

Cardiac rehabilitation in Germany and Europe

德国及欧洲的心脏康复-指导方针

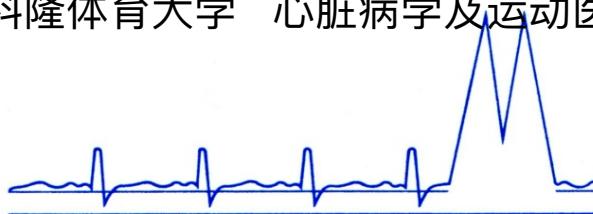


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Review

Cardiac rehabilitation in Germany 德国的心脏康复

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The purpose of this review is to give an overview of the rehabilitation measures provided for cardiac patients in Germany and to outline its legal basis and outcomes. In Germany the cardiac rehabilitation system is different from rehabilitation measures in other European countries. Cardiac rehabilitation in Germany since 1885 is based on specific laws and the regulations of insurance providers. Cardiac rehabilitation has predominantly been offered as an inpatient service, but has recently been complemented by outpatient services. A general agreement on the different indications for offering these two services has yet to be reached. Cardiac rehabilitation is mainly offered after an acute cardiac event and bypass surgery. It is also indicated in severe heart failure and special cases of percutaneous coronary intervention. Most patients are men (>65%) and the age at which events occur is increasing. The benefits obtained during the 3–4 weeks after an acute event, and confirmed in numerous studies, are often later lost under 'usual care' conditions. Many attempts have been made by rehabilitation institutions to improve this deficit by providing intensive aftercare. One instrument set up to achieve this is the nationwide institution currently comprising more than 6000 heart groups with approximately 120 000 outpatients. After coronary artery bypass grafting or acute coronary syndrome cardiac rehabilitation can usually be started within 10 days. The multidisciplinary rehabilitation team consists of cardiologists, psychologists, exercise therapists, social workers, nutritionists and nurses. The positive effects of cardiac rehabilitation are also important economically, for example, for the improvement of secondary prevention and vocational integration. *Eur J Cardiovasc Prev Rehabil* 14:18–27 © 2007 The European Society of Cardiology

European Journal of Cardiovascular Prevention and Rehabilitation 2007, 14:18–27

Keywords: cardiac rehabilitation, Germany, inpatient/outpatient rehabilitation

Cardiac Rehabilitation in Germany 德国心脏康复

Phase I 阶段 I

physical therapy and mobilization
in hospital stage 住院阶段物理治疗及活动

Phase II 阶段II

“inpatient or outpatient”
Rehabilitation immediately after myocardial infarction, heart surgery, etc.
“住院或门诊”
心肌梗塞、心脏手术之后立即开始康复

Phase III 阶段III

- Maintenance therapy
- life-long after-care at the patient's residence
- 维持疗法
- 患者出院后，在家终身坚持

To provide comprehensive cardiac care, a „*rehabilitation-road*“ for treatment subsequent to myocardial infarct, heart surgery or other severe cardiovascular diseases was developed in Germany.

为提供全面心脏护理，德国针对心肌梗死、心脏手术或其他严重心血管疾病，发展了后续的“**康复之路**”治疗。

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The rehabilitation starts at hospital stage (Phase I) and is continued immediately after the release from the hospital as an inpatient or outpatient rehabilitation in specialized rehab clinics (Phase II).

康复始于住院阶段（阶段I），出院后立即在康复诊所以门诊或住院形式（阶段II）继续开展。

Rehabilitation phase III serves lifelong after-care at the patient's residence.

康复阶段III需要患者在家做长期康复治疗。

Here, the patient gets the chance to ensure the success of the Phase II rehabilitation in a heart-group.

此时，患者尝试在心脏小组中维持康复阶段II所取得的成效。

Cardiac Rehabilitation in Germany 德国心脏康复

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“住院或门诊”

心肌梗塞、心脏手术之后立即开始康复

In hospital stage 住院阶段

Phase II cardiac rehabilitation

阶段II 心脏康复

Residential 住院
(in-Patient)

Ambulatory 门诊
(out-Patient)

Phase III 阶段III

- Maintenance therapy
- life-long after-care at the patient's residence
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- 患者出院后，在家终身坚持

Intensive after-rehab-care

出院后加强康复护理

IRENA

出院后强化康复

KARENA

出院后心脏康复

INA

出院后强化

Heart group 心脏小组

Phase II of cardiac rehabilitation in Germany

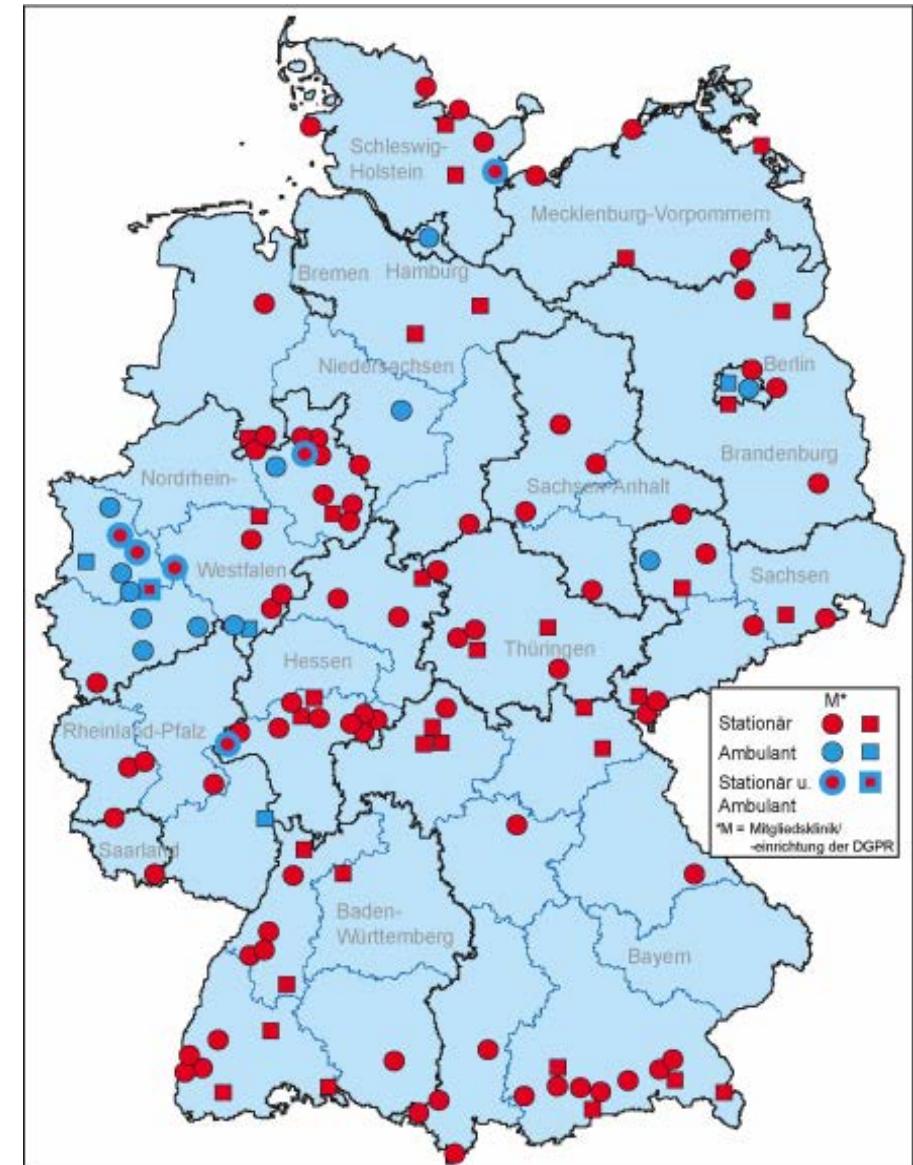
德国心脏康复阶段II



>160 rehab clinics
currently provide **Phase II**
rehabilitation in Germany

德国现有160多家康复诊
所提供阶段II康复服务。

- Residential 住院
- ambulatory 门诊
- residential and 住院兼门诊
ambulatory



Phase II of cardiac rehabilitation in Germany

德国心脏康复阶段II

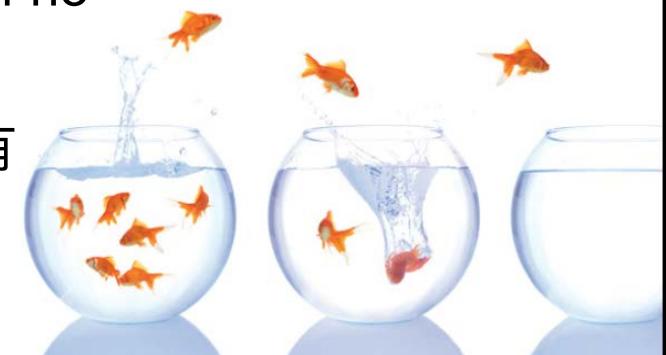


According to German health law, patients have the right to in- or outpatient phase II rehabilitation subsequent to myocardial infarct, PCI, heart surgery, or other severe cardiovascular diseases.

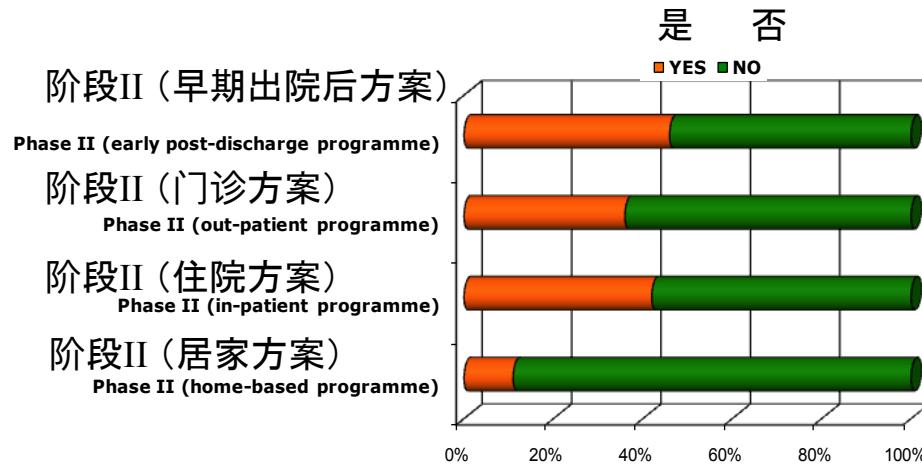
根据德国卫生法规，患者在心肌梗塞、经皮冠状动脉介入治疗（PCI）、心脏手术或其他严重心血管疾病后，有权选择后续阶段II住院或门诊康复治疗。

Necessary measures are paid for by either retirement insurance or health insurance provider, or by social aid if no other provider happens to be responsible.

必要治疗由养老保险或医疗保险承保人支付费用，如没有其他承保人则由社会救助支付。



National legislation/law(s) regarding phase II cardiac rehabilitation in Europe 欧洲关于心脏康复阶段II的国家级法律/法规



In 13 countries (46%), national legislations or laws regarding phase II cardiac rehabilitation are existent.

