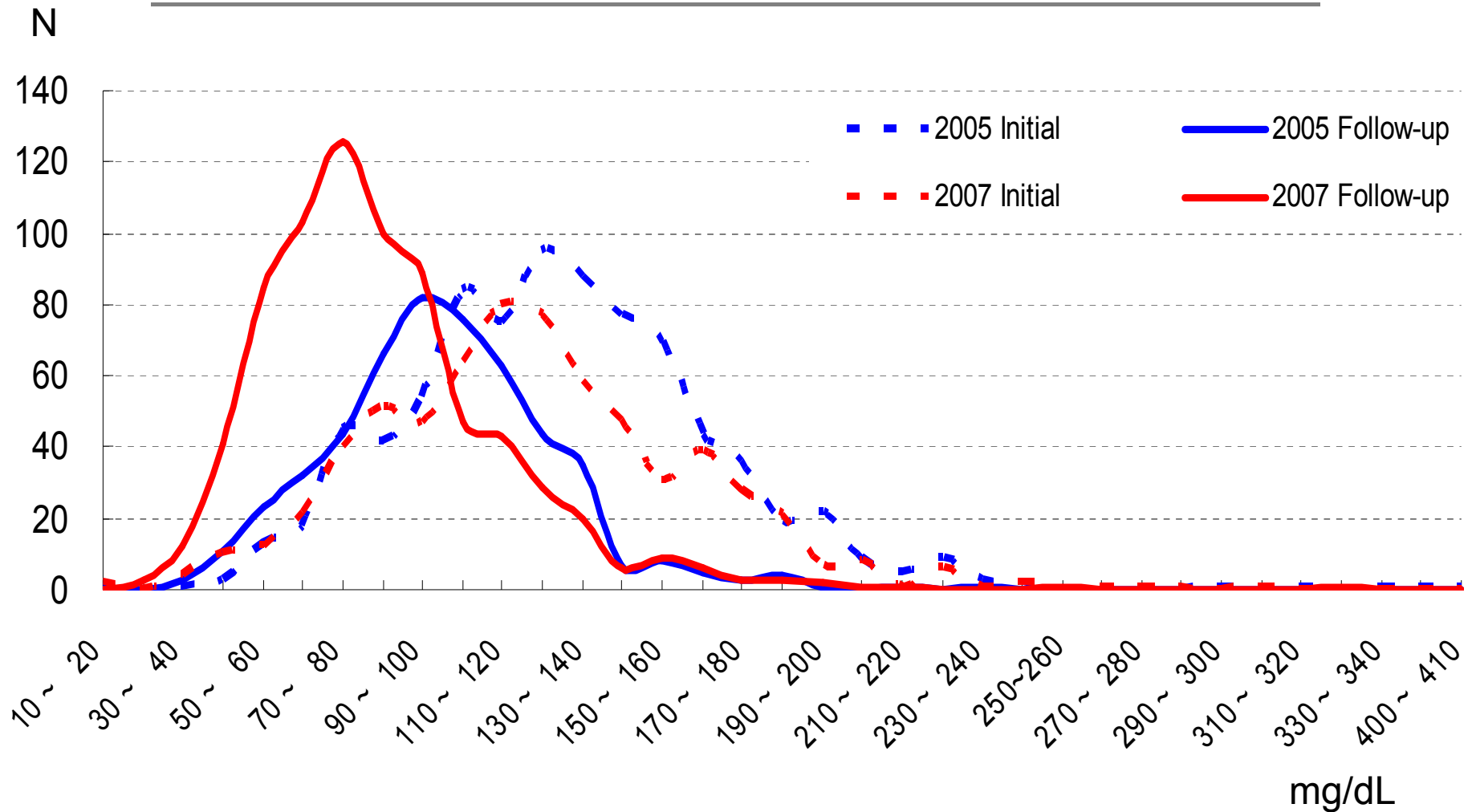
Lipid Lowering Medication	2004		2007		p-Value
	N	(%)	N	(%)	
Yes	607	(57.92)	895	(89.50)	<.0001
No	441	(42.08)	105	(10.50)	
Total	1,048	(100.00)	1,000	(100.00)	

2004 VS 2007

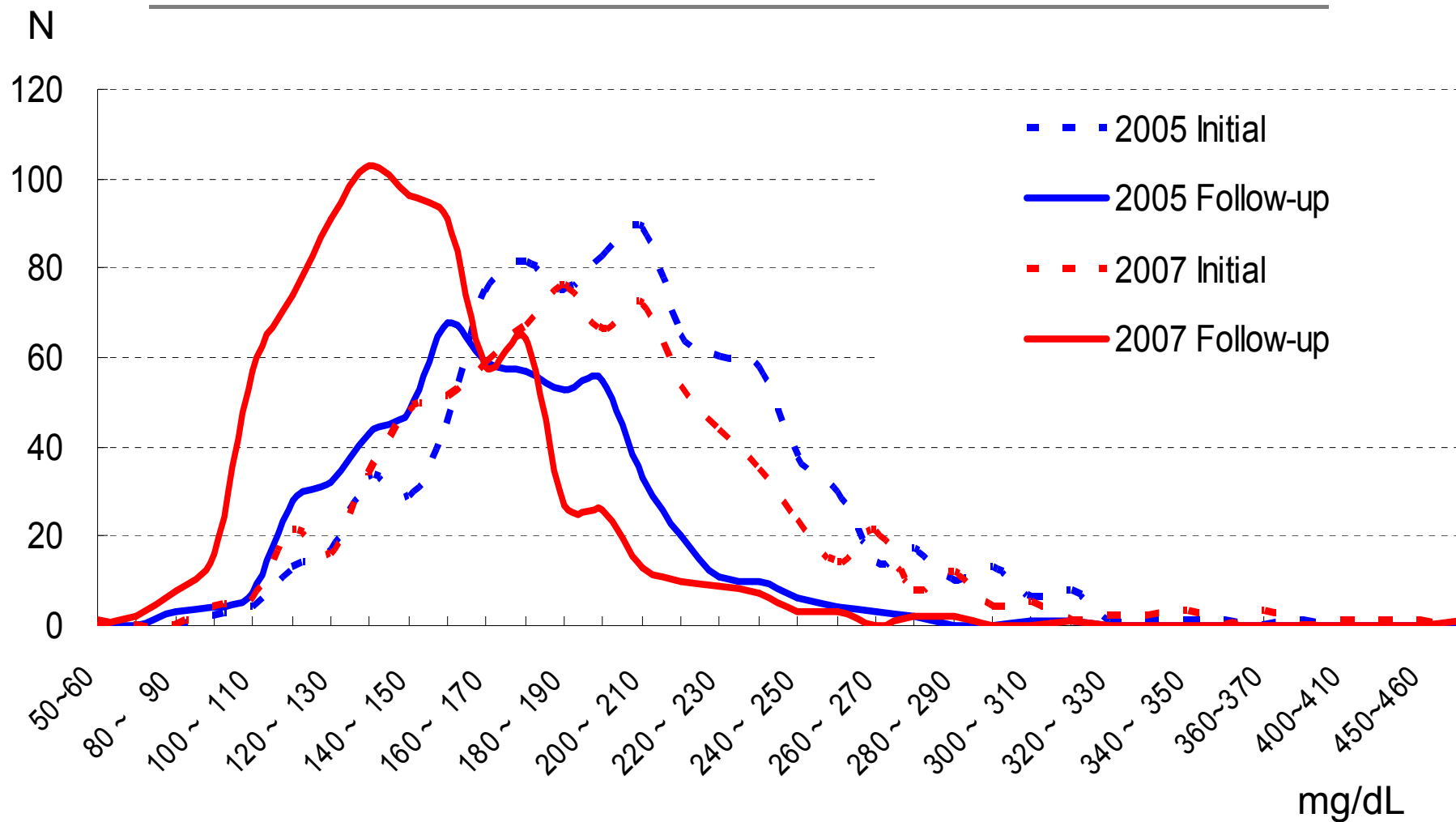
Lipid-lowering drug therapy according to the baseline LDL cholesterol level

