

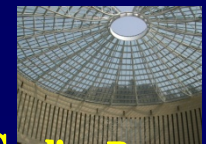
5° JMC - Joint Meeting with Mayo Clinic
15°-17° October 2009 - TORINO (Italy)

OUTPATIENT CARDIOLOGY IN HOSPITAL

does it still make sense?

Giuseppe Vergara MD

*Director, Cardiology Division
Santa Maria del Carmine Hospital
ROVERETO (TN) - Italy*



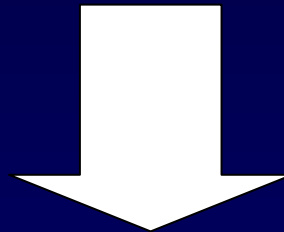
Cardio - Rovereto

HEART DISEASE COURSE

ASYMPTOMATIC/SYMPTOMATIC

STABILITY/INSTABILITY

PROGRESSIVE



PATIENT WITH HEART DISEASE
IS A CHRONIC PATIENT



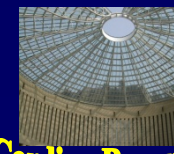
**IN PATIENT
CARDIOLOGY**

STABILITY

**PATIENT WITH
HEART DISEASE**

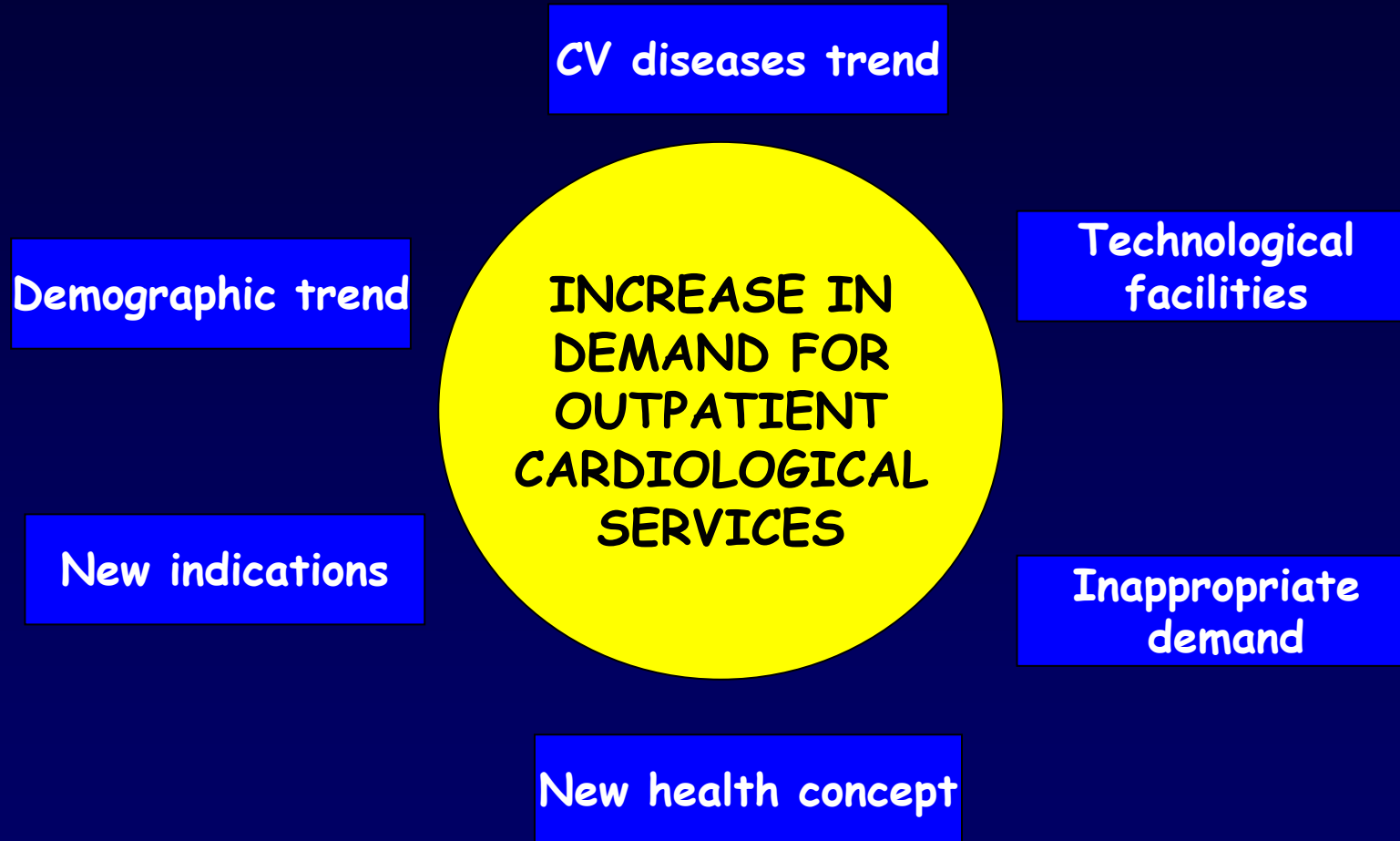
INSTABILITY

**OUTPATIENT
CARDIOLOGY SERVICES**



Cardio - Rovereto

OUTPATIENT CARDIOLOGY: DEMAND AND SUPPLY



OUTPATIENT CARDIOLOGY: DEMAND AND SUPPLY

INCREASE IN
DEMAND FOR
OUTPATIENT
CARDIOLOGICAL
SERVICES

PEOPLE TRUST
TECHNOLOGY
INCREASE OF
INAPPROPRIATE DEMAND
UNEQUAL SUPPLY
IN/OUT HOSPITAL

PEOPLE SATISFACTION/
APPROVAL
SELF REFERRAL
BAD DEMAND
DISTRIBUTION

HOSPITAL
CARDIOLOGY



OUTPATIENT CARDIOLOGY IN HOSPITAL

does it still make sense?



