Assessing quality of care for patients with heart failure

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XXXIII Congreso De La Sociedad Andaluza
De Medicina Interna (SADEMI)
Cordoba
9 June 2017

Disclosures

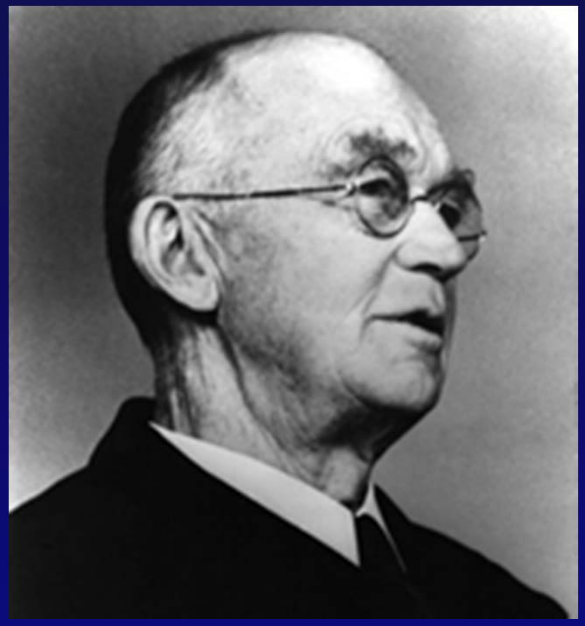
- Consultancies: Astra Zeneca
- Speaker fees: Astra Zeneca
- Research Grants: Novartis, Pfizer

University of East Anglia
And Norfolk and Norwich
University Hospital
Norwich, UK

UK General Election Results

No overall majority for conservatives!

Quality improvement for healthcare



"Every hospital should follow every patient it treats long enough to determine whether the treatment has been successful, and then to inquire 'if not, why not' with a view to preventing similar failures in the future."

Ernest Amory Codman, 1914

"It is not possible to learn without measuring, but it is possible - and very wasteful - to measure without learning"

"There is a tendency to bury evidence of errors and flaws, instead of revealing and studying it in the service of improvement"

Donald Berwick 2010

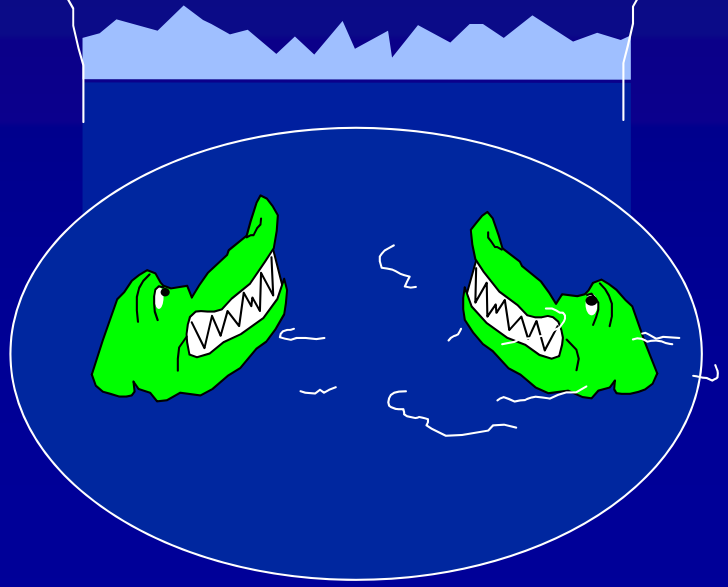
Why do we need quality improvement?

Guidelines

Standard setting based on ideal circumstances

Quality improvement "bridge"