Baseline LDL cholesterol	N	(%)	Lipid-lowering medication	N	(%)	Baseline LDL cholesterol	N	(%)	Lipid-lowering medication	N	(%)
≥ 100mg/dL	645	(78.5)	(+)	475	(73.6)	≥ 100mg/dL	462	(71.7)	(+)	461	(99.8)
			(-)	170	(26.4)				(-)	1	(0.2)
< 100mg/dL	177	(21.5)	(+)	64	(36.2)	< 100mg/dL	182	(28.3)	(+)	178	(97.8)
			(-)	113	(63.8)				(-)	4	(2.2)
≥ 130mg/dL	391	(47.6)	(+)	331	(84.7)	≥ 130mg/dL	241	(37.4)	(+)	241	(100.0)
			(-)	60	(15.3)				(-)	0	(0.0)
< 130mg/dL	431	(52.4)	(+)	208	(48.3)	< 130mg/dL	403	(62.6)	(+)	398	(98.6)
			(-)	223	(51.7)				(-)	5	(1.4)
Total	822	(100.0)	(+)	539	(65.6)	Total	644	(100.0)	(+)	639	(99.2)
			(-)	283	(34.4)				(-)	5	(0.8)

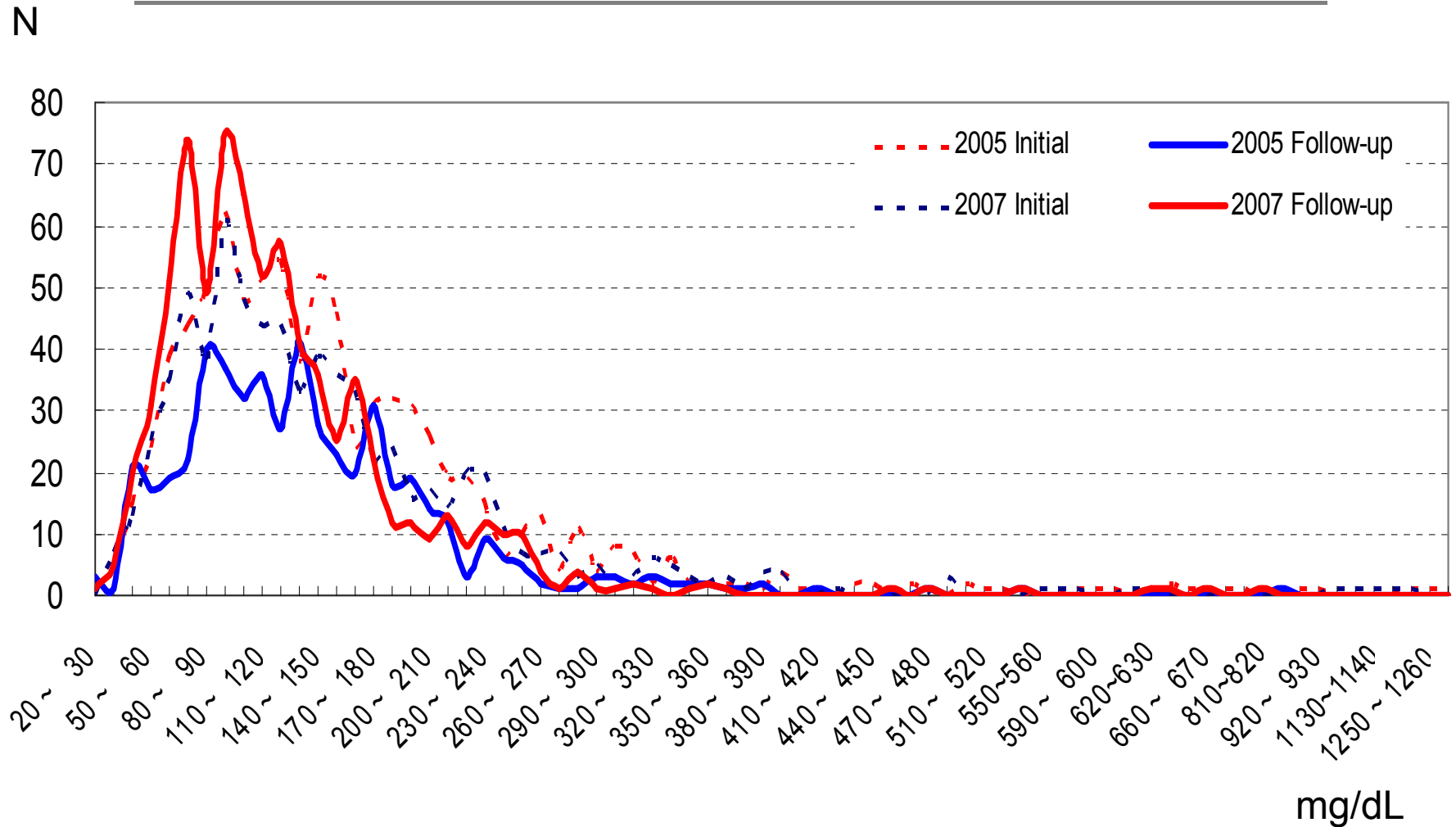
Change of LDL-C in Overall Patients at Initial & F/U Point