针对心脏康复阶段II，13个国家（46%）有国家法律或法规。



Phase II of cardiac rehabilitation in Germany costs of phase II rehabilitation program

德国心脏康复阶段II

康复方案阶段II 费用

→ Health insurance providers 医疗保险承保人

The aim of phase II rehabilitation is to prevent impending disability or need for nursing, *to extinguish them after occurrence, to improve the condition, or to merely prevent it from getting worse – secondary prevention.*

康复阶段II的目标是防止出现残疾或丧失独立能力，防患于未然，改善身体状况，或防止状况恶化 – 二级预防。

From an economic perspective, the resulting costs of a disease or disability can especially be reduced by cutting the costs of outpatient clinical treatment.

从经济角度看，疾病或残疾的花费可通过削减门诊临床治疗而大幅降低。

[Bundesarbeitsgemeinschaft für Rehabilitation (BAR): Rahmenempfehlungen zur ambulanten kardiologischen Rehabilitation vom 20.Oktobe 2000. Frankfurt am Main, 2001]

Phase II of cardiac rehabilitation in Germany costs of phase II rehabilitation program

德国心脏康复阶段II 康复方案阶段II 费用

→ Retirement insurance provider 养养老保险承保人
“rehab before an early retirement „ ”提前退休之前做康复“

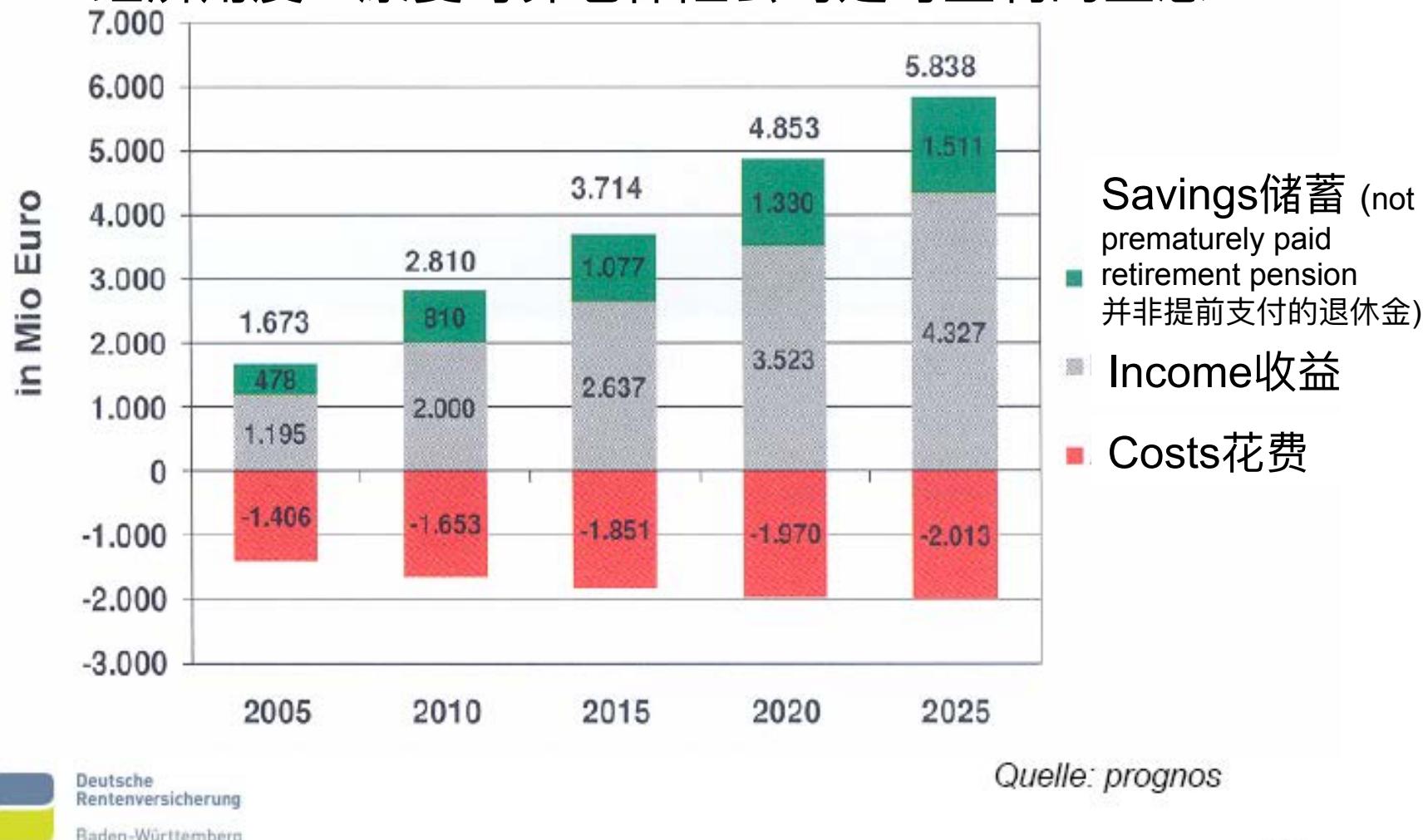
The aim of Phase II rehabilitation is to counteract or overcome the disease's consequences for the patient's ability to work.
康复阶段II的目标是消除疾病的影响，如患者丧失工作能力等。

The retirement insurance provider grants medical rehabilitation measures before they start paying pension due to reduced working capacity.
因工作能力下降，养老保险承保人支付退休金之前，也认可医学康复措施。

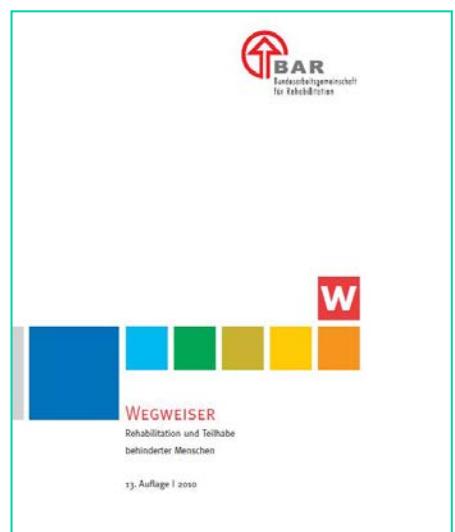
[Bundesarbeitsgemeinschaft für Rehabilitation (BAR): Rahmenempfehlungen zur ambulanten kardiologischen Rehabilitation vom 20.Oktobe 2000. Frankfurt am Main, 2001] 联邦康复工会：于2000年10月20日在法兰克福

Economic perspective: Rehab is a profitable business for the retirement insurance companies

经济角度：康复对养老保险公是可盈利的生意



Cardiac rehabilitation in Germany guidelines, position papers and more 德国心脏康复指南、意见书等



Clin Res Cardiol Suppl 2/II/1-II/54 (2007)
DOI 10.1007/s11789-007-0001-0

LEITLINIE

Deutsche Leitlinie zur Rehabilitation von Patienten mit Herz-Kreislauferkrankungen (DLL-KardReha)

Reha-Qualitätssicherung der Deutschen Rentenversicherung

Reha-Therapiestandards
Koronare Herzkrankheit

→ Leitlinie für die medizinische Rehabilitation der Rentenversicherung

Deutsche Rentenversicherung
Rehabilitation - mit Sicherheit Qualität

Stand: Oktober 2009

Clin Res Cardiol Suppl 4/1-44 (2009)
DOI 10.1007/s11789-009-0078-8

LEITLINIE

Leitlinie körperliche Aktivität zur Sekundärprävention und Therapie kardiovaskulärer Erkrankungen

Reha-Qualitätssicherung der Deutschen Rentenversicherung

Strukturqualität von Reha-Einrichtungen – Anforderungen der Deutschen Rentenversicherung

→ Stationäre medizinische Reha-Einrichtungen

KTL

Klassifikation therapeutischer Leistungen in der medizinischen Rehabilitation

Ausgabe 2007 mit CD-ROM

Deutsche Rentenversicherung
Rehabilitation - mit Sicherheit Qualität

Trägerübergreifende Zusammenarbeit – Koordinierung und Kooperation

Die Bundesarbeitsgemeinschaft für Rehabilitation (BAR) ist die gemeinsame Repräsentanz der Verbände der Rehabilitationsinstitute, der Bundesagentur für Arbeit, des Bundesländer, der Spitzenverbände der Sozialpartner sowie der Kassenärztlichen Bundesvereinigung zur Förderung und Koordinierung der Rehabilitation und Teilhabe behinderter Menschen

ISSN 0933-8462



Deutsche Leitlinie zur Rehabilitation von Patienten mit Herz-Kreislauferkrankungen (DLL-KardReha)

Recommendations推荐:

Cardiac rehabilitation after coronary bypass surgery.

(I, A).

冠状动脉搭桥手术后的心脏康复。(I, A).

Cardiac rehabilitation after myocardial infarction (STEMI or NSTEMI) and/or interventional therapy.

(I, A).

心肌梗塞(STEMI急性心肌梗死 or NSTEMI非ST段抬高心肌梗死)后的心脏康复和/或介入治疗。(I, A).

Effect of early short-term cardiac rehabilitation after acute ST-elevation and non-ST-elevation myocardial infarction on 1-year mortality.

急性ST段抬高的心梗和非ST段抬高的心梗之后，早期短期心脏康复对1年死亡率的影响。

Junger et al. Curr Med Res Opin 2010 Apr;26(4):803-11

ACOS-Register (“observational, prospective Acute Coronary Syndromes”)

ACOS-登记 (“观察，预期急性冠脉综合征”)

Retrospective randomized Cohort-Study in Germany,

data from ACOS Register,

n = 4547 (STEMI n = 2432; NSTEMI n = 2115),

collected in 155 German hospitals in 2000 to 2002,

follow up 1 Year

德国回顾随机队列研究，ACOS登记数据，n = 4547 (ST段抬高心梗 n = 2432；非ST段抬高心梗 n = 2115)，2000年至2002年间收集的155家德国医院数据，跟踪期1年

Objective of the Study 研究目标：

to analyze the effect of 3 week phase II cardiac rehabilitation on clinical development in the first year after STEMI or NSTEMI.

ST段抬高心梗或非ST段抬高心梗后的第一年，分析3周心脏康复阶段II对临床发展的影响。

Effect of early short-term cardiac rehabilitation after acute ST-elevation and non-ST-elevation myocardial infarction on 1-year mortality.