**INPATIENT
CARDIOLOGY**

STABILITY

**PATIENT WITH
HEART DISEASE**

INSTABILITY

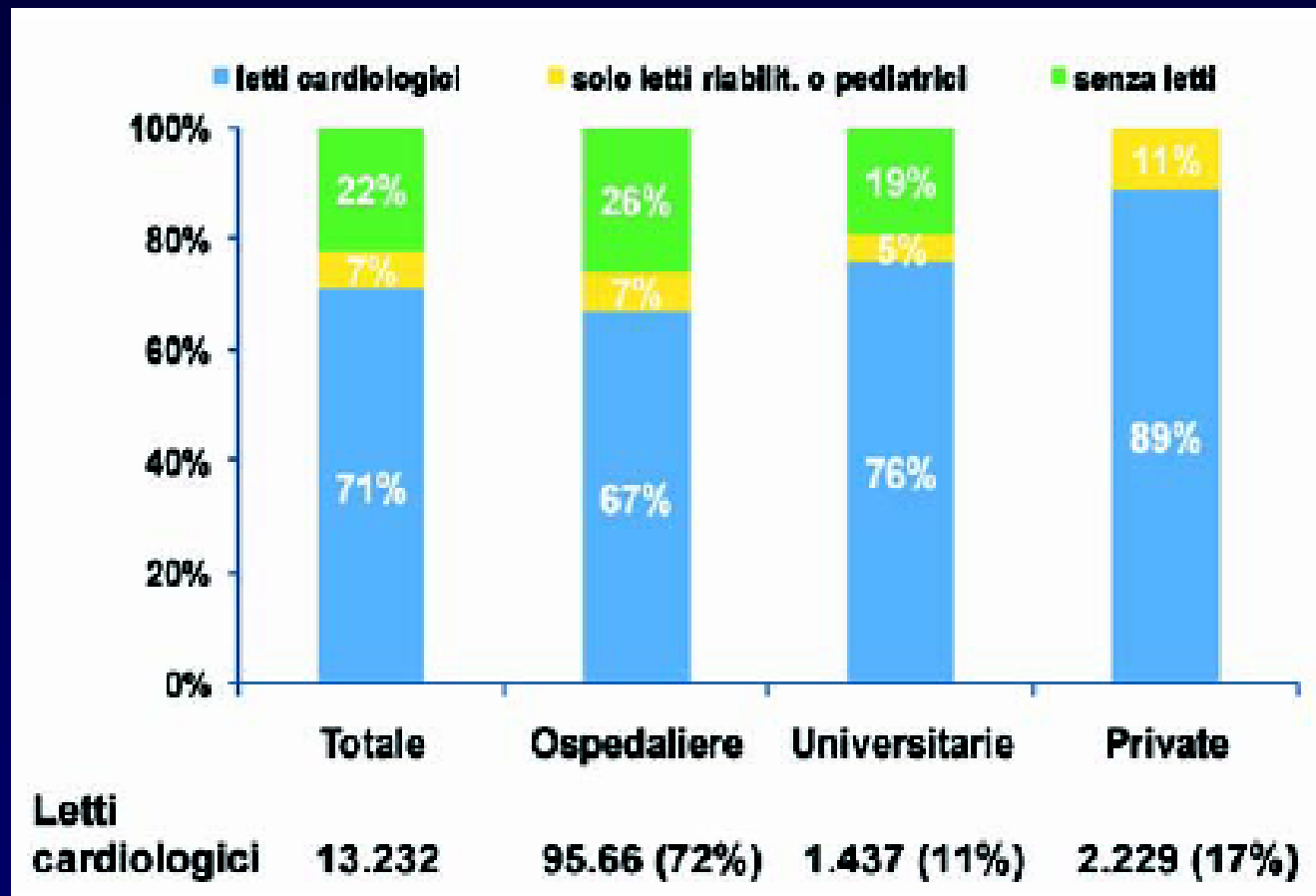
**OUTPATIENT
CARDIOLOGY SERVICES**

WHERE?



OUTPATIENT CARDIOLOGY: DEMAND AND SUPPLY

ITALIAN HOSPITALS WITH CARDIOLOGICAL SERVICES



STRUTTURA E ORGANIZZAZIONE FUNZIONALE DELLA CARDIOLOGIA
G.Ital.Cardiol 2009; 10 (Suppl 3) 38s-57s



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HEALTH SERVICES ORGANIZATION IN CARDIOLOGY

THE "INTENSITY OF CARE" MODEL

MAY LEAD TO "FRAGMENTATION"