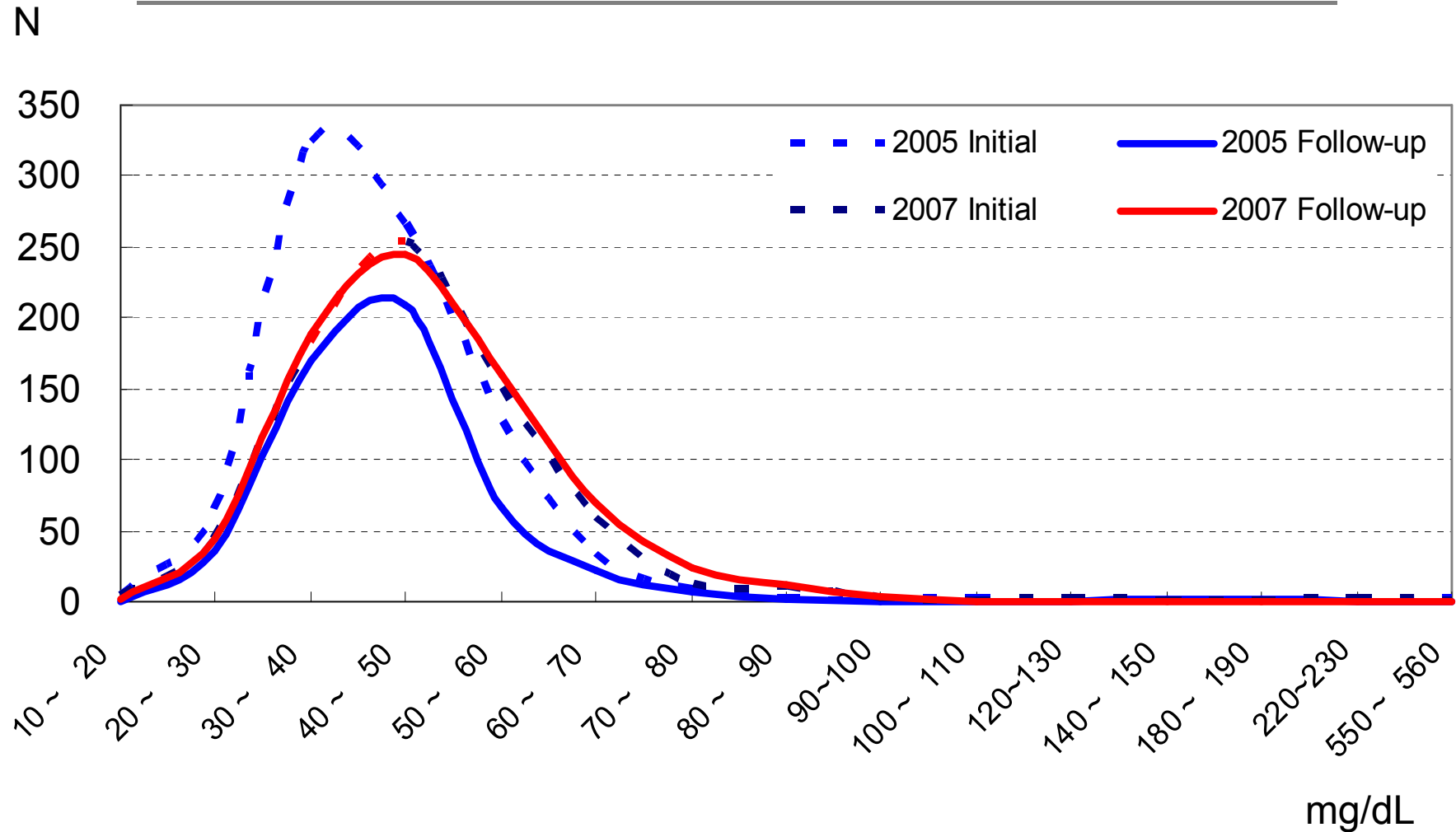
Change of TC in Overall Patients at Initial & F/U Point



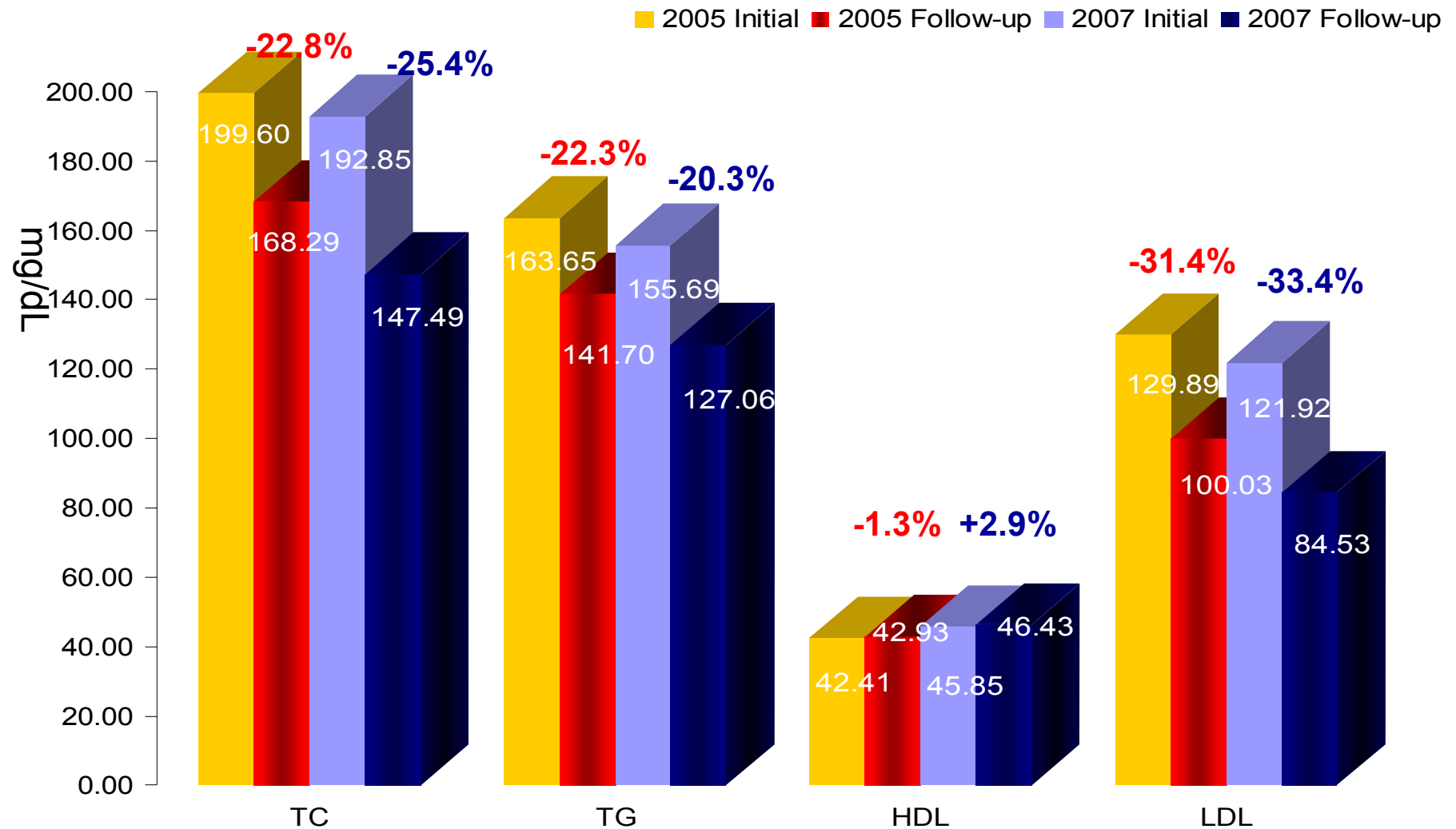
Change of Triglyceride in Overall Patients at Initial & F/U Point