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Junger et al. Curr Med Res Opin 2010 Apr;26(4):803-11

CAD-patients with STEMI (67.8%) more often attend cardiac rehabilitation compared to NSTEMI-Patients (52.3%)

患ST段抬高心梗（67.8%）的心脏病患者，比非ST段抬高的心梗患者（52.3%）更常做心脏康复

	cardiac rehab 心脏康复 (n)	no cardiac rehab 没有心脏康复(n)	P P值	OR 比值比
STEMI ST段抬高心梗				
Cases of death 死亡案例	3.2 % (52)	13.0 % (102)	< 0.001	0.41 (0.28-0.60)
MACCE 心脏及脑血管的主要不良事件	7.4 % (122)	16.5 % (122)	< 0.001	0.66 (0.49-0.89)
NSTEMI 非ST段抬高心梗				
Cases of death 死亡案例	4.8 % (53)	12.6 % (127)	< 0.001	0.53 (0.38-0.76)
MACCE 心脏及脑血管的主要不良事件	8.1 % (90)	15.1 % (152)	< 0.001	0.73 (0.55-0.98)

STEMI ST-evaluation-myokardial-infarction; NSTEMI non-ST-evaluation-myokardial-infarction; MACCE : major adverse cardiac and cerebrovascular events (death, re-infection, stroke); OR odds ratio

Retrospective randomised Cohort-Study in Germany, 德国回顾随机队列研究,
data from ACOS Register, n = 4547 collected 155 German hospitals in 2000 to 2002

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Junger et al. Curr Med Res Opin 2010 Apr;26(4):803-11

Results 结果:

- ✓ age (>70 years) and a history of earlier myocardial infarction were independent predictors for **not attending** phase II cardiac rehabilitation
- ✓ 年龄 (> 70岁) 有早期心梗史，是**不参与**心脏康复阶段II的独立预测因素
- ✓ early revascularization (<48 hours after admission to hospital) was a predictor for attending phase II cardiac rehabilitation
- ✓ 早期血运重建（入院<48小时，是**参与**心脏康复阶段II的预测因素）

Main objectives of phase II cardiac rehabilitation

心脏康复阶段II的主要目标

Improve overall quality of life 提升整体生活品质:

- ✓ reduce cardiac pain/disorders 减少心脏疼痛/心脏疾患
- ✓ improve functional and physical capacity 改善功能和体质
- ✓ improve psychological well-being (coping with the disease)
- ✓ 改善心理健康 (应对疾病)
- ✓ improve social and occupational re-integration 促进社会和职业重组

Improve prognosis 改善预后:

- ✓ prevention und risk reduction
- ✓ 预防并减少风险
- ✓ reduce morbidity 减少发病率
- ✓ reduce mortality 减少死亡率

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LEITLINIE

Deutsche Leitlinie zur Rehabilitation von
Patienten mit Herz-Kreislauferkrankungen
(DLL-KardReha)

Reduce Costs 减少花费:

- ✓ improve patients compliance 提高患者依从
- ✓ reduce/avoide hospitalisation 减少/避免住院治疗
- ✓ avoide premature retire and/or need for home care
- ✓ 避免过早退休及/或需要家庭看护

Phase II cardiac rehabilitation in Germany

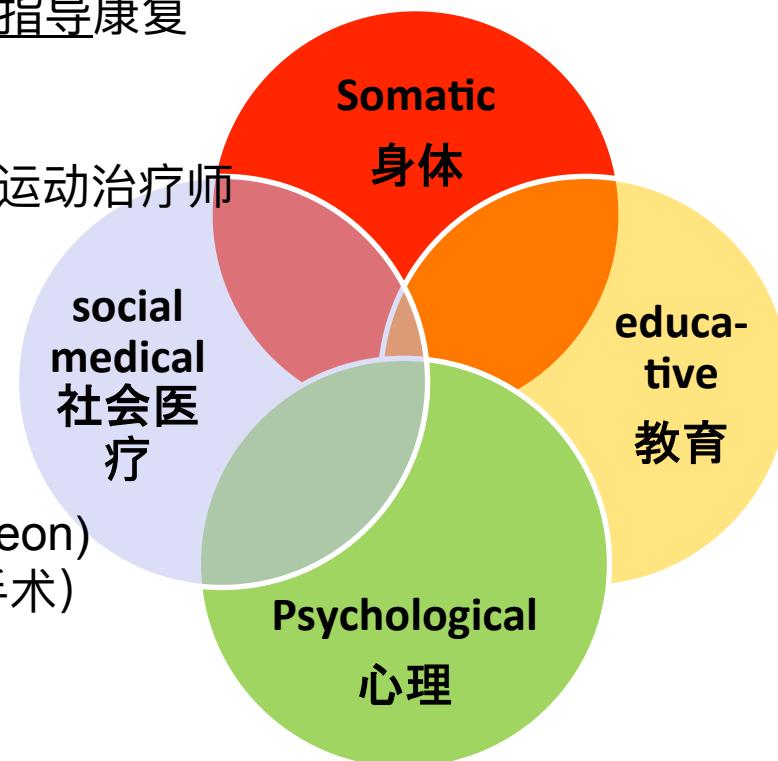
德国心脏康复阶段II

The **comprehensive** rehabilitation program includes **somatic, educative, psychological, and social medical elements** that are ensured by an interdisciplinary rehabilitation team.

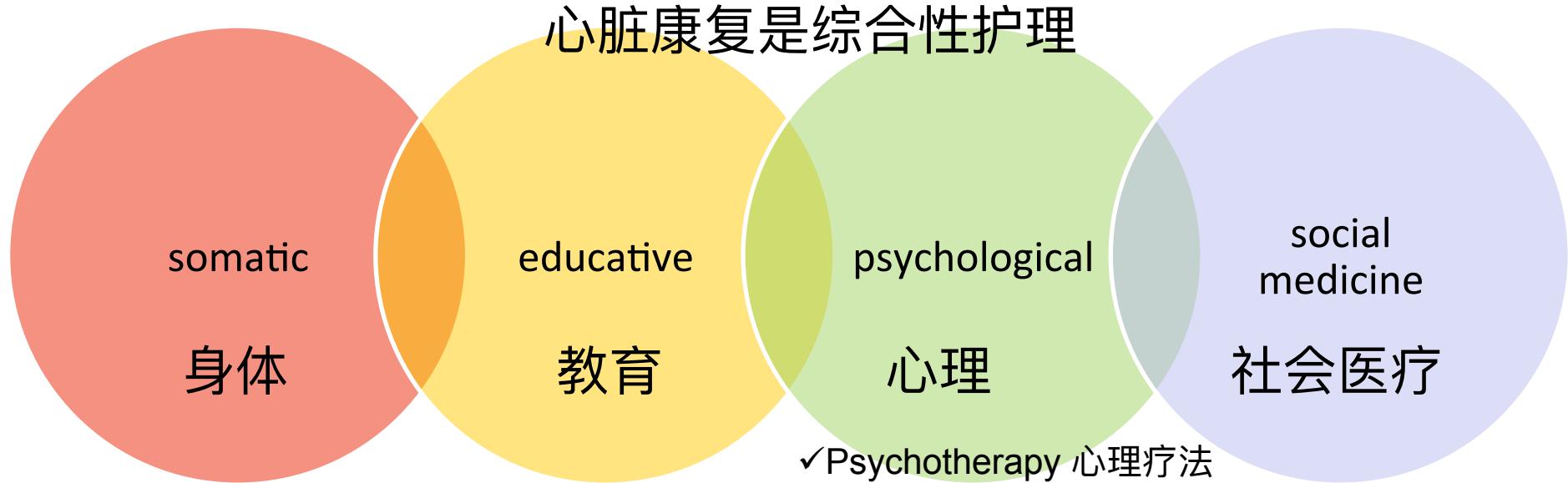
全面康复方案包括身体的、教育的、心理的及社会医学因素，由跨学科康复团队提供保证。

The interdisciplinary rehabilitation team 跨学科康复团队:

- The rehab is supervised by cardiologists 心脏病专家指导康复
- additional physicians 更多医生
- nursing staff 护理人员
- physiotherapist and exercise therapist 物理治疗师及运动治疗师
- Psychologist 心理学家
- Dietician 营养学家
- occupational therapist 职业治疗师
- social services expert 社会服务专家
- consultant professionals 专业咨询
(i.e. internist, neurologist, diabetologist, cardiac surgeon)
(比如内科医生、神经学家、糖尿病专科医生、心脏手术)



Cardiac rehabilitation a comprehensive care



- ✓ medical diagnostic, therapy and care
- ✓ 医疗诊断、治疗和护理
- ✓ Physiotherapy 理疗
- ✓ physical therapy
- ✓ 物理治疗
- ✓ exercise therapy
- ✓ 运动疗法
- ✓ ...

- ✓ Information 信息
- ✓ Motivation 积极性
- ✓ education and training 教育和培训
- ✓ ...

- ✓ Psychotherapy 心理疗法
- ✓ stress management training 压力管理训练
- ✓ relaxation training
- ✓ 放松训练
- ✓ critical incident stress debriefing
- ✓ 危机事件紧急晤谈
- ✓ coping with the disease 应对疾病
- ✓ depression, Anxiety
- ✓ 抑郁、焦虑
- ✓ ...

- ✓ occupational therapy 职业疗法
- ✓ social therapy
- ✓ 社会疗法
- ✓ functional therapy
- ✓ 功能性疗法
- ✓ ...

Phase III 阶段III maintenance therapy 维持疗法

- life-long after-care at the patient's residence 患者出院后，在家终身坚持

Special indications such as long-term work incapacity may require employed patients to attend intensified after-care programs at home for a limited amount of time.

特殊适应症，比如长期没有工作能力，需要受雇患者一段时间内，在家做出院后的强化康复。

IRENA

8 weeks 8周

1-2 units á 90-120 minutes
per week
1-2单元，每周90-120分钟

All costs are carried by the patient's
retirement / health insurance.

所有费用都可由患者的退休/医疗保险
支付。

Heart-Group 心脏小组

12- 24 months including 90 units á 60-90 minutes (Lifelong)

12-24个月包括90个单元，60-90分钟（终身）

Retirement/ health insurance providers 退休/医疗保险承保人

- intensified rehab-aftercare-programs to secure/stabilize job-related rehabilitation success and the reintegration into working life/social life immediately (at latest 3 months) after phase II rehabilitation
- 出院后的强化康复项目，可以确保/稳定与工作相关的康复成果，康复阶段II之后，让患者立刻重回工作生活/社会生活（最迟三个月）。

IRENA

8 weeks 8周

1-2 units á 90-120 minutes per week

1-2单元，90-120分钟/周

- ✓ Aerobic exercise training 有氧运动训练
- ✓ resistance exercise training 抗阻训练
- ✓ physical therapy 物理治疗
- ✓ problem-oriented group work (for instance non-smoker's training, overweight groups, stress management groups) 以问题为导向的小组作业（比如，非吸烟者的训练、肥胖组、压力管理组）
- ✓ information, motivation, and education (dietetic consulting, cooking lessons (if necessary), fostering of motivation)
- ✓ 信息、积极性和教育（饮食咨询、烹饪课程（如有必要）、培养积极性）

Phase III 阶段III

• Maintenance therapy 维持疗法

- life-long after-care at the patient's residence

• 患者出院后在家长期坚持

Heart-Group

心脏小组

< 6000 Groups in Germany

德国 < 6000组

Organization and administration 组织和管理:

- regular sport clubs, health-oriented sport clubs, rehab institution etc.
- 一般体育俱乐部、健康为导向的运动俱乐部、康复机构等。
- Institutions have to get licensed to bill insurance companies for their services.
- 机构需要获得认证，就自己的服务为保险公司提供账单。

Rehab team: sport therapist, physician, (*nutritionists, psychologists, social workers*)

康复团队：运动治疗师、医生（营养学家、心理学家、社会工作者）

Finances 财务:

-health insurance or/and retirement insurance providers subsidized participation (a minimum 90 units; 7 Euro for each patient/units).