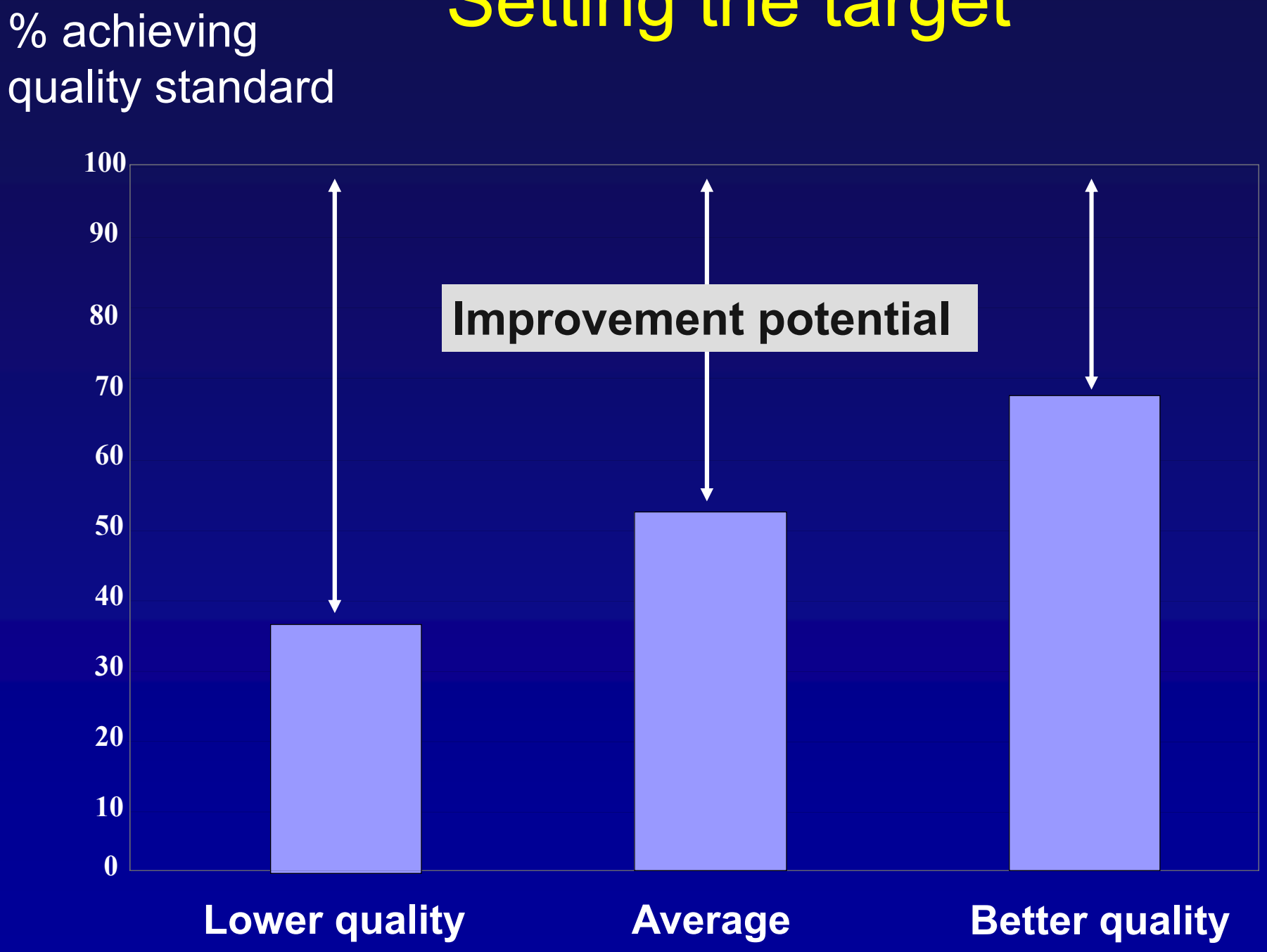
Quality "gap"



"Reality"