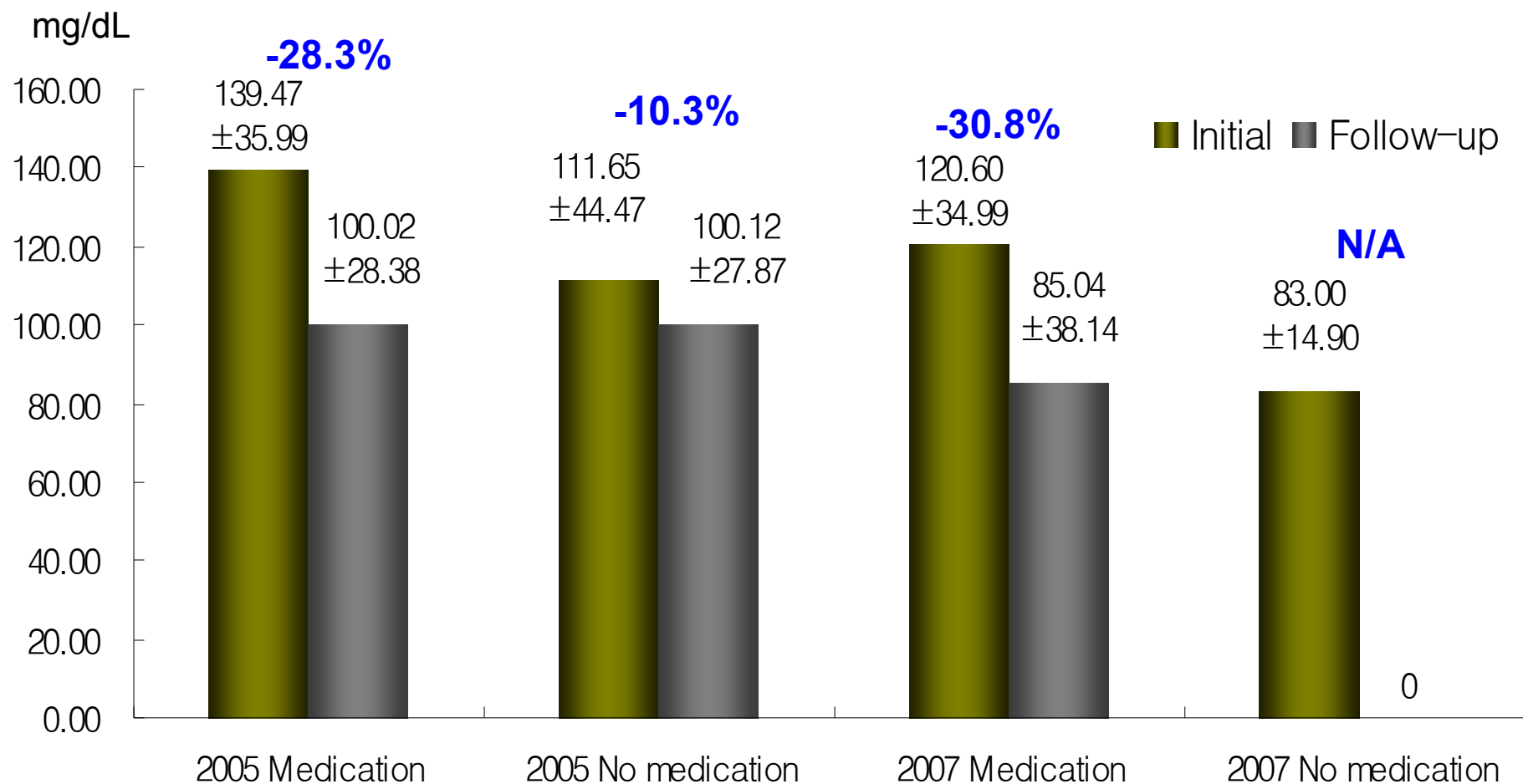
Change of HDL-C in Overall Patients at Initial & F/U Point



Change of Lipid Profile in Whole Pts. at Initial & F/U Point



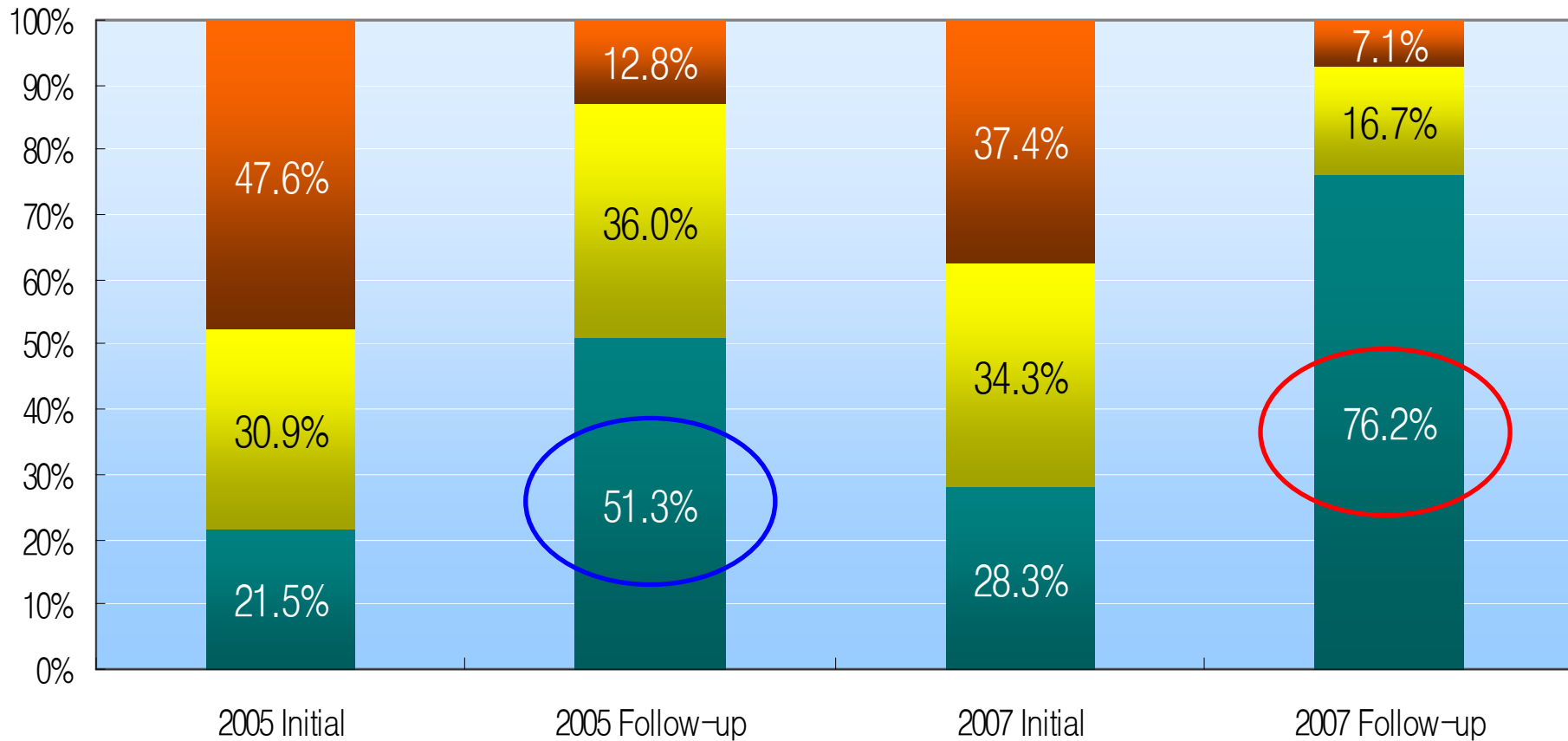
LDL-C Reduction with or without Lipid Lowering Medication