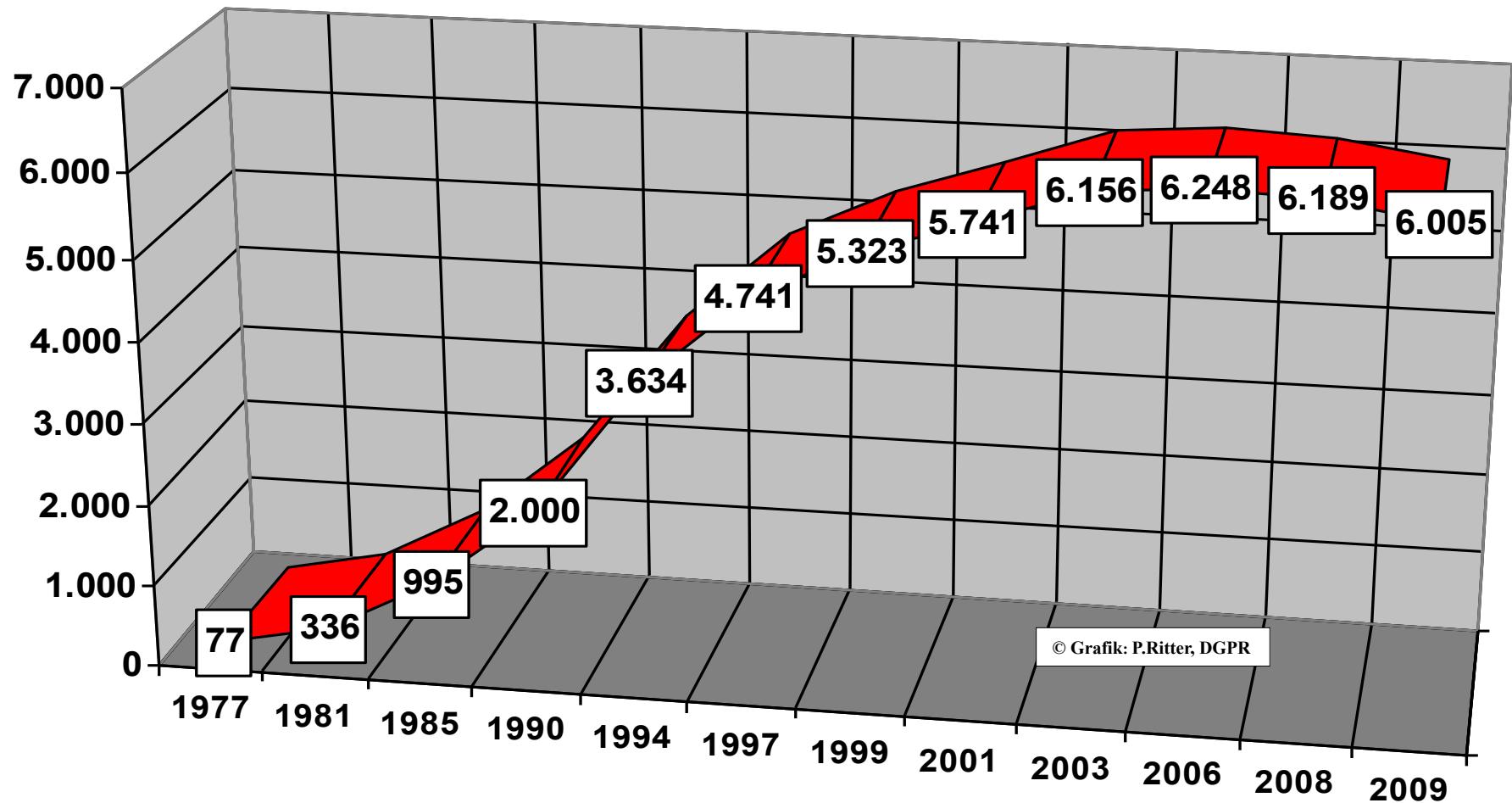
-医疗保险或/和养老保险承保人补贴（最少90个单元；每位患者7欧元/单元）。

-patient himself

-患者自己

Development heart groups in Germany

德国心脏小组的发展



Long term results of maintenance therapy in heart groups - Case-Control Study

心脏小组案例对照研究，维持疗法的长期效果

In summary the results show:

总的结果显示：

- *significantly improved exercise tolerance in the heart group*

心脏小组可显著提高运动耐力

- *heart group members had significantly lesser cardiac pain/discomfort,*

心脏小组成员明显较少出现心脏疼痛/不舒服

- *significantly lesser moderate to severe stress induced angina pectoris,*

明显较少出现压力导致的中度至重度心绞痛

- *lower need for cardiac medication.* 对心脏药物需求较少

- *cardiac morbidity was reduced by 54%.* 心脏发病率减少了54%

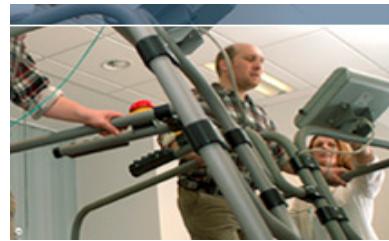
- *the costs for medical care were lowered by 47% in the heart group.*

- 心脏小组里医疗护理费用减少了47%。

(Buchwalsky et al. Z Kardiol 91 (2002), 139-46)

Cardiac Rehabilitation in Europe

欧洲心脏康复



European Cardiac Rehabilitation Inventory Survey (ECRIS)

欧洲心脏康复现况调查

 Wolters Kluwer
Health | Lippincott
Williams & Wilkins



Original Scientific Paper

欧洲心脏康复：欧洲心脏 康复现况调查结果

Cardiac rehabilitation in Europe: results from the European Cardiac Rehabilitation Inventory Survey

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European Association of Cardiovascular Prevention and Rehabilitation

Eur J Cardiovasc Prev Rehabil. 2010;17:410-8

Countries participating 参与国家

Responder rate 72%

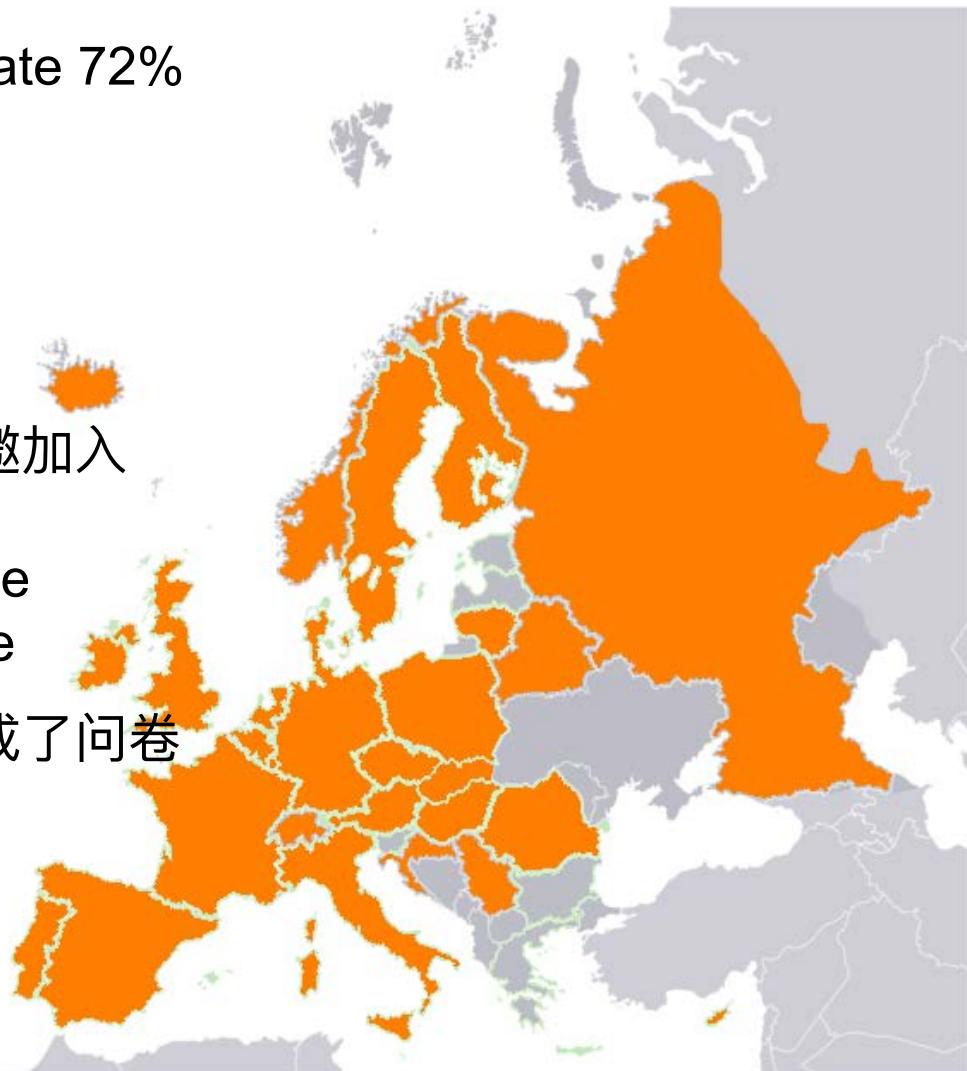
响应率 72%

39 countries
invited to
participate

39个国家受邀加入

28 countries
completed the
questionnaire

28个国家完成了问卷



- Austria 奥地利
- Belarus 白俄罗斯
- Belgium 比利时
- Croatia 克罗地亚
- Cyprus 塞浦路斯
- Czech Republic 捷克共和国
- Denmark 丹麦
- France 法国
- Finland 芬兰
- Germany 德国
- Hungary 匈牙利
- Iceland 冰岛
- Ireland 爱尔兰
- Italy 意大利
- Lithuania 立陶宛
- Luxembourg 卢森堡
- Netherlands 荷兰
- Norway 挪威
- Poland 波兰
- Portugal 葡萄牙
- Romania 罗马尼亚
- Russian Federation 俄罗斯
- Serbia 塞尔维亚
- Slovak Republic 斯洛伐克共和国
- Spain 西班牙
- Sweden 瑞典
- Switzerland 瑞士
- United Kingdom 英国