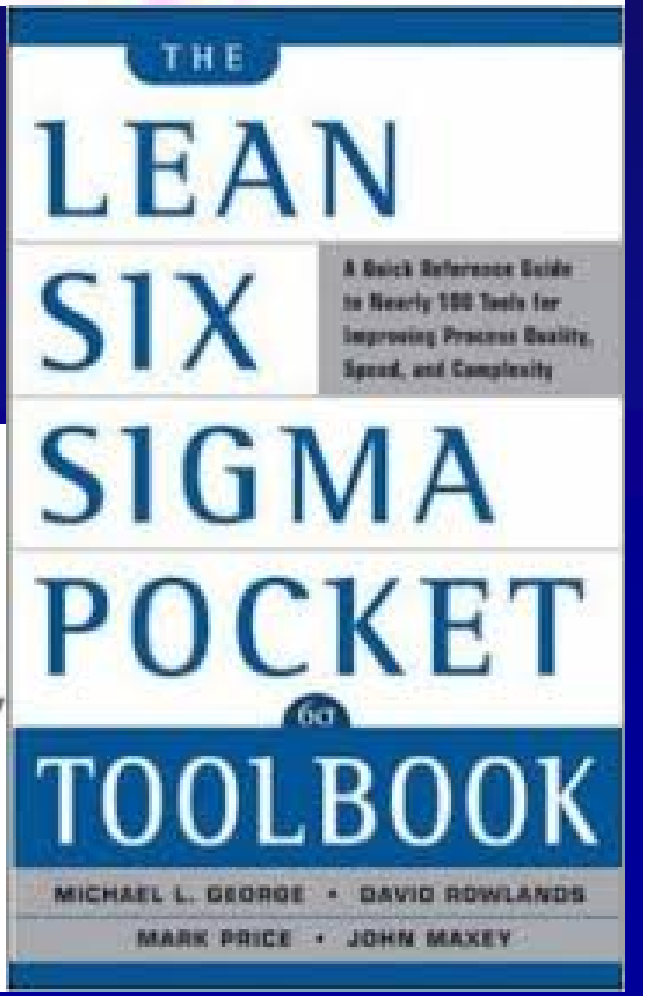
Applying guidelines in practice

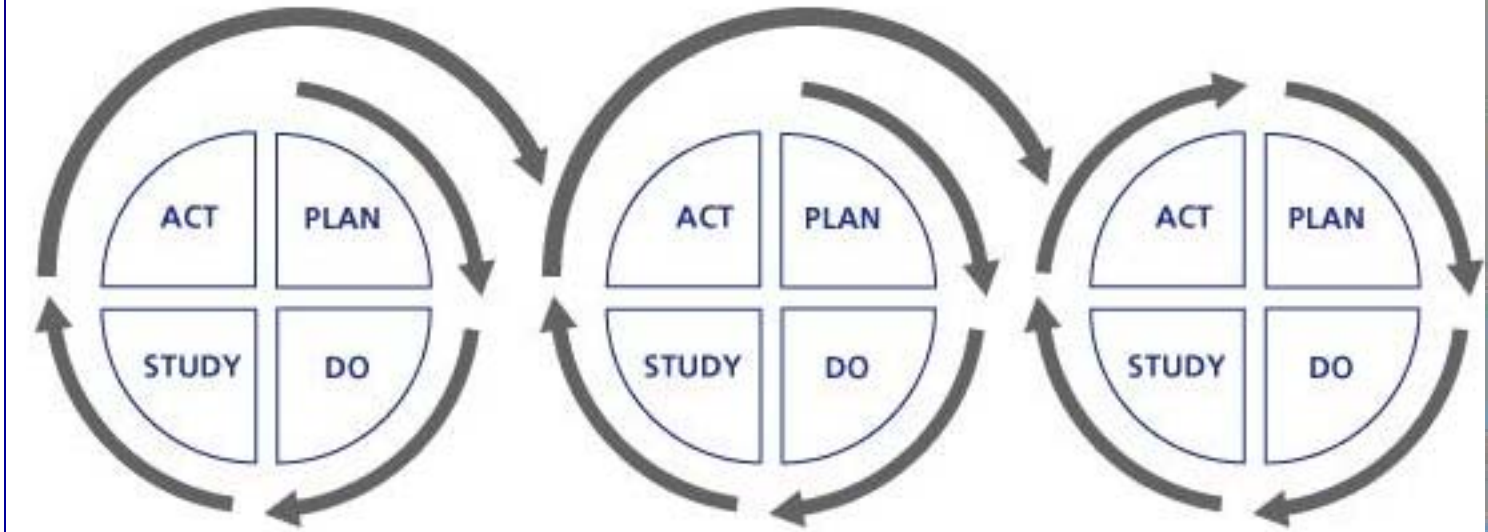
Setting the target



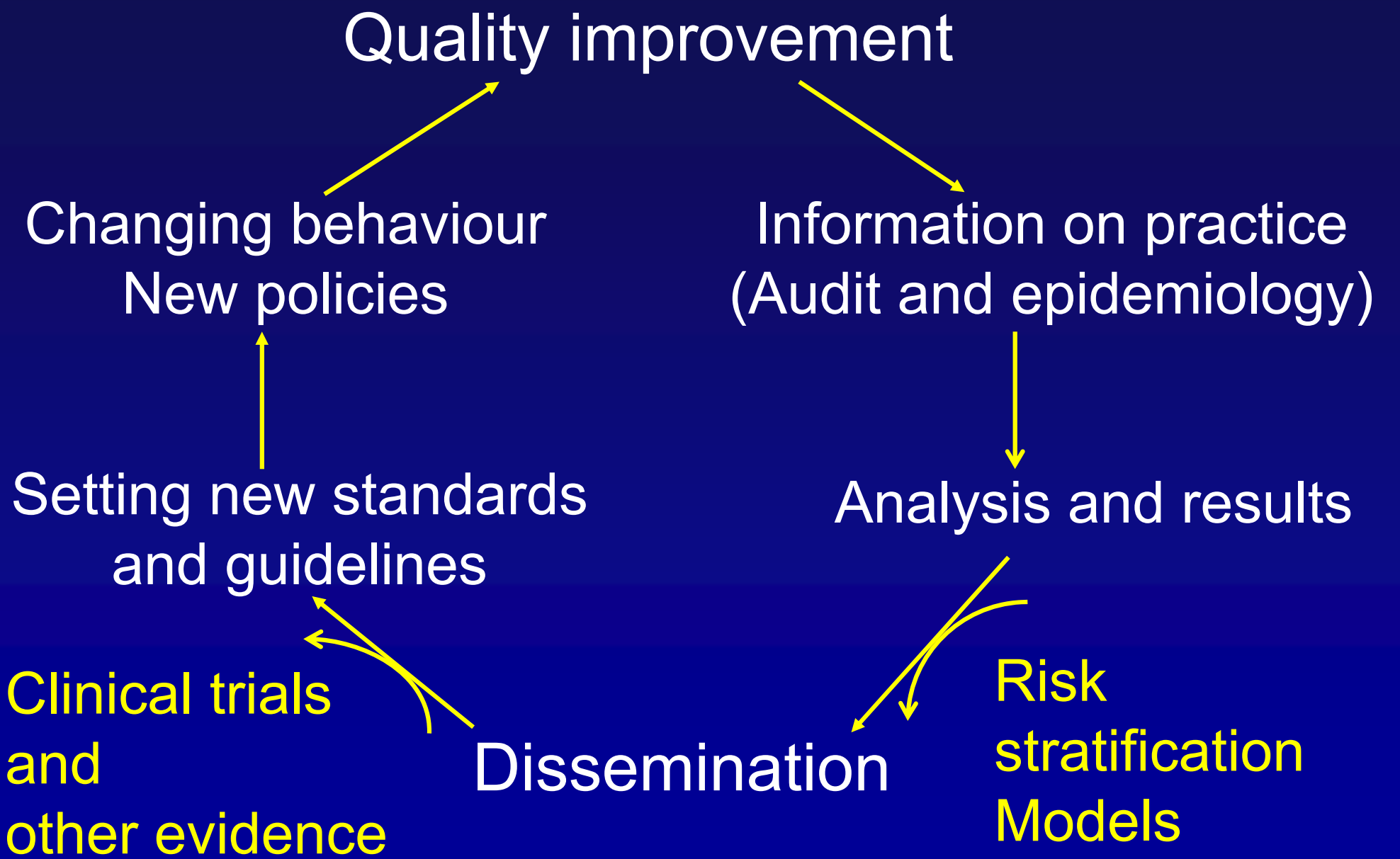
Quality Improvement (QI) methods

- Based on industry models
- Focus on workers, technology, customers, process, systems
- Range of tools and approaches – some examples





Quality of care improvement cycle

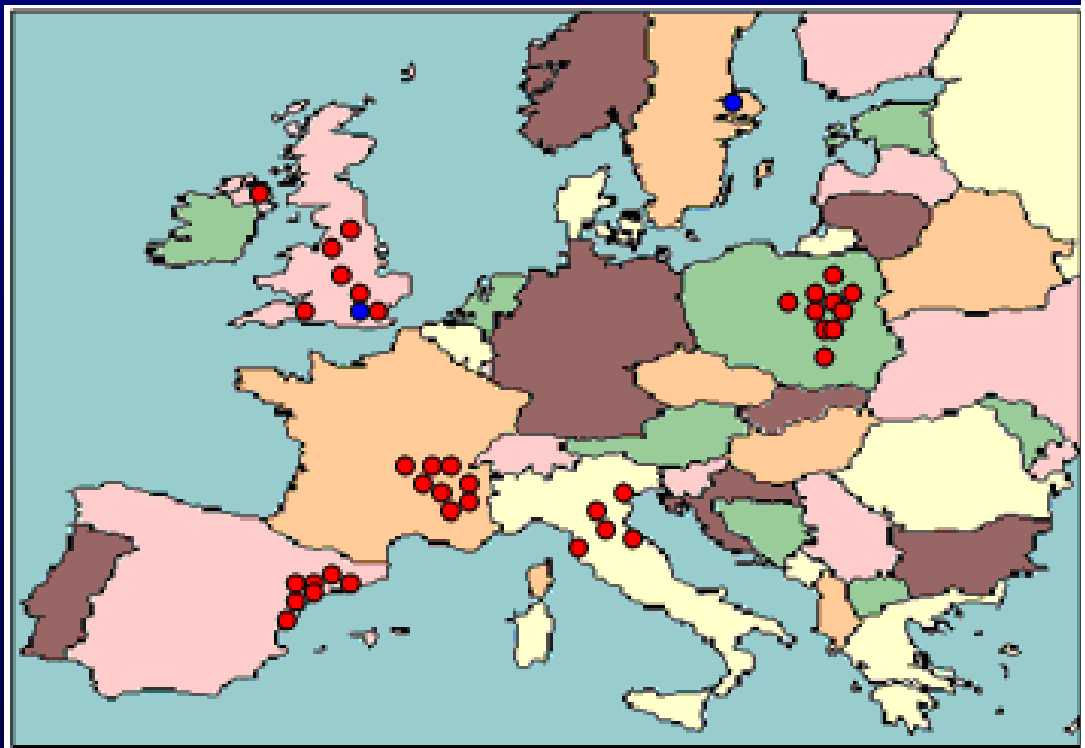


Quality principles applied to health care as a service delivery activity

- Certified guidelines set the standards √
- Products (medicines and devices) are tested, regulated and certified before they can be used √
- Health professionals generally have appropriate training and qualifications √
- Health care organisations usually not certified X
- Health care procedures usually not certified X
- Information systems to review quality of care generally inadequate X
- Quality improvement not embedded in practice X

European Quality Improvement Programme for Acute Coronary Syndromes: *EQUIP-ACS*

- Quality improvement (QI) programme for non ST elevation acute coronary syndromes
- Research grant from GSK (Euros 600K)
- Cluster randomised to QI or no QI programme
- Primary outcome was change in quality indicators
- 38 hospitals in 5 countries
- 12 months recruitment
- 4400 patients enrolled



Flather et al Am Heart J. 2011 Oct;162(4):700-707.e1.