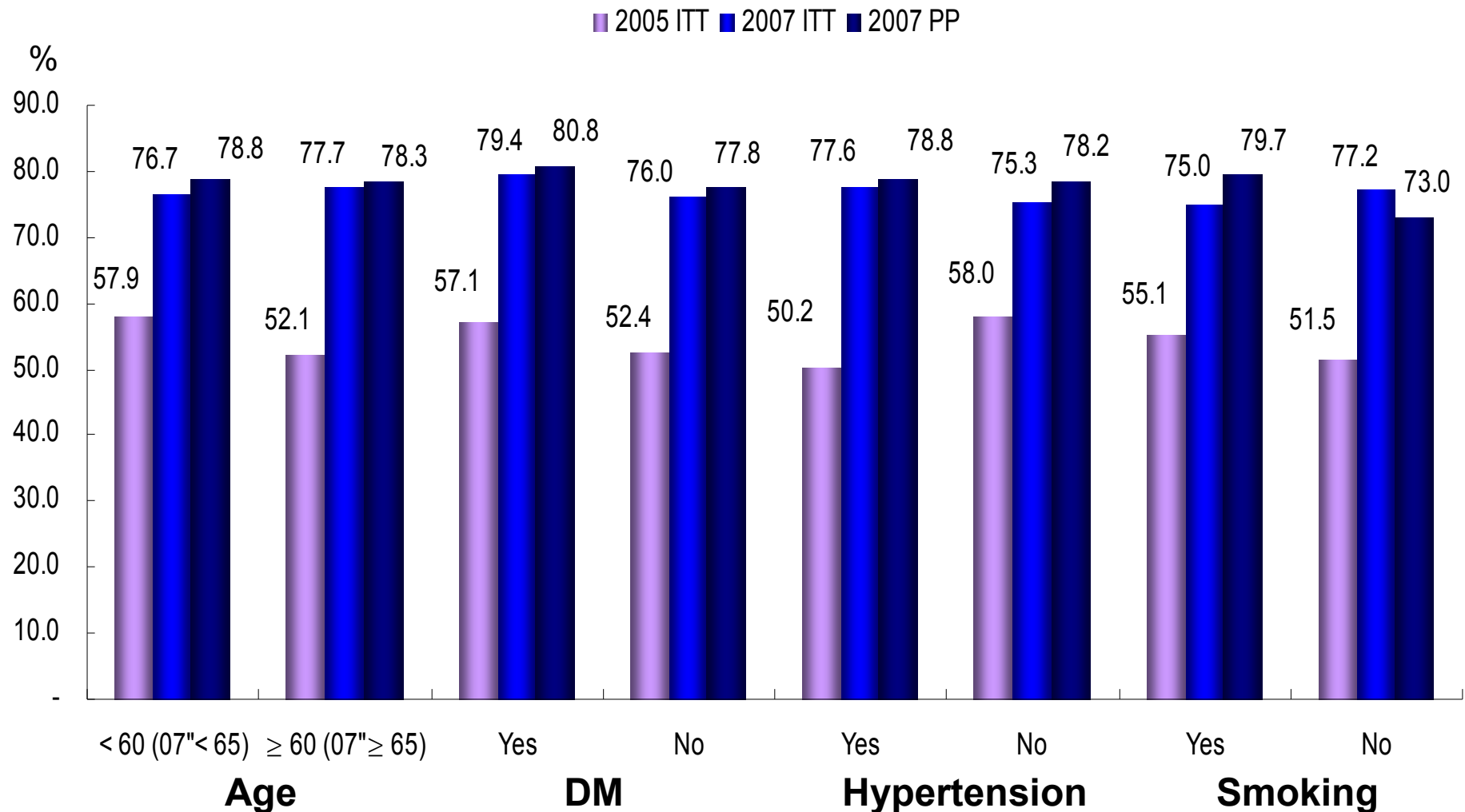
2004 VS 2007

LDL-C Distribution in Overall Patients at Initial & F/U Point

■ < 100mg/dL ■ ≥ 100 ~ < 130mg/dL ■ ≥ 130mg/dL

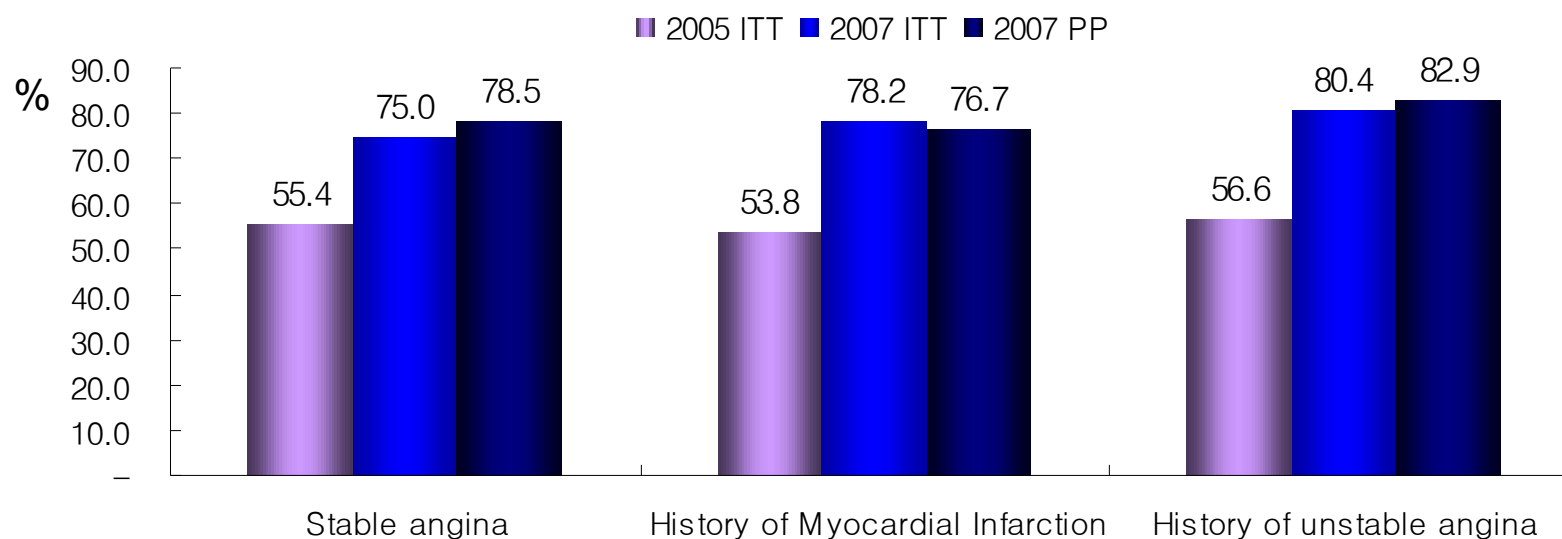


Rate of Target Goal achievement depending on Risk factors [LDL-C<100]



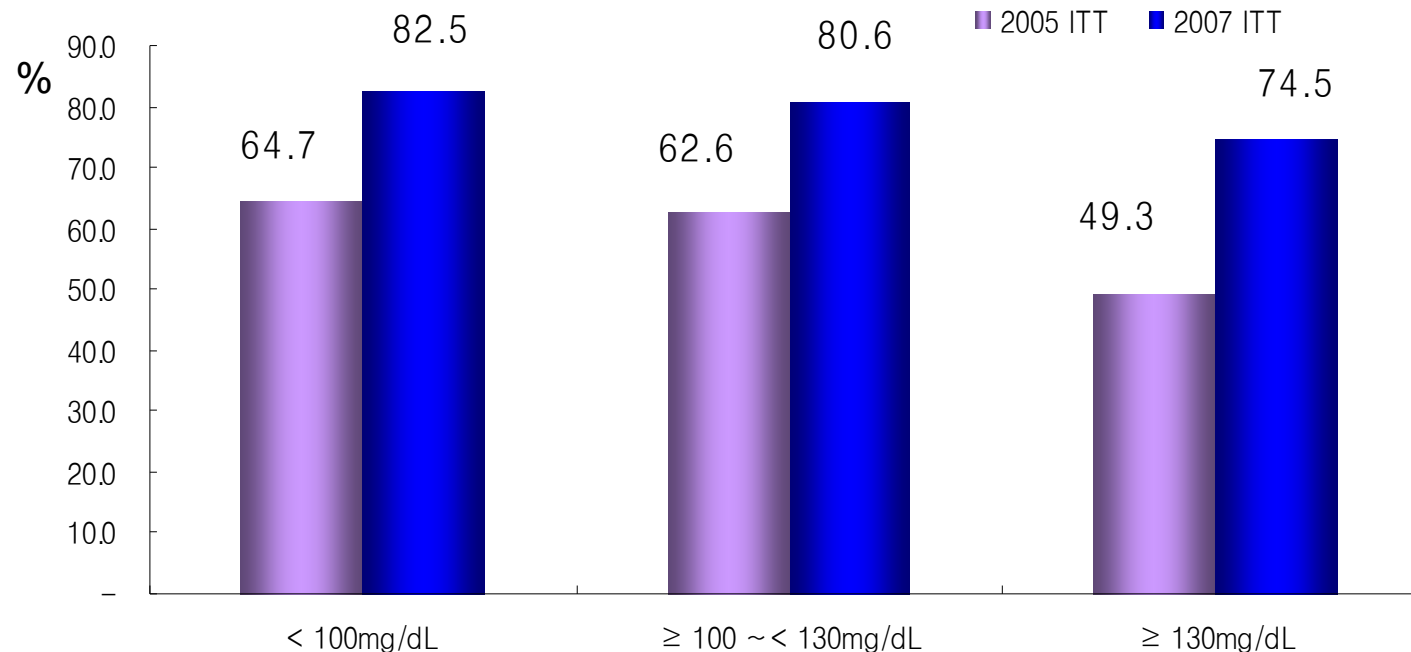
Rate of Target Goal achievement depending on CHD type [LDL-C<100]