PHASES of ASSISTANCE

Unstable/acute

Stable/post-acute

Rehabilitation

Out of hospital

Day hospital

Day service

PHASES of DISEASE

Diagnosis

Treatment

Follow-up

PROFESSIONALS

Hospital cardiologist

Out of hospital cardiologist

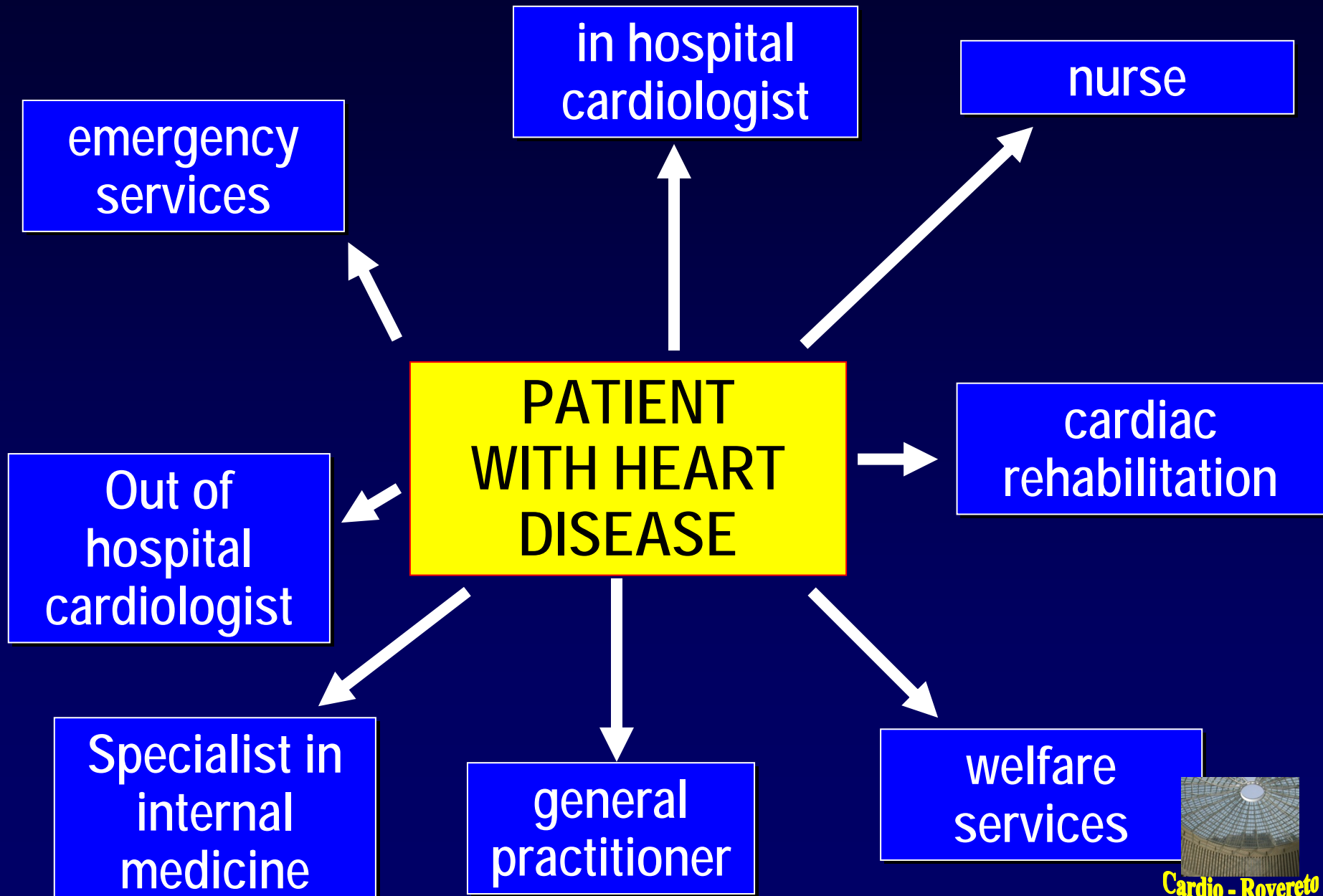
General practitioner

Other specialist

Nurses



"FRAGMENTATION" OF CURE



HEALTH SERVICES ORGANIZATION IN CARDIOLOGY

THE "CARDIOVASCULAR DEPARTMENT" MODEL

LEAD TO "INTEGRATION"

PHASES of ASSISTANCE

Unstable/acute
Stable/post-acute
Rehabilitation
Out of hospital
Day hospital
Day service

PHASES of DISEASE

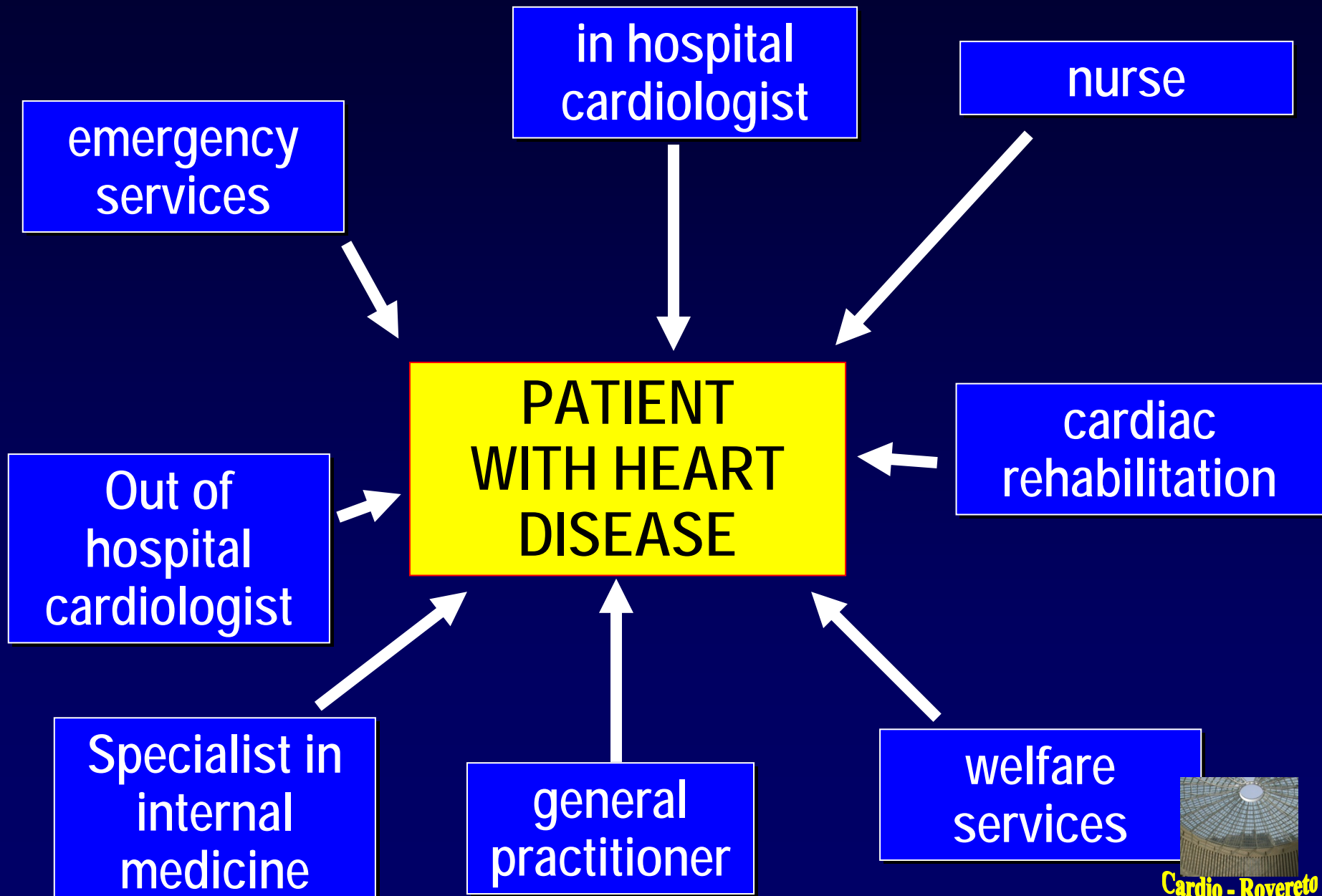
Diagnosis
Treatment
Follow-up

PROFESSIONALS

Hospital cardiologist
Out of hospital cardiologist
General practitioner
Other specialist
Nurses



"INTEGRATION" OF CURE



**INPATIENT
CARDIOLOGY**

**DISEASE
MANAGEMENT
("integration
of care")**

**OUTPATIENT
CARDIOLOGY SERVICES**

STABILITY

INSTABILITY

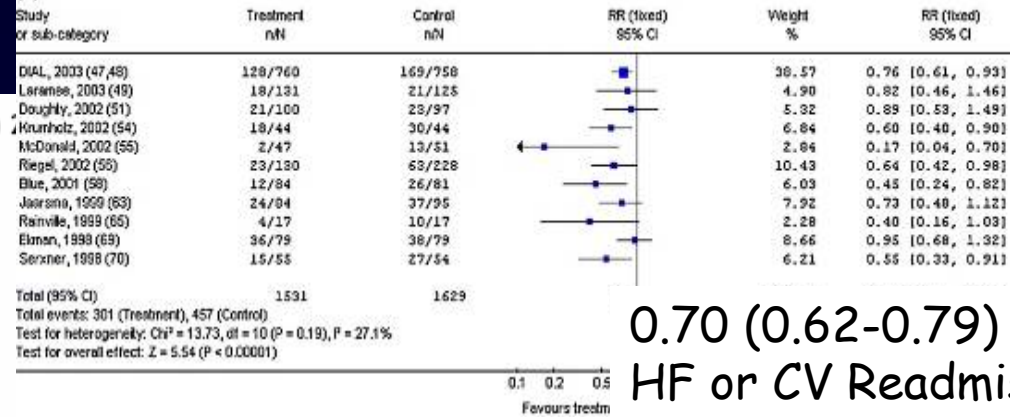


Cardio - Rovereto

European Heart Journal (2004)