Clinical Trials & Evaluation Unit

Quality improvement intervention

- 3 one-day meetings held over 4-month period (Amsterdam, London)
- 2 members of staff (“Local Champions”) from each QI centre attended
  - Meeting 1: Analysis of current work processes, setting goals, measurement methods
  - Meeting 2: measuring performance, improvement ideas, PDSA & other established QI tools
  - Meeting 3: Results, further improvement work, reliable work processes- sustainability
  - Analysis of local situation and implementation plans

Reactions to challenging data

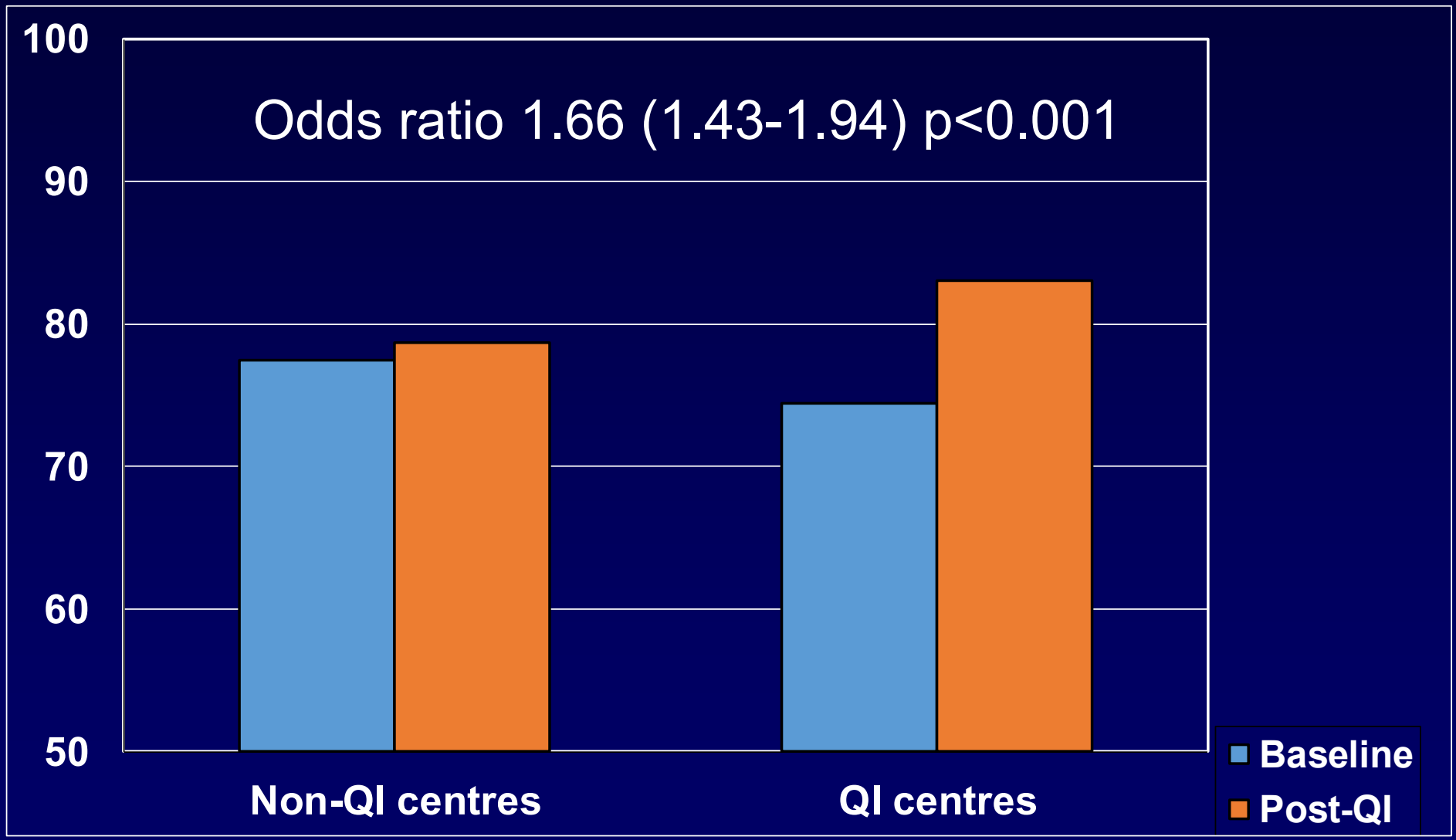
1. The data are wrong
2. The data are right, but it's not a real problem
3. The data are right, it's a real problem but it's not my problem
4. The data are right and it's my problem

Don Berwick 2003

EQUIP ACS: Primary outcome

(risk stratification, Cor angio, anticoagulant, statin, beta blocker, ACE-I, clopidogrel) ESC 2010

% achieving quality indicator



Flather et al Am Heart J. 2011 Oct;162(4):700-707.e1.