CHD type	2004(ITT)			2007(ITT)			2007(PP)		
	Total N	Achievement N	(%)	Total N	Achievement N	(%)	Total N	Achievement N	(%)
Stable angina	195	108	55.4	76	57	75.0	65	51	78.5
- CAG-proven	163	90	55.2	75	57	76.0	-	-	N/A
- stress test only	14	6	42.9	1	-	-	-	-	N/A
History of Myocardial Infarction	199	107	53.8	211	165	78.2	180	138	76.7
History of unstable angina	83	47	56.6	250	201	80.4	199	165	82.9
Congestive heart failure	8	3	37.5	13	9	69.2	13	9	69.2
Others	13	9	69.2	53	41	77.4	48	36	75.0



Rate of Target Goal achievement depending on Baseline LDL-C [LDL-C < 100]

Baseline LDL-C	2004(ITT)			2007(ITT & PP)		
	Total N	Achievement N	(%)	Total N	Achievement N	(%)
< 100mg/dL	51	33	64.7	126	104	82.5
≥ 100 ~ < 130mg/dL	131	82	62.6	165	133	80.6
≥ 130mg/dL	282	135	49.3	200	149	74.5
Total	464	250	53.9	491	386	78.6



2004 VS 2007

Lipid lowering medication

Generic Name (중복 check)	2004		2007	
	N	(%)	N	(%)
Statin				
Rosuvastatin	-	(0.00)	369	(30.83)
Atorvastatin	209	(17.96)	350	(29.24)
Simvastatin	345	(29.64)	160	(13.37)
Pitavastatin	-	(0.00)	76	(6.35)
Pravastatin	172	(14.78)	55	(4.59)
Fluvastatin	-	(0.00)	26	(1.42)
Lovastatin	19	(1.63)	-	(0.00)
Others	7	(0.60)	-	(0.00)
Fenofibrate(Fibrate)	54	(4.64)	17	(3.26)
Others	1	(0.09)	39	(8.77)

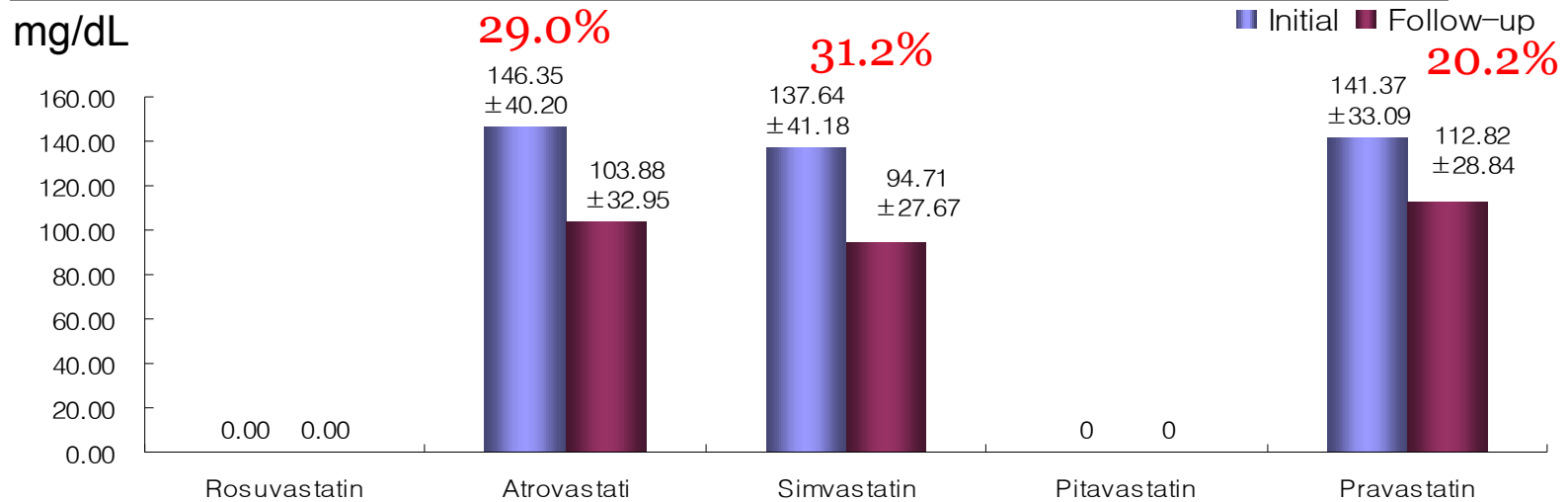
2004 VS 2007

Mean Dose of Various Statins at Initial Point

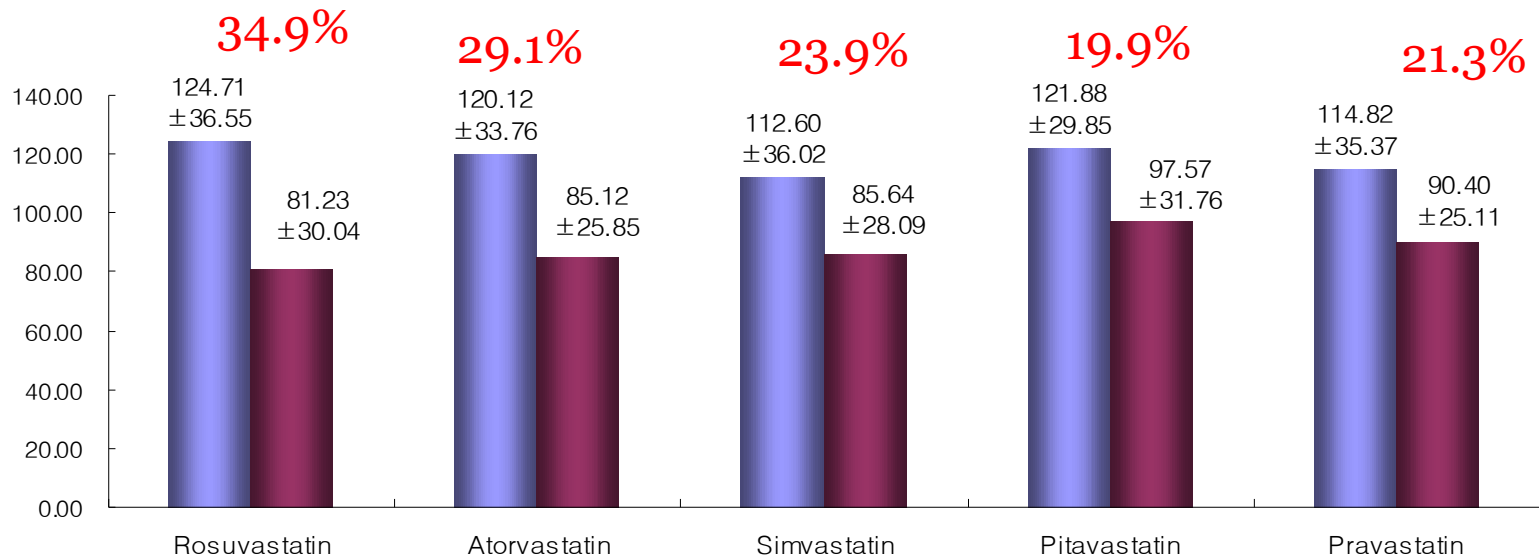
Statin	Mean dose	baseline LDL- C		Mean dose	baseline LDL-C	
	(mg/day)	(Mean ± SD)		(mg/day)	(Mean ± SD)	
		mg/dL			mg/dL	
Rosuvastatin	-	-	-	10.36	127.54	± 45.53
Atorvastatin	11.57	146.35	± 40.20	13.45	121.52	± 36.72
Simvastatin	20.65	137.64	± 41.18	21.11	114.48	± 40.70
Pitavastatin	-	-	-	1.99	121.88	± 29.85
Pravastatin	12.23	141.37	± 33.09	23.67	112.46	± 37.55
Fluvastatin	-	-	-	74	116.55	± 27.59
Fenofibrate	200	104.66	± 44.03	160	98.50	± 25.64
lovastatin	19.72	137.96	± 61.01	-	-	-