ELSEVIER



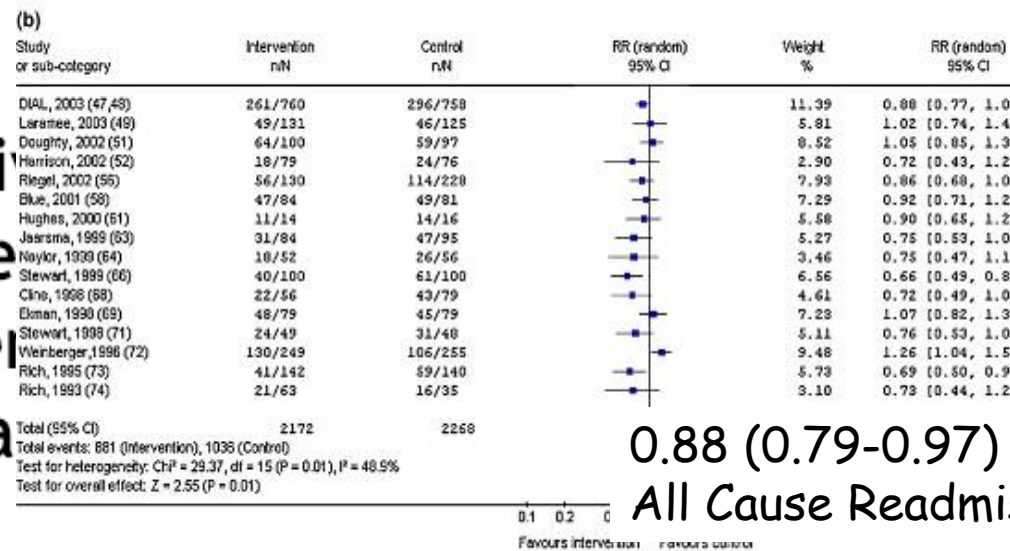
0.70 (0.62-0.79)
HF or CV Readmission



EUROPEAN SOCIETY OF CARDIOLOGY

Review

The effect of
programme
in older patients
and meta-analysis

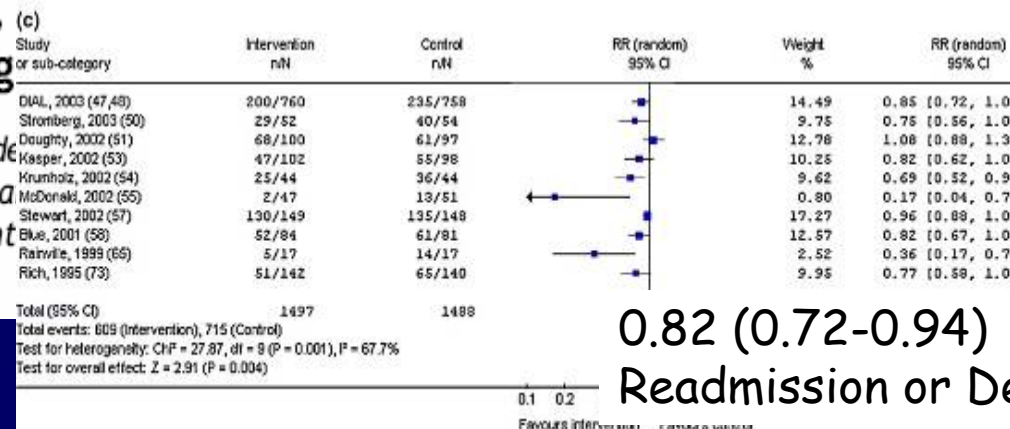


0.88 (0.79-0.97)
All Cause Readmission

in in
c review

Jonás Gonseth^a,
Fernando Rodríguez

^a Instituto de Ciencias de la Reina, Toledo, Spain
^b Department of Preventive Medicine, Madrid, Spain



0.82 (0.72-0.94)
Readmission or Death

Mancha. Talavera
na de Madrid.

**INPATIENT
CARDIOLOGY**

coordination

**Shared
protocols**

STABILITY

INSTABILITY

Team work

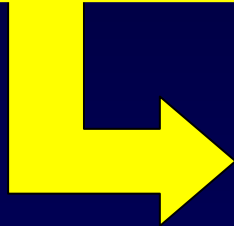
Comunication

**OUTPATIENT
CARDIOLOGY SERVICES**



OUTPATIENT CARDIOLOGY

IN HOSPITAL



COMPLEXITY

MANAGEMENT OF FEW
REFERENCE FOR MANY

AMOUNT

OUT OF HOSPITAL



OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

MANAGEMENT OF FEW

LANDMARK/REFERENCE OF MANY



OUTPATIENT CARDIOLOGY IN HOSPITAL

1 COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

- DIRECT MANAGEMENT OF (FEW) COMPLEX PTS
- REFERENCE FOR (MANY) OTHER PTS
- GESTIONAL APPROACH: MULTIDISCIPLINARY, CONTINUITY OF CARE
- VOCATIONAL TRAINING
- MANAGERIAL AND "CULTURAL" REFERENCE
- FOCUS ON: CAD, HF, ARRHYTHMIAS AND IMPLANTED DEVICES
VALVE DISEASE, GUCH, OTHER



OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

REFERRAL

- UTIC/POSTINTENSIVE WARD
- CARDIAC REHABILITATION DIVISION/SERVICE
- SELF-REFERRAL (FOLLOW-UP)
- OTHER (Specialist, GP) FOR SPECIFIC PROBLEMS
- NO VIA CBO !



OUTPATIENT CARDIOLOGY IN HOSPITAL

1 COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

CAD CLINIC

- NON INVASIVE EVALUATION
- MULTIDISCIPLINARY APPROACH
- SCREENING FOR SD PRIMARY PREVENTION
- F.U.AFTER INSTABILIZATION (6 month)
- F.U.AFTER REVASCULARIZATION (6 month)
- PREPARATION FOR INVASIVE PROCEDURES



OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

HF CLINIC

- TO EVALUATE ELIGIBILITY for NF THERAPY
- AFTER INSTABILIZATION (6 month)
- DRUG INFUSION
- DIAGNOSTIC EVALUATION
- FOR "SECOND OPINION"
- ELDERLY "FRAIL" PTS
- CRT PTS (cooperation with the electrophysiologist)



ESC Guidelines for the diagnosis and treatment of acute and chronic heart failure 2008

Care and follow-up (*Table 24*)

- An organized system of specialist heart failure care improves symptoms and reduces hospitalizations (Class of recommendation I, level of evidence A) and mortality (Class of recommendation IIa, level of evidence B) of patients with heart failure.