Quality improvement in heart failure

- Heart failure is common and is associated with high risk of death, hospital admission and readmissions
- High burden of health care costs
- Achieving high quality care (doing what we should be doing) could provide large benefits
- Observational studies provide evidence of benefit of quality improvement
- HOWEVER: lack of robust evidence base to support quality improvement leads to poor uptake and financial investment

Guideline based quality indicators in heart failure

- Based on the European Society of Cardiology Heart Failure Guidelines
- Level of evidence (A,B, C) based on published research: large randomised trials provide high levels of evidence = A
- Class of recommendation: expert opinion on whether a treatment should be given (I, II, III), I is highest class

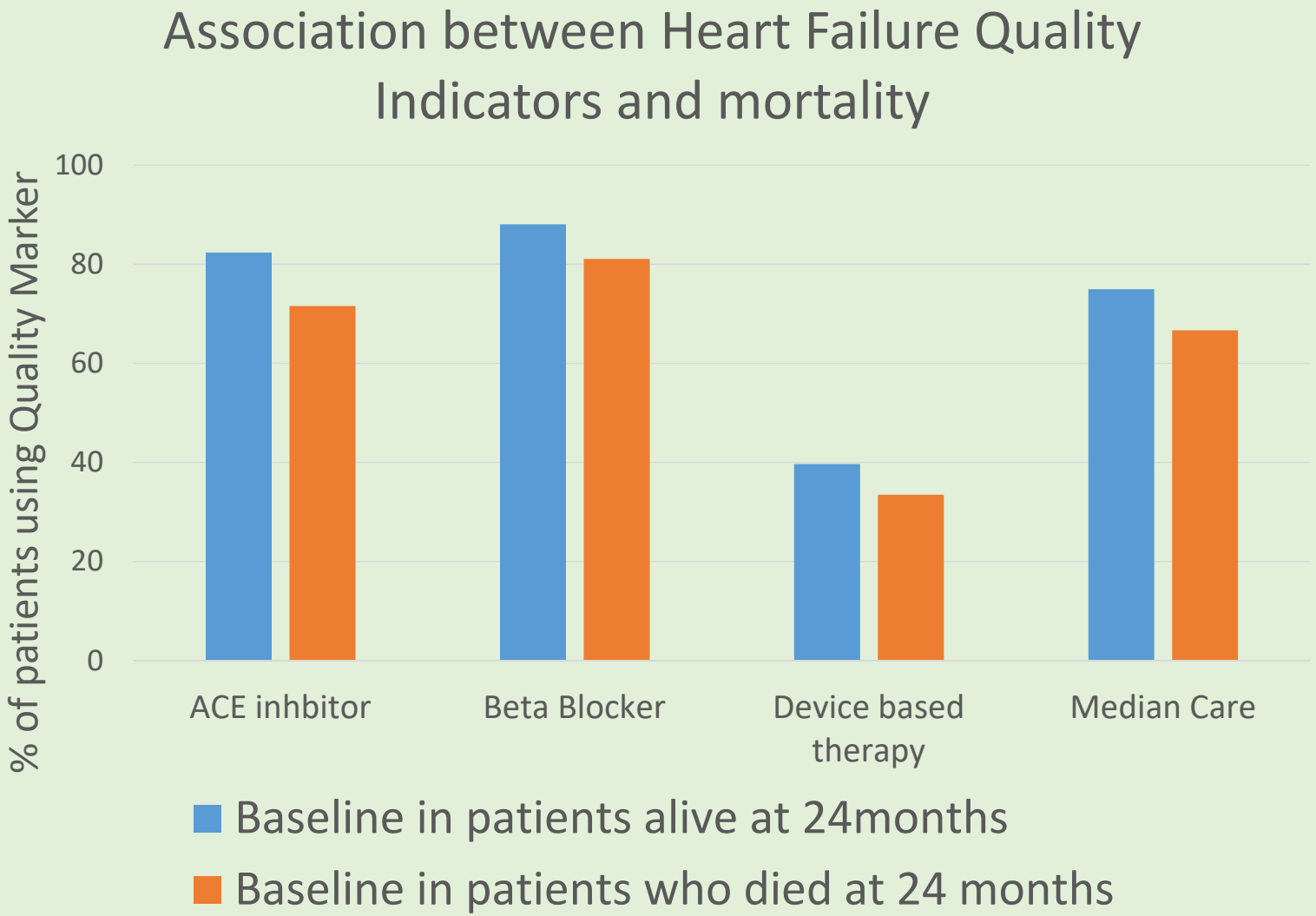
Quality indicator	Level of evidence	Class of recommendation
Angiotensin Converting Enzyme Inhibitor	A	I
Beta blocker	A	I
Mineral Corticoid Receptor Antagonist	A	I
Angiotensin Receptor Neprilysin Inhibitor	B	I
Implantable Cardioverter Defibrillator	**A**	**I**
Cardiac Resynchronisation therapy	A	I

8. European Journal of Heart Failure Ponikowski, Piotr et al. "2016 ESC Guidelines For The Diagnosis And Treatment Of Acute And Chronic Heart Failure".

Observational Quality Improvement programmes are associated with improved outcomes

Observational data exploring QI and outcomes in USA

A 10% of improvement in composite care was associated with a 13% lower odds of 24month mortality.