Change of LDL-C with Statins at Initial & F/U Point

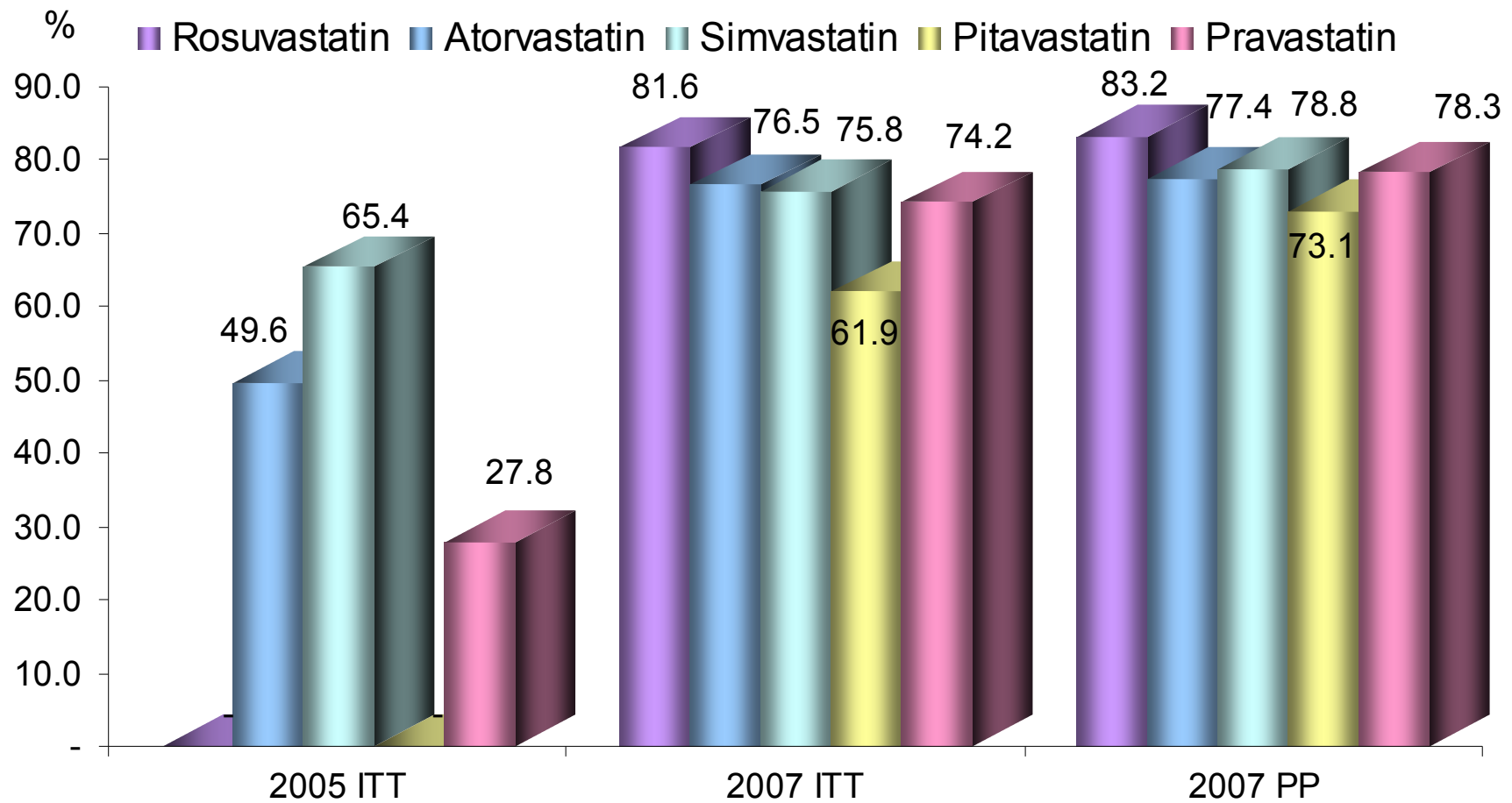
2004



2007

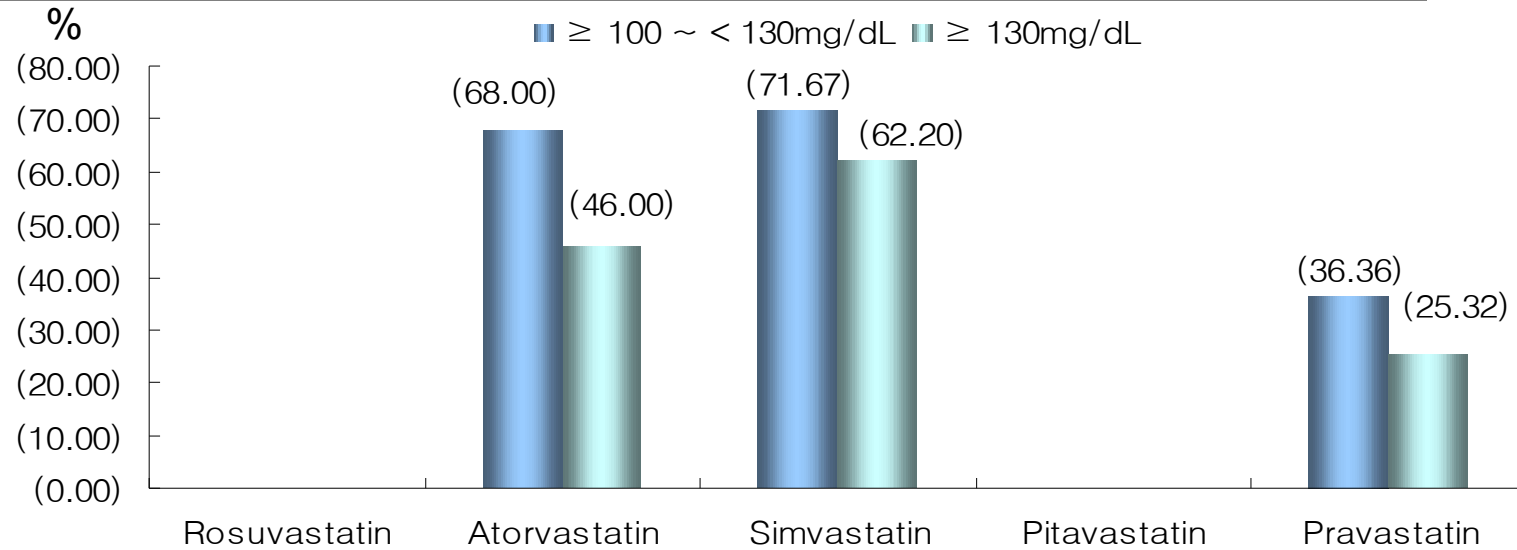


Rate of Target Goal achievement depending on LDL lowering medication [LDL-C < 100]