Countries participating 参与国家

Representing 72% of all
the European country
members of the ESC

代表72%的欧洲经济社会
委员会成员国

Including
> 600 million inhabitants
> 80% of the total
population

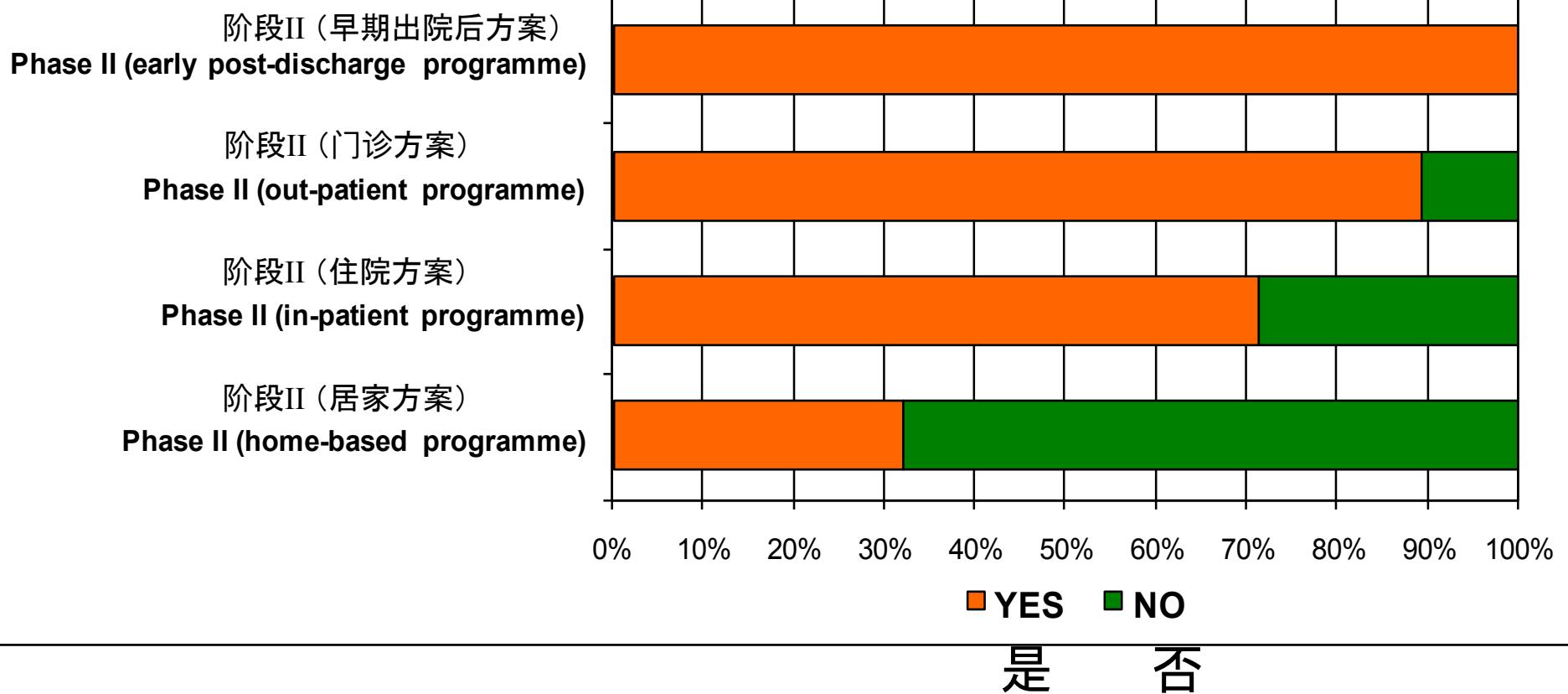
包括
> 6亿居民

> 总人口的80%



- Austria 奥地利
- Belarus 白俄罗斯
- Belgium 比利时
- Croatia 克罗地亚
- Cyprus 塞浦路斯
- Czech Republic 捷克共和国
- Denmark 丹麦
- France 法国
- Finland 芬兰
- Germany 德国
- Hungary 匈牙利
- Iceland 冰岛
- Ireland 爱尔兰
- Italy 意大利
- Lithuania 立陶宛
- Luxembourg 卢森堡
- Netherlands 荷兰
- Norway 挪威
- Poland 波兰
- Portugal 葡萄牙
- Romania 罗马尼亚
- Russian Fed. 俄罗斯
- Serbia 塞尔维亚
- Slovak Republic 斯洛伐克共和国
- Spain 西班牙
- Sweden 瑞典
- Switzerland 瑞士
- United Kingdom 英国

Phase II cardiac rehabilitation currently offered 现行心脏康复阶段II提供

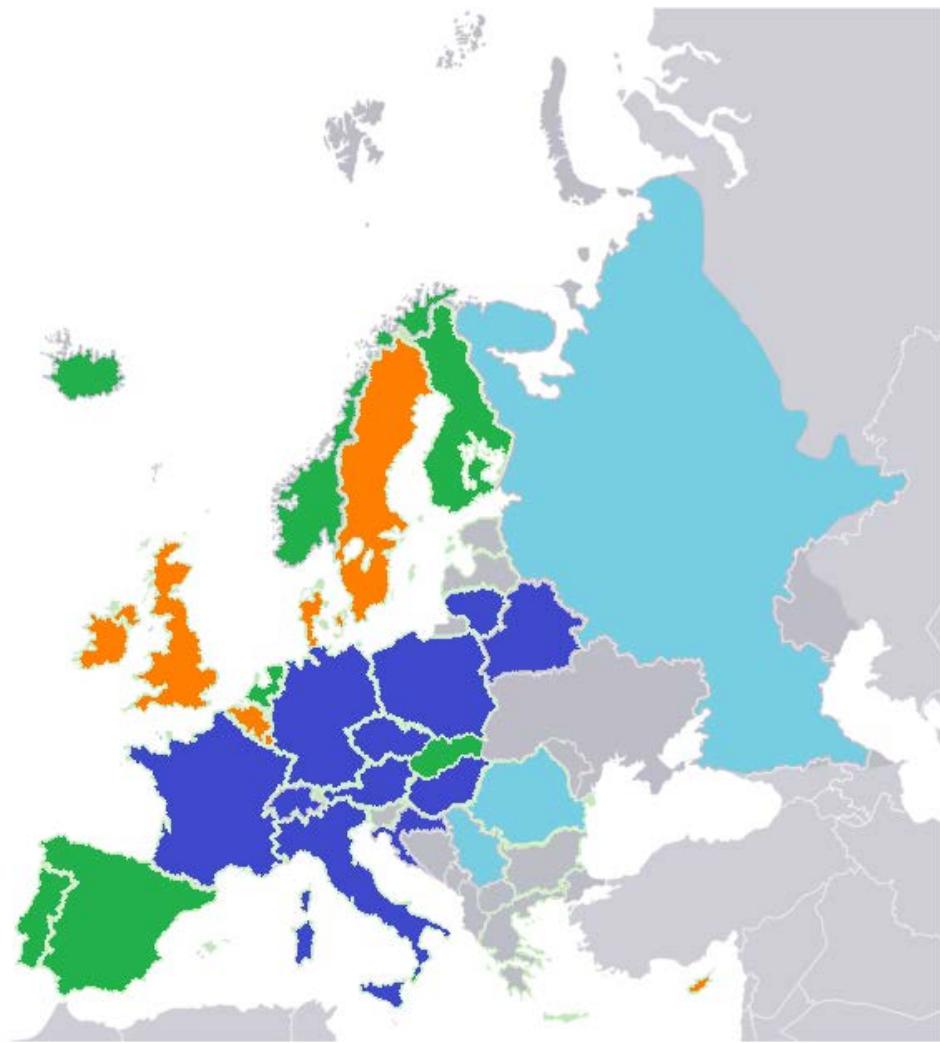


Phase II cardiac rehabilitation currently offered 现行心脏康复阶段II提供

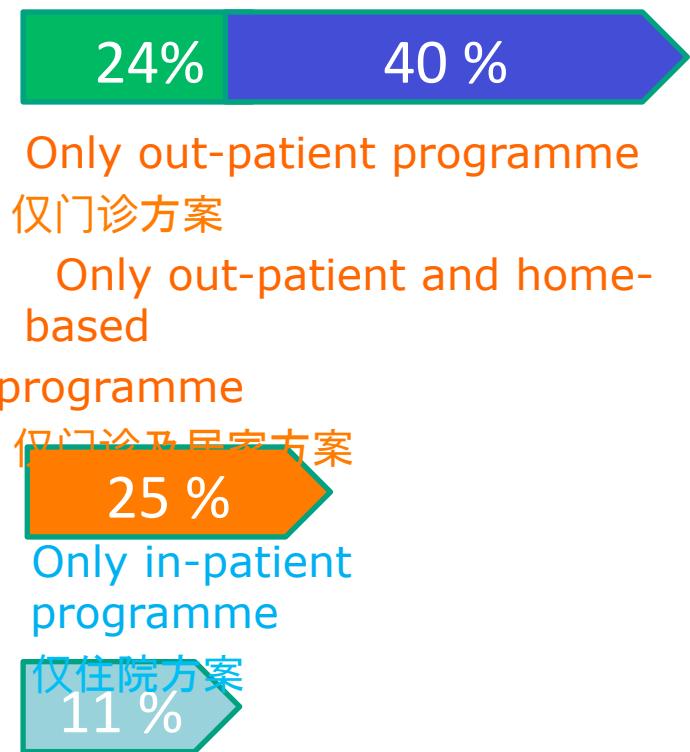


- In-patient and out-patient programme
 - 住院及门诊方案
 - In-patient, out-patient and home-based
 - 住院、门诊、居家
- 64%
- Only out-patient programme
 - 仅门诊方案
 - Only out-patient and home-based programme
 - 仅门诊及居家方案
- 25 %
- Only in-patient programme
 - 仅住院方案
- 11 %