Randomized controlled trials have generally demonstrated that a structured system of care improves outcomes, including quality of life, the frequency and duration of follow-up and survival.^{232,321–325} However,

OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

ARRHYTHMIA CLINIC

AF PTS ELIGIBLE FOR RHYTHM STRATEGY
SCREENING FOR SD PRIMARY PREVENTION
EVALUATION OF PTS WITH COMPLEX ARRHYTHMIAS
PREPARATION FOR INVASIVE PROCEDURES
F.U AFTER ABLATION PROCEDURES (6 month)
PMK/ICD PTS
CRT PTS (cooperation with HF specialist)



EVOLUTION OF THE ELECTRICAL DEVICES

FROM RHYTHM MANAGEMENT
TO RHYTHM AND DISEASE MANAGEMENT

FROM TREATING TO MANAGING

PACING
ATPacing
DEFIBRILLATION

1960-2000

+

CRT

2000.....

+

- ARRHYTHMIC FUNCTIONS
- NON ARRHYTHMIC FUNCTIONS
- PHYSICAL/TECHNICAL PARAMETERS

2004.....



STORAGE OF THE ARRHYTHMIC EVENTS

- AF and OTHER STA
- NSVT
- VT/VF
- OTHER INFORMATIONS

ARRHYTHMIC PATTERN

STORAGE OF NON ARRHYTHMIC FUNCTIONS

- HEART RATE
- PHYSICAL ACTIVITY
- HRV
- FLUID LUNG OVERLOAD

CLINICAL COURSE IN
HF PTS

STORAGE OF PHYSICAL AND TECHNICAL PARAMETHERS

- BATTERY VOLTAGE
- LEAD IMPEDENCE
- OTHER