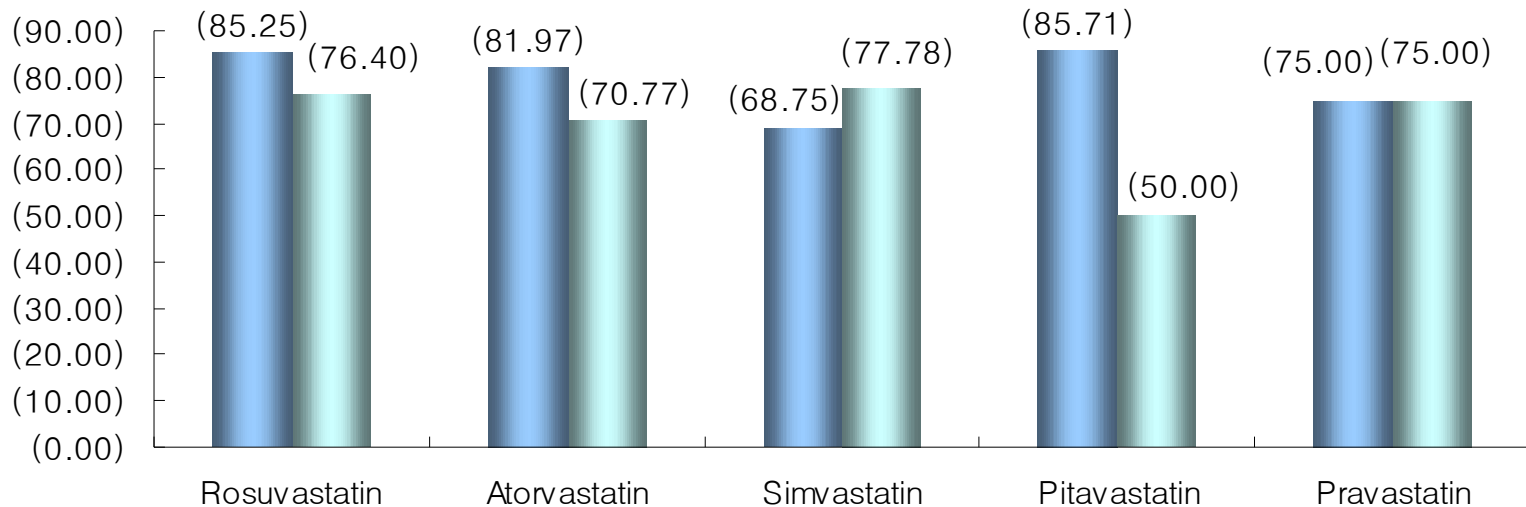


Rate of Target Goal Achievement by Statins [LDL-C < 100]

2004



2007



Logistic Regression

변수	Estimate	Standard		p-value	Odd Ratio	95% CL	
		Error				Lower	Upper
Intercept	2.2684	0.5088		<.0001			
Baseline LDL	-0.0151	0.0024		<.0001	0.9850	0.9800	0.9900
Smoking(1=유, 0=무)	-0.3907	0.1818		0.0317	0.6770	0.4740	0.9660
DM(1=유, 0=무)	0.0807	0.1727		0.6400	1.0840	0.7730	1.5210
Hypertension(1=유, 0=무)	-0.0946	0.1593		0.5526	0.9100	0.6660	1.2430
Atorvastatin	0.5701	0.3959		0.1499	1.7680	0.8140	3.8420
Fenofibrate	-0.0686	0.5475		0.9002	0.9340	0.3190	2.7300
Fluvastatin	0.3930	0.6334		0.5350	1.4810	0.4280	5.1260
Pitavastatin	0.8061	0.5878		0.1703	2.2390	0.7070	7.0860
Pravastatin	-0.4538	0.4270		0.2879	0.6350	0.2750	1.4670
Rosuvastatin	1.4489	0.4257		0.0007	4.2590	1.8490	9.8100
Simvastatin	0.8364	0.4032		0.0380	2.3080	1.0470	5.0870

Current status of management of hyperlipidemia for CAD patients in 2004 and 2007

- Rate of target goal achievement [LDL-C < 100mg/dl]
 - at presentation ; **20%(04')** vs **28%(07')** of patients
 - at F/U after management ; **50%(04')** vs **76%(07')** of patients
- Medication rate of lipid lowering drug
 - **58%(04')** vs **89.5%(07')** of CHD patients received
- LDL-C reduction rate
 - in pts with medication [$140 \pm 36 \rightarrow 100 \pm 28$ mg/dl] ; **30%(04')** vs [$122.2 \pm 40.2 \rightarrow 84.5 \pm 30.8$ mg/dl] ; **33%(07')**
 - in pts without medication [$112 \pm 44 \rightarrow 100 \pm 28$ mg/dl] ; **10%(04')** vs **N/A (07')**

Current status of management of hyperlipidemia for CAD patients in 2004 and 2007

Among treated CHD patients, only **55%(05')** vs **78.6%(07')** reached goal.

- Simvastatin user 65%(05') vs 75.8%(07')
- Atorvastatin user 50%(05') vs 76.5%(07')
- Pravastatin user 28%(05') vs 74.2%(07');n=32
- **New statin Rosuvastatin user 81.6%(07')**
- New statin Pitavastatin user 61.9%(07');n=42

Current status of management of hyperlipidemia for CAD patients in 2005 and 2007

"10-60% Rule"

	2005	2007
LDL-C reduction rate in pts without medication	10%	N/A
Rate of TGA at initial time point in CAD pts	20%	30%
LDL-C reduction rate in pts with medication	30%	33%
Rate of patients without lipid drugs	40%	10%
Rate of TGA at F/U time point in CAD pts	50%	75%
Rate of patients with lipid drugs	60%	90%

Current status of management of hyperlipidemia for CAD patients in 2004 and 2007

❑ Patients' aspect

- ✓ More educated patients : LSM, compliance
- ✓ More patients with ACS, HT, PCI
- ✓ Less patients with smoking

❑ Doctors' aspect

- ✓ More aggressive treatment with drugs
- ✓ Minor change of treatment guideline

❑ Society's aspect

- ✓ New powerful statins

Conclusion

- **Future requirements**
 - Doctors' effort of statin therapy (especially CHD/CHD risk equivalent patients)
 - Initial adequate dose
 - High potency drug
 - Combination therapy
 - Development and application of well-designed systematic care system
 - Drug adherence
 - Problem of medical insurance

Control more, Live longer without problem !

**2007 Study on Treatment Gap
of Management for Hyperlipidemia
in Korean Patients with Coronary Artery Disease**

(10 center follow-up study ; revisited, 2nd)

Thank you for your attention !!