Phase II cardiac rehabilitation currently offered 现行心脏康复阶段II提供



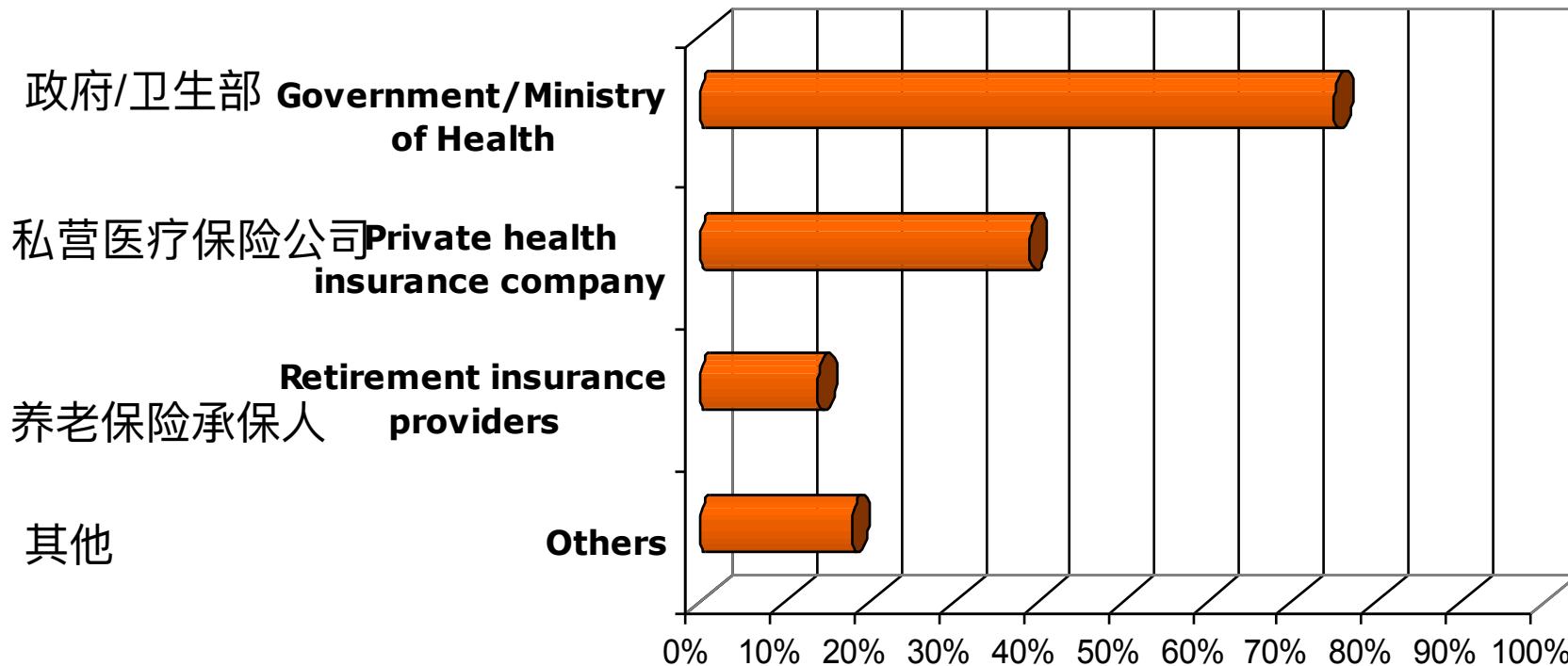
- In-patient and out-patient programme
- 住院及门诊方案
- In-patient, out-patient and home-based
- 住院、门诊、居家
- **mainly in-patient** 主要是住院



Duration of currently offered cardiac rehabilitation 现有心脏康复的时长

Phase II (early post-discharge programme) 阶段II (早期出院后方案)	Typical duration 通常时间
out-patient programme 门诊方案 <i>currently offered in 25 countries (89%) 现25个国家(89%)提供</i>	3 – 12 (24) weeks 周 mainly 基本 $\leq 6 - \geq 12$ weeks周
in-patient programme 住院方案 <i>currently offered in 20 countries (75%) 现20个国家(75%)提供</i>	(2) 3- 4 (6) weeks 周
home-based programme 居家方案 <i>currently offered in 9 countries (32.1%) 现9个国家(32.1%)提供</i>	(2) 6-52 weeks 周 (lifelong长期)

Institutions covering the costs of phase II cardiac rehabilitation 机构支付的心脏康复阶段II费用



Only 46% of the countries have national legislation/law(s) regarding phase II cardiac rehabilitation. 仅46%的国家设有关于心脏康复阶段II的国家法律/法规。

冠心病患者心脏康复的应用与效果： EUROASPIRE III 调查结果

Original scientific paper

Use and effects of cardiac rehabilitation in patients with coronary heart disease: results from the EUROASPIRE III survey

Kornelia Kotseva¹, David Wood¹, Guy De Backer² and
Dirk De Bacquer² (on behalf of the EUROASPIRE III Study
Group)



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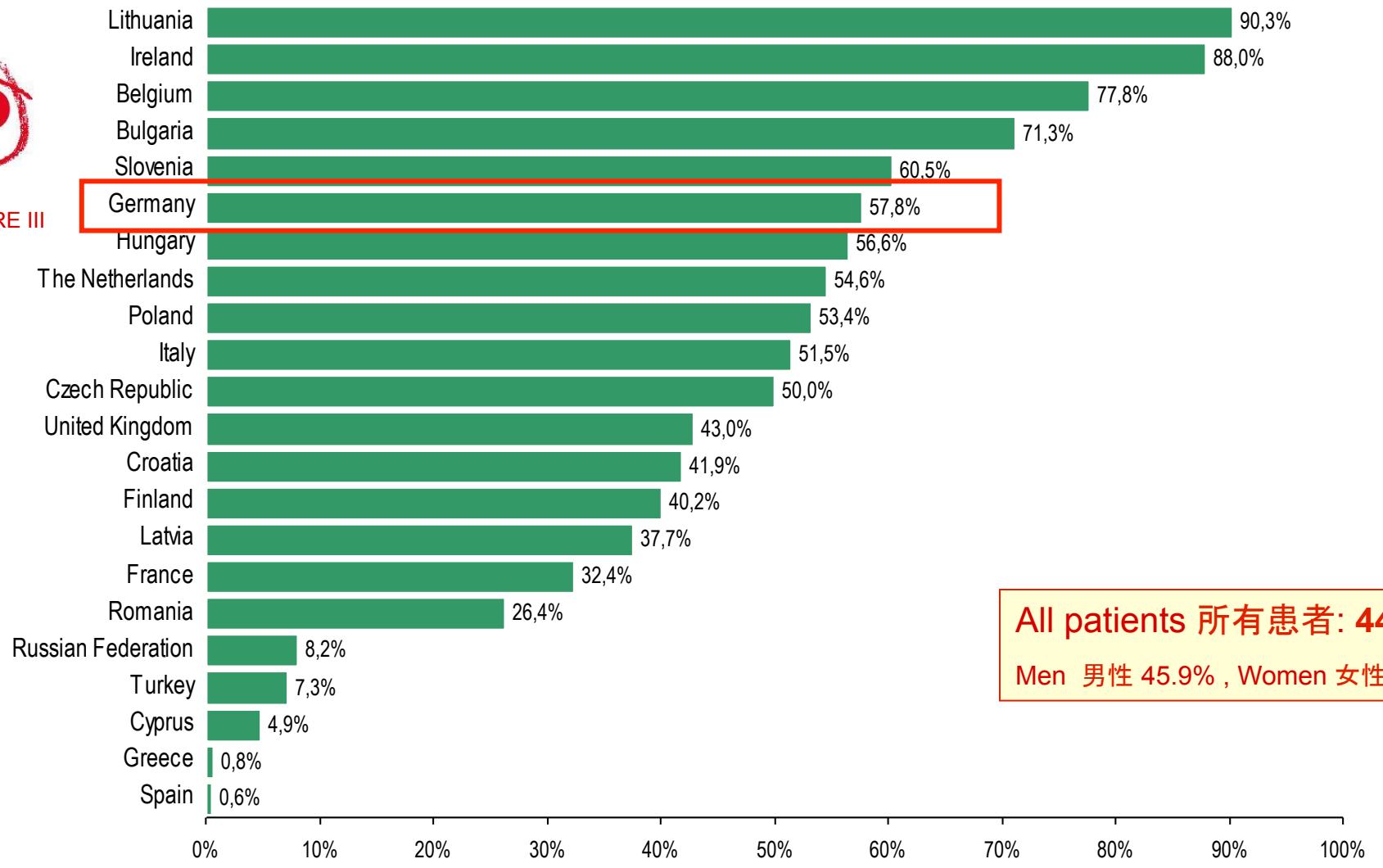


Advise to follow cardiac rehabilitation programme*

劝告患者参与心脏康复项目



EuroASPIRE III



All patients 所有患者: 44.9%

Men 男性 45.9% , Women 女性 42.0%

* Within 3 months of discharge following the index event or procedure

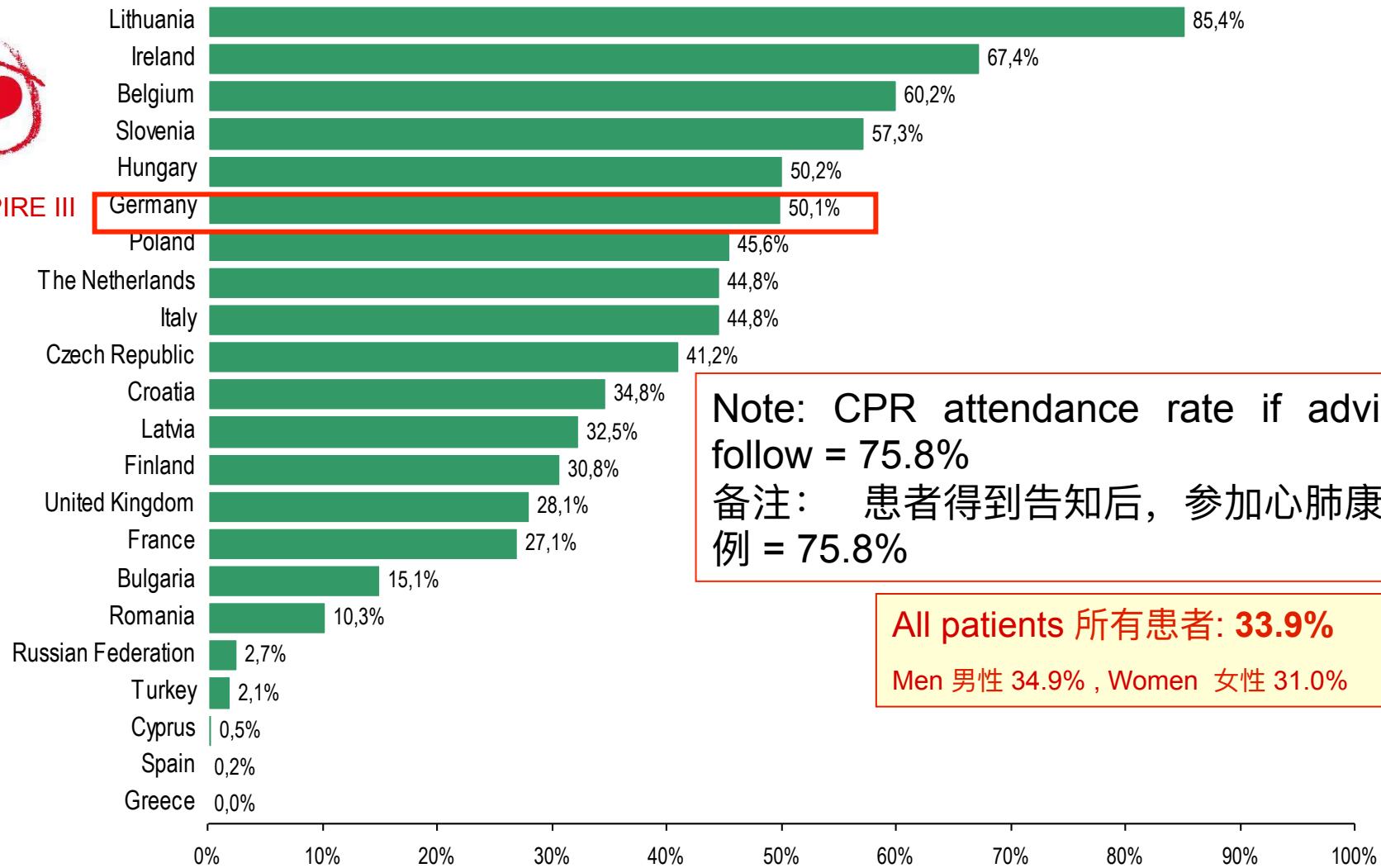
Interview

Attendance at CR programme among all patients*

所有患者中参加心脏康复的比例



EuroASPIRE III



Note: CPR attendance rate if advised to follow = 75.8%
备注：患者得到告知后，参加心肺康复的比例 = 75.8%