DEVICE FUNCTIONING



ICD - IDC/CRT AS "MANAGERIAL" TOOL

SOFTWARE/TECHNOLOGICAL EVOLUTION



REMOTE TRANSMISSION

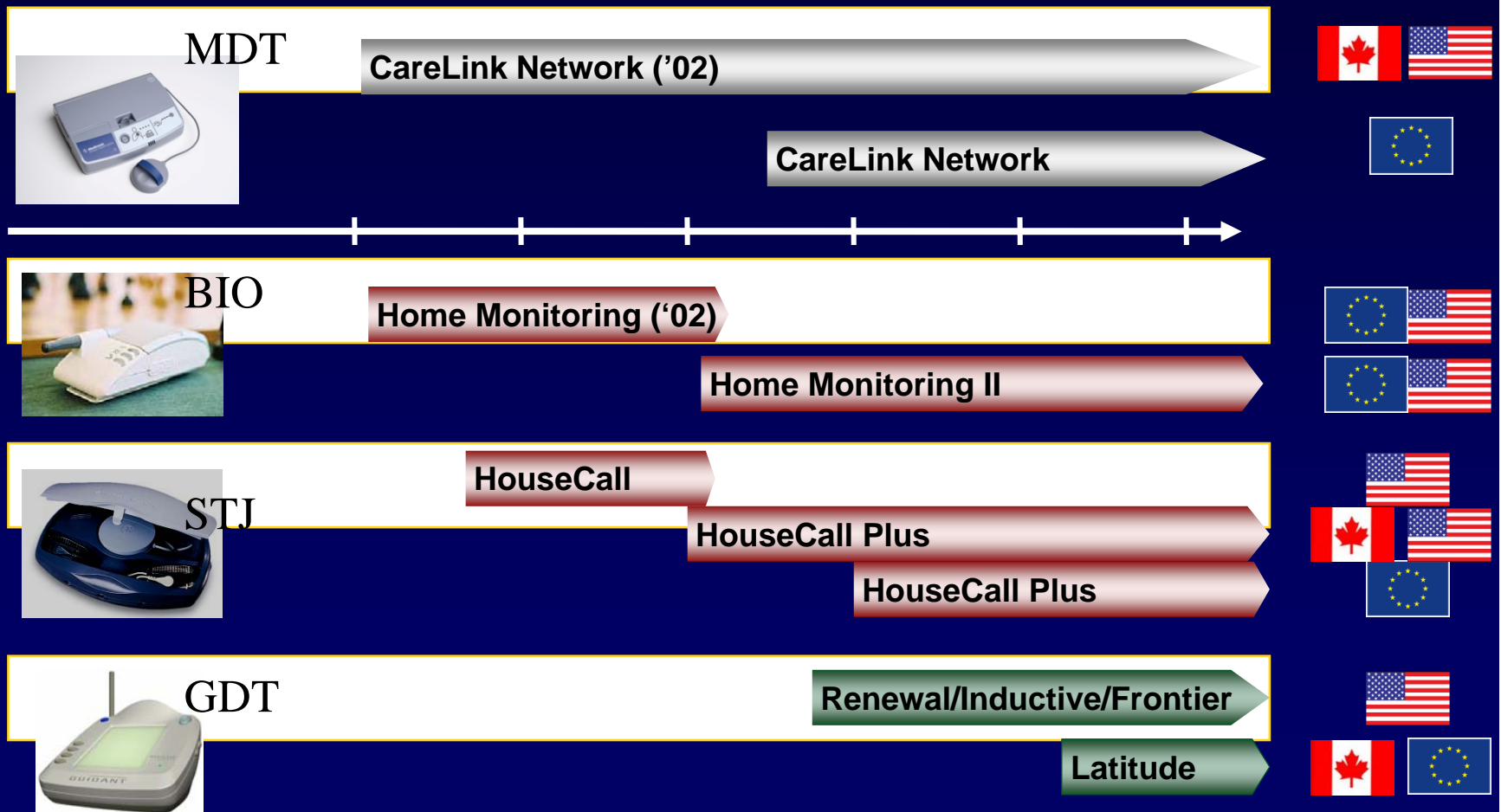


MANAGERIAL SUPPORT

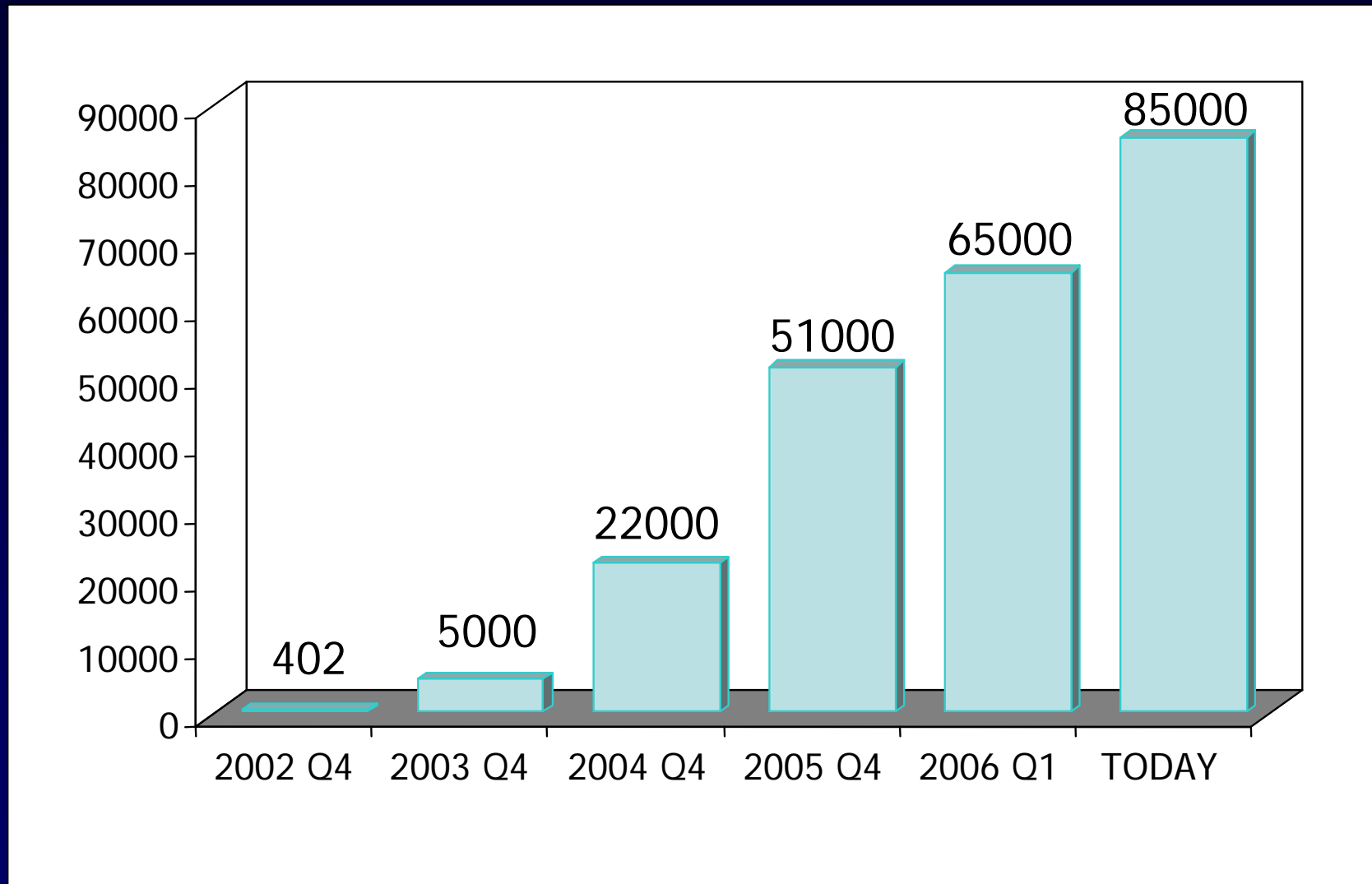


Overview about systems

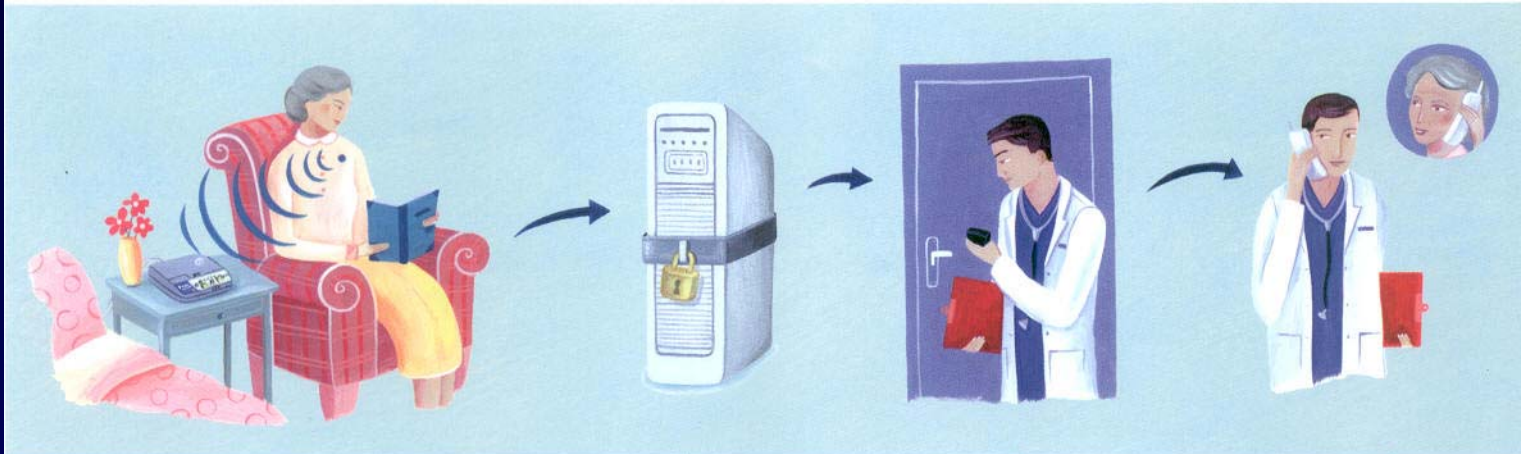
2003 2004 2005 2006 2007 2008



Number of Patients Currently followed with the Medtronic CareLink Network



TELECARDIOLOGY IN ICD- ICD CRT PTS



1 The implanted cardiac device detects a problem such as atrial fibrillation or a device integrity issue. If the patient's device is programmed to notify the clinician of Medtronic CareAlert status, the heart device automatically establishes wireless communication with the CareLink Monitor.

2 Device data are sent automatically from the monitor to a secure server via a standard phone line.

3 A full device transmission is sent to the CareLink Clinician Website with an alert message in the "Event Summary" section of the patient list. If the clinic has elected to receive optional alert notifications, a message will be sent via the selected method(s). These may include email, text message, voice message, and/or numeric page.