All patients 所有患者: 33.9%

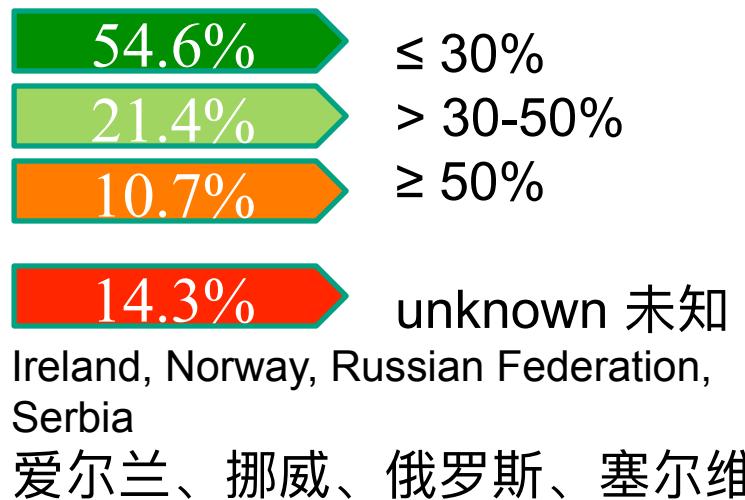
Men 男性 34.9% , Women 女性 31.0%

* Attending at least half of the sessions

Estimated percentage of eligible patients admitted
for phase II cardiac rehabilitation in 2006
2006年，加入心脏康复阶段II的适应症患者估计百分比

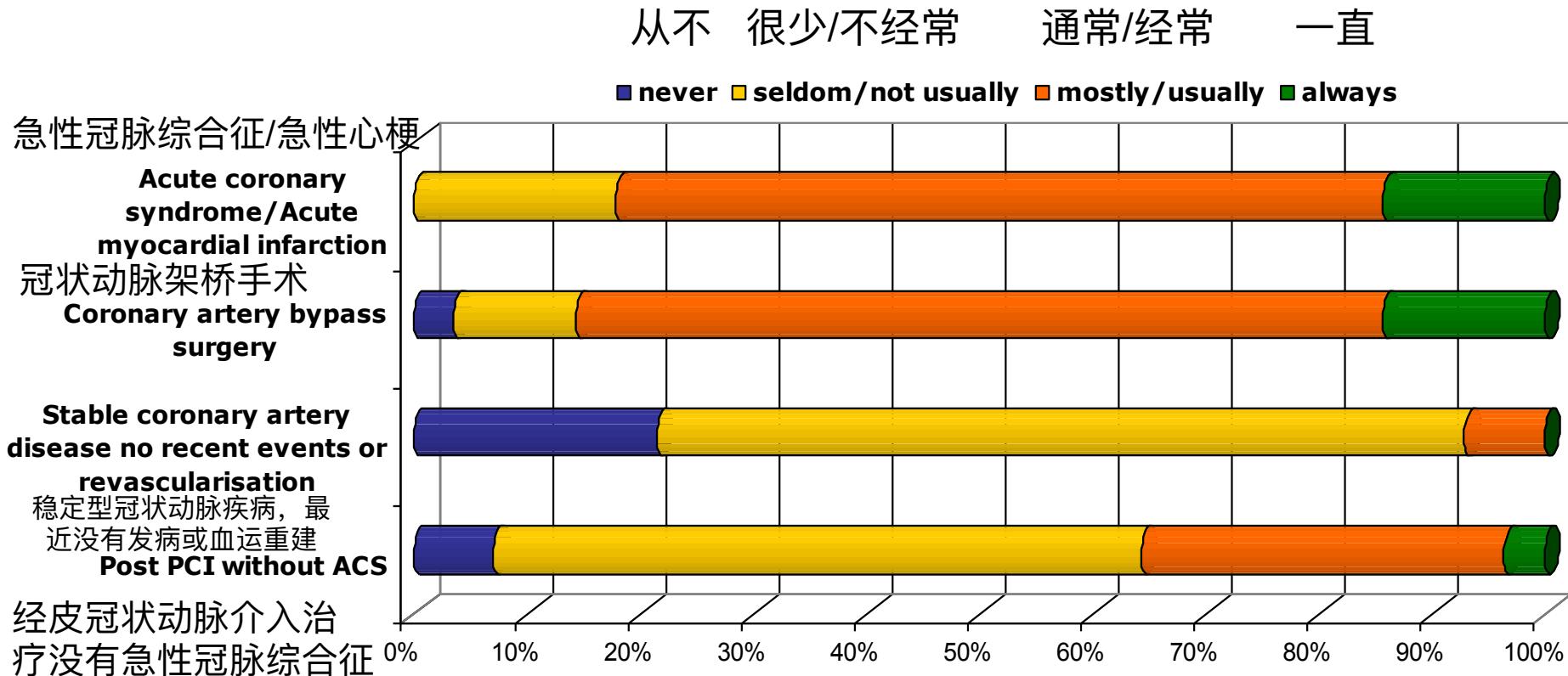
Phase II 阶段II

$\leq 3\% - 90\%$

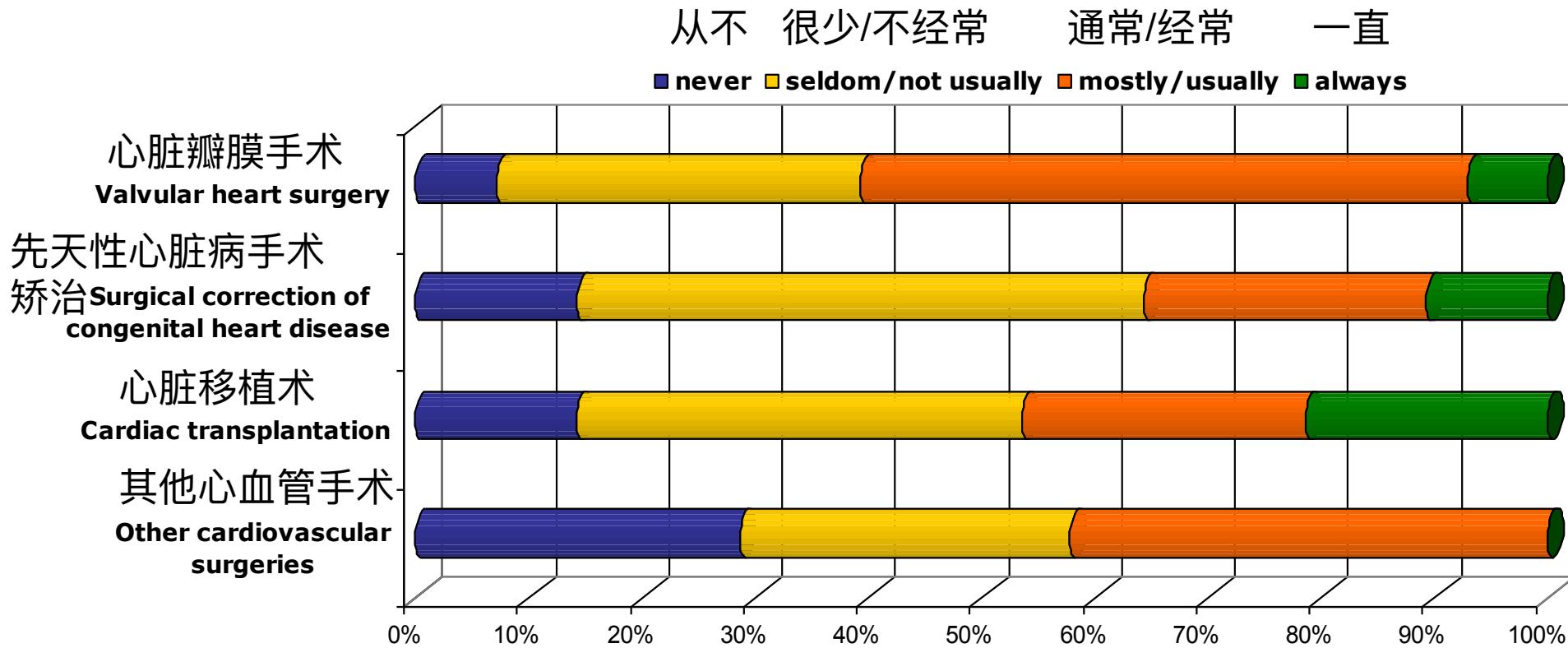


Spain	<3%
Portugal	4%
Cyprus	4%
Romania	10%
Poland	17%
France	10-30%
Belgium	15-20%
Czech Republic	15-20%
Denmark	20%
Finland	20-30%
Italy	25-30%
Netherlands	30%
Austria	30%
Switzerland	30%
Hungary	30%
Republic Belarus	40%
Croatia	40%
Slovak Republic	41%
Luxembourg	40-50%
Sweden	40-50%
UK	40-50%
Germany	$\geq 50\%$
Iceland	$\geq 50\%$
Lithuania	90%

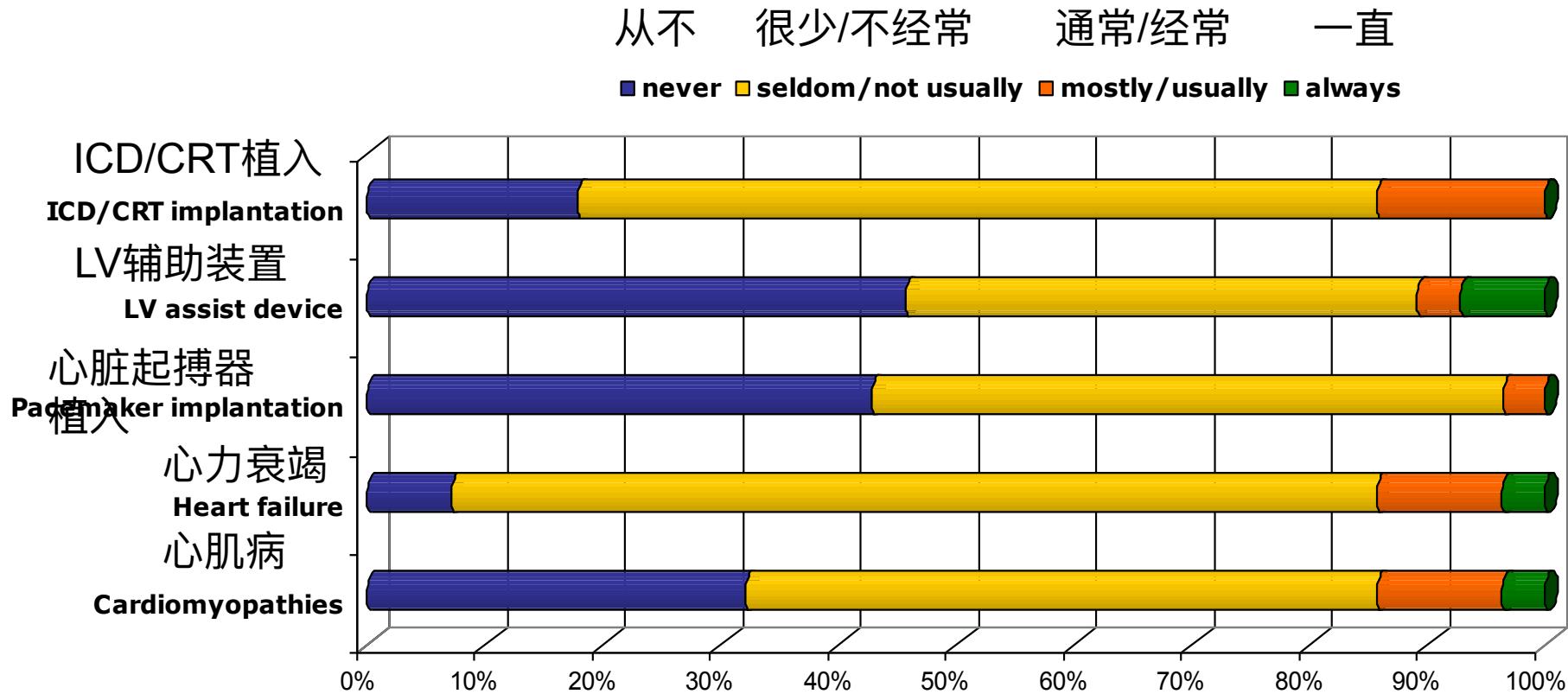
Which patients take part in phase II cardiac rehabilitation? 哪些患者会参加心脏康复阶段II?