4 The clinician reviews the alert information and calls the patient to provide further instructions.



TELECARDIOLOGY IN ICD- ICD CRT PTS

AUTOMATIC FOLLOW-UP



1 Using the secure CareLink™ Clinician Website, clinic staff can preschedule up to six automatic device checks for each patient – without having to make appointments or coordinate calendars with patients.

2 The device automatically “wakes up” at the scheduled time and communicates with the CareLink Monitor, which is plugged into a standard phone line and an electrical outlet. Data are transmitted wirelessly from the device to the monitor as the patient sleeps.

3 Data are sent automatically from the CareLink Monitor to a secure server via the phone line.

4 The clinician reviews the patient’s device data on the secure website.



FOLLOW-UP IN ICD- ICD CRT PTS

HIGH-TECH

AND

HIGH-TOUCH



TELECARDIOLOGY IN ICD- ICD CRT PTS



Medtronic

Quick Look

Device: Concerto™ C174AWK Serial Number: PVU611242S Date of Interrogation: 02-Sep-2009 01:25:08
 Patient: RISATTI, MARIA Physician: DOTT. Catanzariti - - -

Device: Concer
 Patient: RISAT

Device Status (Implanted: 21-Mar-2008) Measured on:
 Battery Voltage (RRT=2.62 V) 3.09 V 02-Sep-2009
 Last Full Charge 8.7 sec 22-Mar-2009

Atrial(4574) RV(6947) LV



Medtronic

OptiVol Events

Device: Concerto™ C174AWK Serial Number: PVU611242S Date of Interrogation: 02-Sep-2009 01:25:08
 Patient: RISATTI, MARIA Physician: DOTT. Catanzariti - - -

Medtronic CareAlert Setup

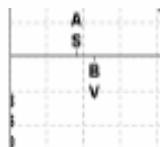
Alert Time (OptiVol) 09:10

Alert Conditions	Enable-Urgency Tone / Monitor	Threshold
OptiVol Fluid Settings	On-High / On	60

OptiVol Event List: 21-Mar-2008 14:01:55 to 02-Sep-2009 01:25:08

Date/Time	Event	Threshold
(No data since last session.)		
----- Last Programmer Session 26-May-2009 -----		
22-May-2009 17:00:03	Possible fluid accumulation	60
----- Last Medtronic CareLink Monitor Session 07-May-2009 -----		
08-Dec-2008 17:00:03	Possible fluid accumulation	60

Alert(s) may be re-triggered unless the possible fluid accumulation is resolved or the OptiVol Alert is turned Off in Alert Setup.



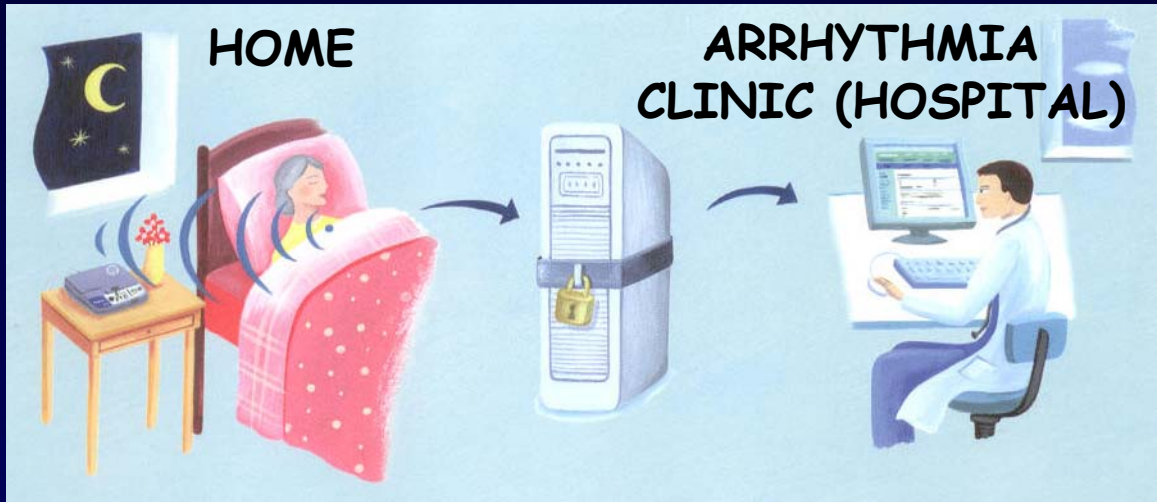
- Alert: Backup alarm has sounded due to unsuccessful wireless transmissions.
- Patient Activity less than 1 hr/day for 14 weeks.
- Longest ventricular sensing episode since the last session is greater than 60 seconds.

DEVICE CONTROL
DIAGNOSTIC FUNCTIONS REPORT



Cardio - Rovereto

TELECARDIOLOGY IN ICD- ICD CRT PTS



HOSPITAL DEVICE CONTROL

Medtronic Current
Device: Concerto™ C17AWK Serial Number: PKV0112428 Date of Interrogation: 02-Sep-2008
Medtronic Quick Look
Device: Concerto™ C17AWK Serial Number: PKV0112428 Date of Interrogation: 02-Sep-2008 15:26:58
Medtronic OptiVol Events
Device: Concerto™ C17AWK Serial Number: PKV0112428 Date of Interrogation: 02-Sep-2008 01:25:08
Patient: BSAITL, MARIA Physician: DOTT, Caterina
Medtronic CareAlert Setup
Alert Time (OptiVol): 06:00
Alert Conditions: Enable-Urgency Time / Monitor Threshold
Control-Fault Settings: Charge: Low 80

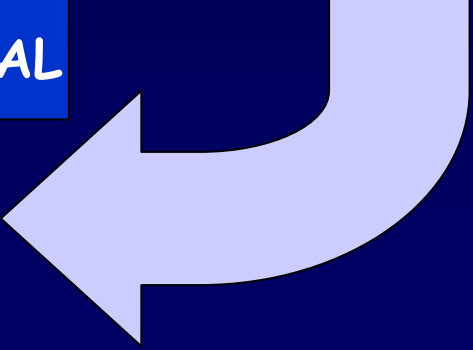
OptiVol Event List: 24-Mar-2008 14:01:55 to 02-Sep-2008 01:25:08		
Date/Time	Event	Threshold
22-May-2008 17:00:00	Possible lead accumulation	80
08-Dec-2008 17:00:00	Possible lead accumulation	80

Alert(s) may be re-triggered unless the possible lead accumulation is resolved or the OptiVol Alert is turned Off in Alert Setup.

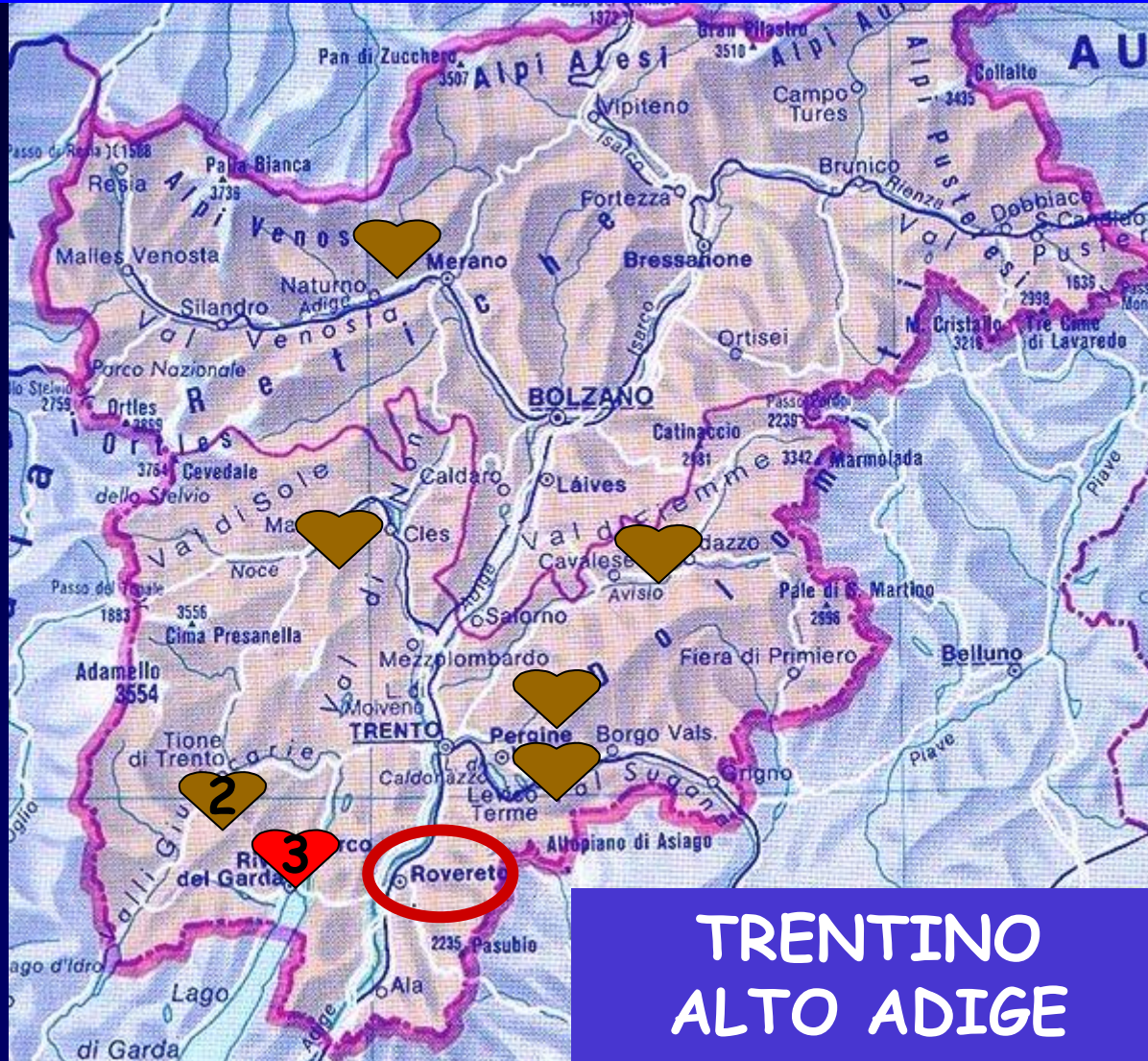
OUT OF HOSPITAL

This section shows two scenarios for 'OUT OF HOSPITAL' care. On the left, a cartoon doctor is on a phone, with a patient's ICD device on a table. On the right, a photograph shows a nurse in blue scrubs attending to a patient in a hospital bed.

OUT OF HOSPITAL CLINICAL CONTROL



TELECARDIOLOGY IN ICD- ICD CRT PTS THE ROVERETO NETWORK



OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

VALVE DISEASE CLINIC

- PREPARATION FOR INVASIVE PROCEDURES
- PREPARATION FOR SURGERY
- FOLLOW-UP AFTER SURGERY/REHABILITATION (6 months)
- OTHER SPECIFIC PROBLEMS



OUTPATIENT CARDIOLOGY IN HOSPITAL

1

COMPLEX PTS

"SPECIALIZED" OUTPATIENT SERVICES

GUCH UNIT

- HIGH SPECIALIZED APPROACH
- NON INVASIVE EVALUATION
- MULTIDISCIPLINARY APPROACH
- SCREENING FOR SD PRIMARY PREVENTION
- F.U. AFTER INSTABILIZATION
- PREPARATION FOR INVASIVE PROCEDURES



OUTPATIENT CARDIOLOGY IN HOSPITAL

2 "PRIORITY" REFERRAL

- MAY BE OF CLINICAL URGENCY/EMERGENCY
- POSSIBLE TECHNOLOGICAL SUPPORT
- MULTIDISCIPLINARY APPROACH
- PATIENT WILL/SATISFACTION
- MORE EFFICIENT APPROACH



OUTPATIENT CARDIOLOGY IN HOSPITAL

3 PRE ADMISSION/POST DISCHARGE REFERRAL

- CONTINUITY OF CARE
- ADMINISTRATIVE/LEGAL IMPLICATIONS



OUTPATIENT CARDIOLOGY IN HOSPITAL

4

DAY SERVICE

- COMPLEX PTS
- COMPLEX MULTIDISCIPLINARY PROBLEMS
- SET OF OUTPATIENT COMPLEX SERVICES
- CONCLUSIVE REPORT



Cardio - Rovereto

OUTPATIENT CARDIOLOGY

IN HOSPITAL

coordination

Shared protocols

GENERAL PRACTITIONER

HOME CARE
(telecardiology/
nurse)

Team work

Comunication

OUT OF HOSPITAL



OUTPATIENT CARDIOLOGY IN HOSPITAL

does it still make sense?

NO, except for.....

YES, but only for



OUTPATIENT CARDIOLOGY

IN HOSPITAL

"SPECIALIZED" OUTPATIENT SERVICES

coordination

COMPLEXITY

MANAGEMENT OF FEW

REFERENCE FOR MANY

**Shared
protocols**

Team work

Comunication

OUT OF HOSPITAL

AMOUNT

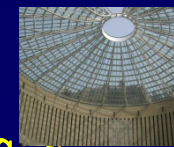


In hospital and out of hospital...
Clinical Governance is

about doing the *right things*, to the *right patient* at the *right time* in the *right place*, and getting it *right first time*

D. Freedman. LUISS 2004





Cardio - Rovereto