Which patients take part in phase II cardiac rehabilitation? 哪些患者会参加心脏康复阶段II?



Which patients take part in phase II cardiac rehabilitation? 哪些患者会参加心脏康复阶段II?



Predictors for advice to participate in CR 告知患者参加心康的预示:
 -younger age 年纪轻
 -Index event CABG
 -冠脉搭桥术指数

Negative predictors 负向预测
 -low educational level
 index event
 低教育水平指数
 -Ischaemia 缺血
 -Acute myocardial infarction (AMI) 急性心梗
 - PCI经皮冠状动脉介入治疗

Use and effects of cardiac rehabilitation in patients with coronary heart disease:
 results from the EUROASPIRE III survey
 Kotseva et al.

Eur J Prev Cardiol 2012;
 DOI:10.1177/2047487312449591

Table 2. Reported advice to participate in a CRP programme according to patients' characteristics at discharge

	CRP advised		p^b
	%No (n/total)	%Yes (n/total)	
Age at index event ^a (years), N	61.8 (9.7), 4885	61.5 (9.4), 3690	<0.0001
Female gender	26.6 (1300/4885)	23.7 (940/3960)	0.35
Index event – CABG	8.9 (436/4885)	32.6 (1293/3960)	<0.0001
Index event – PCI	45.5 (2223/4885)	36.6 (1448/3960)	<0.0001
Index event – AMI	20.6 (1008/4885)	17.8 (707/3960)	0.03
Index event – Ischaemia	24.9 (1218/4885)	12.9 (512/3960)	<0.0001
Previous CABG	8.3 (403/4862)	7.1 (280/3941)	0.03
Previous PCI	17.7 (861/4856)	18.6 (732/3932)	0.58
Previous AMI	27.8 (1338/4818)	33.6 (1316/3916)	0.009
Previous Ischaemia	8.6 (409/4778)	9.5 (369/3867)	0.48
Previous angina pectoris	32.2 (1541/4781)	29.7 (1143/3845)	<0.0001
Previous stroke	3.4 (166/4851)	4.3 (170/3934)	0.43
Previous TIA	2.4 (116/4838)	3.0 (116/3924)	0.16
Previous PAD	5.4 (257/4750)	5.2 (204/3914)	0.03
Diabetes at discharge	28.4 (1085/3814)	29.3 (865/2954)	0.43
Smoking in month prior to IE	31.6 (1540/4873)	29.0 (1147/3950)	0.74
Discharge BMI $\geq 25 \text{ kg/m}^2$	78.9 (1711/2169)	77.8 (1223/1573)	0.54
Discharge BMI $\geq 30 \text{ kg/m}^2$	31.6 (685/2169)	29.4 (462/1573)	0.76
Systolic BP at discharge ^a (mmHg), N	129.7 (19.2), 3355	130.0 (18.0), 2443	0.52
Diastolic BP at discharge ^a (mmHg), N	78.0 (10.2), 3347	78.5 (10.2), 2437	0.62
Total cholesterol at discharge ^a (mmol/l), N	5.20 (1.25), 2930	5.11 (1.27), 1972	0.004
BMI at discharge ^a (kg/m^2), N	28.4 (4.40), 2169	28.3 (4.44), 1573	0.77
Low educational level	30.0 (1454/4850)	19.6 (772/3940)	0.001
Medication at discharge:			
Antiplatelets	95.8 (4559/4760)	94.2 (3652/3877)	0.26
Beta-blockers	80.6 (3829/4749)	84.9 (3290/3874)	0.11
ACE inhibitors/angiotensin II RA	70.7 (3362/4754)	66.4 (2574/3876)	0.68
Calcium antagonists	22.5 (1067/4751)	22.4 (868/3879)	0.16
Diuretics	27.1 (1288/4753)	32.1 (1244/3879)	0.55
Lipid-lowering	83.0 (3937/4746)	77.8 (3007/3864)	0.64
Anticoagulants	5.4 (259/4752)	10.6 (412/3877)	0.08

^aMean (SD); ^badjusted for diagnostic category, age at index event and centre. CRP, cardiac rehabilitation programme; CABG, coronary artery bypass graft; PCI, percutaneous coronary intervention; AMI, acute myocardial infarction; Ischaemia, acute myocardial ischaemia; TIA, transient ischaemic attack; PAD, peripheral artery disease; BMI, body mass index; BP, blood pressure.

Goals to go for in Europe 欧洲的目标

To increase the number of eligible patients enrolled in cardiac rehabilitation

让更多得适应症患者加入到心脏康复中

At present, only some groups are routinely admitted to CR (particularly MI and **CABG**).

目前，只有一些小组定期例行常规的成为心脏康复成员（特别是心梗和冠脉搭桥术）。

Among other, currently neglected groups, e.g. PCI and chronic heart failure, also need to be routinely included.

其他的，目前被忽略的小组，比如，经皮冠状动脉介入治疗和慢性心力衰竭人群，也需要加入进来。

Cardiac rehabilitation – Attendance USA 心脏康复 – 美国参与度

Retrospective Cohort-Study (2000 to 2007);
USA; n = 72.817 data from 156 hospitals, participating in the
„Get With the Guideline“ Initiative der American Heart
Association

回顾性队列研究 (2000-2007) ; 美国; n = 72.817, 数据来自
156家医院, 均响应美国心脏协会“遵循准则”的倡议。

- Only 56 % of the eligible patients diagnosed with CAD, ACS, PCI or CABG are admitted to Cardiac rehabilitation
仅56%被诊断有CAD, ACS, PCI 或 CABG的适应症患者, 被
认为可接受心脏康复

Brown T. M. et al. *J of the American College of Cardiology* 2009, 54 (6): 515-21

Cardiac rehabilitation – USA 心脏康复 – 美国
Who get the advise to go to cardiac rehabilitation?
哪些人会被告知要做心脏康复?

Predictor for being advised to go to cardiac rehabilitation:
需要做心脏康复的预示:

- ✓ Bypass-Surgery 心脏搭桥手术 (CABG) (AOR: 3,00)
- ✓ PCI 经皮冠状动脉介入治疗 (AOR: 1,67)
- ✓ Age < 65 years 年龄 < 65岁 (p < 0.001)
- ✓ Male gender 男性 (p < 0.001)
- ✓ Caucasian (ethnic) 高加索人 (民族的) (p < 0.001)

AOR = adjusted odds ratio 校正比值比

Brown T. M. et al. *J of the American College of Cardiology* 2009, 54 (6): 515-21

Cardiac rehabilitation – USA 心脏康复 – 美国
Who is less likely to be advised to go to cardiac Rehab?
哪些人不需要参与心脏康复?

Patients with comorbidities are less likely to be advised to go to cardiac rehabilitation 不常建议患有共存病的患者做心脏康复

- ✓ Dialyses patient 透析患者 (AOR: 0,79)
- ✓ History of Stroke 脑卒中史 (AOR: 0,91)
- ✓ Peripheral arterial disease 外周动脉疾病 (AOR: 0,92)
- ✓ Chronic Lung Disease 慢性肺病 (AOR: 0,93)
- ✓ History of myocardial Infraction 心肌梗塞史 (AOR: 0,95)
- ✓ Hypertention 高血压

AOR = adjusted odds ratio 校正比值比

Brown T. M. et al. *J of the American College of Cardiology* 2009, 54 (6): 515-21

Cardiac Rehabilitation in Canada

加拿大心脏康复

Grace et al. Progress in cardiovascular Disease 2014;56:530-535;

- ✓ While the effectiveness of CR in the Canadian context is clear, **only 34% of eligible patients participate in CR**,
加拿大心脏康复的现状很清晰，只有34%的适应症患者参加心脏康复，
- ✓ Identified CR barriers include **lack of referral and physician recommendation, travel and distance, and low perceived need**.
- ✓ 经证实，心脏康复推广阻力包括：缺少转诊及医生推荐、旅途及距离较远、感知需求较低。

The key barriers to participate in CR reported by Canadian patients include:
加拿大患者参与心脏康复的主要障碍是：

- ✓ travel and distance, 旅途及距离远，
- ✓ perceiving they did not “need” CR, 感觉自己并不“需要”心脏康复，
- ✓ perceiving they could manage their CVD independently through exercising in their own home or community,
认为自己可以独自在家或社区通过锻炼应对心血管疾病，
- ✓ work responsibilities and other time constraints, 工作职责及其他时间限制，
- ✓ severe weather. 恶劣天气。

Heterogeneity of Cardiac Rehabilitation

心脏康复的异质性

- ✓ Challenge to be open to accept different approach to CR and new possibilities - settings – developments – i.e. tele-rehabilitation
- ✓ 挑战 更加开放，接纳心脏康复不同方式及新的可能性 – 设置 – 发展 – 比如，远程康复
- ✓ Challenge to develop and implement “minimal” standards of CR Quality
- ✓ 挑战 发展并实施心脏康复质量的“最低”标准
- ✓ Challenge to identify which setting, duration, do fit best for whom?
- ✓ 挑战 明确哪些安排、时长等最适合哪些人？
- ✓ Chance to make CR available for more eligible patients
- ✓ 机遇 让更多的适应症患者适合接受心脏康复
- ✓ Chance to develop more individually tailored CR
- ✓ 机遇 发展更多个性化定制的心脏康复方案
- ✓ Chance to learn from the experience of other countries, health systems and researchers
- ✓ 机遇 学习其他国家、医疗卫生体系及研究人员的经验
- ✓ And more ... 还有更多

thank you for your attention ... 谢谢大家!