6. Associations Between Outpatient Heart Failure Process-of-Care Measures and Mortality Gregg C et al Circulation. 2011;123:1601-1610,

Cluster-Randomized Trial of Personalized Site Performance Feedback in Get With The Guidelines-Heart Failure

Adam D. DeVore, MD; Margueritte Cox, MS; Paul A. Heidenreich, MD, MS; Gregg C. Fonarow, MD; Clyde W. Yancy, MD; Zubin J. Eapen, MD, MHS; Eric D. Peterson, MD, MPH; Adrian F. Hernandez, MD, MHS

- Large cluster randomised US based study 147 hospitals and 70,000 patients
- Provided a personalised site feedback as the intervention in heart failure centres
- No change in estimate of quality of care from baseline to 12 months
- Interpretation: providing additional information to sites is not sufficient to change practice

Circulation: Cardiovascular Quality and Outcomes. 2015;8:421-427

The Impact of Innovation on Heart Failure Care

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MEDICINE

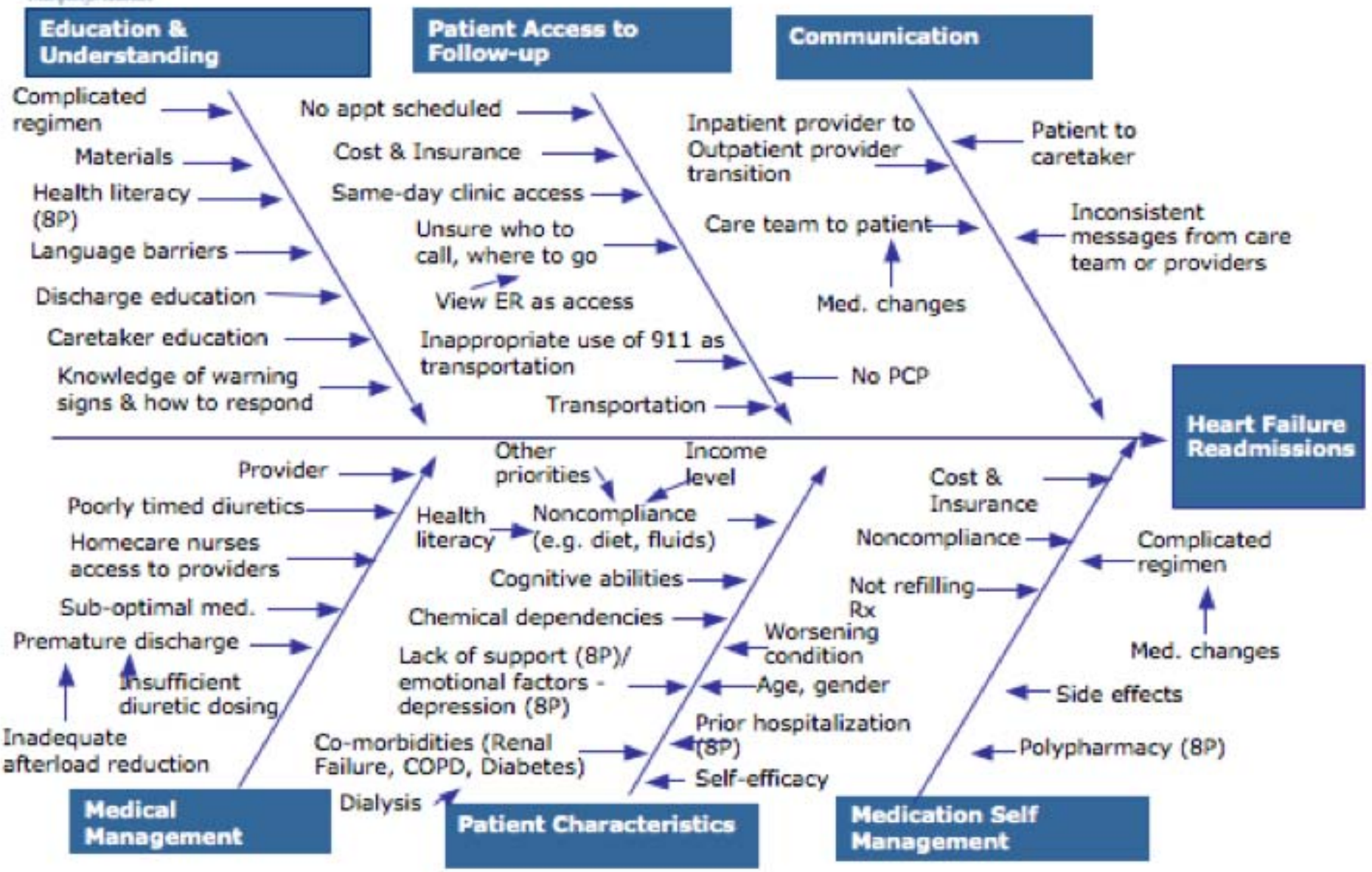
JOHNS HOPKINS BAYVIEW MEDICAL CENTER

Amber E. Johnson, MD, MBA

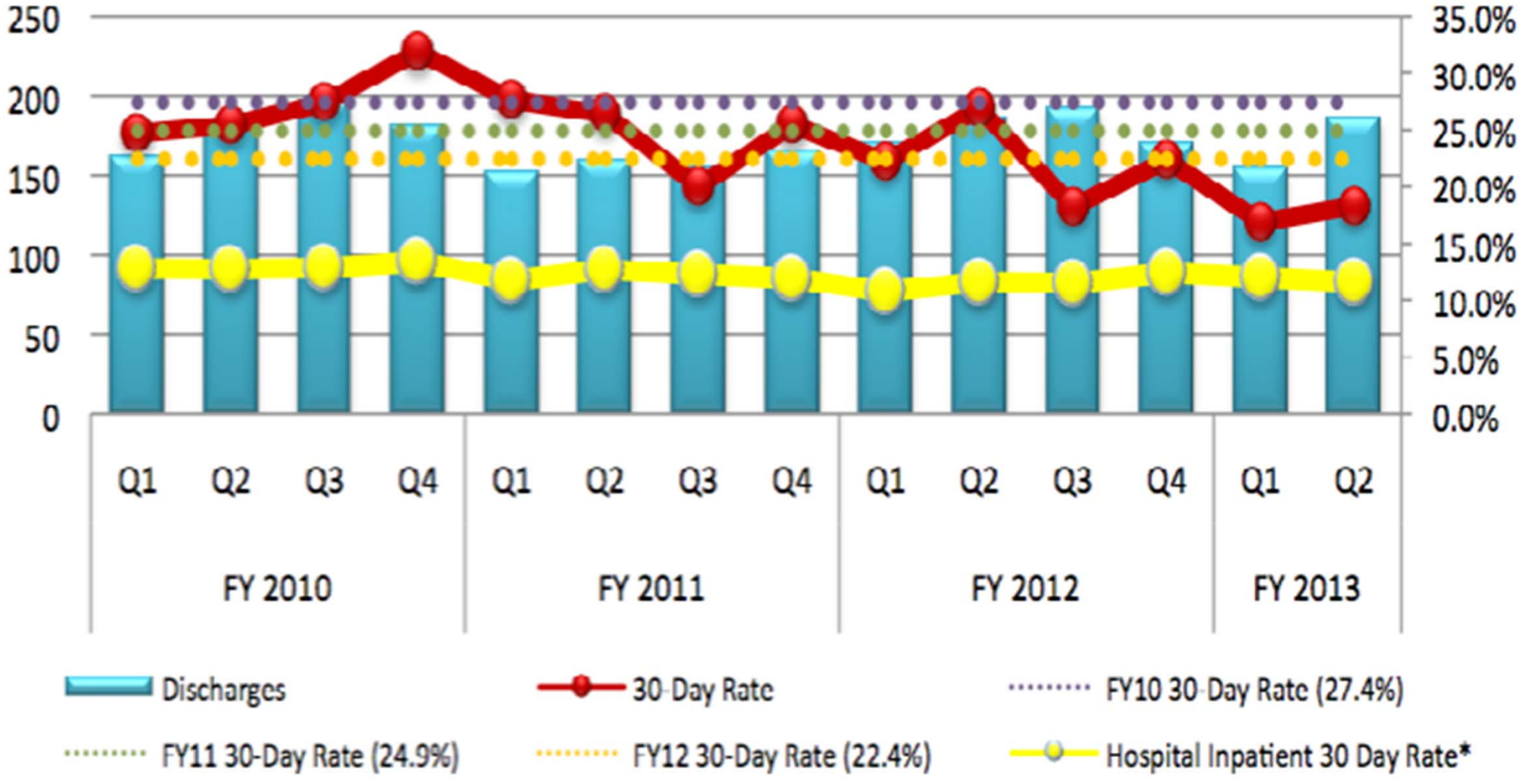
PGY-3

Johns Hopkins Bayview Medical Center

Causes of Bayview Heart Failure Readmissions



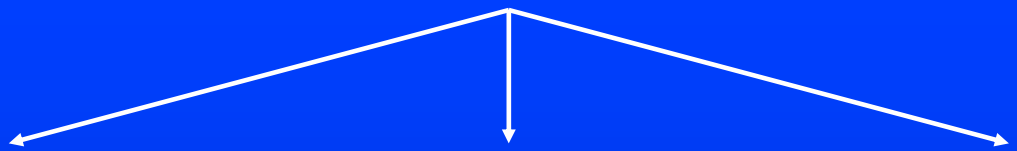
Heart Failure (Primary Dx*) 30-Day All Cause Readmissions by Fiscal Year



Spanish led quality improvement activities in heart failure

La Unidad de Insuficiencia Cardiaca y Riesgo Vascular de Medicina Interna Ramon y Cajal (UICARV)

Objetivos



Asistencia integral

Seguimiento continuado

Coordinación AP-especiali.

UICARV

Continuidad asistencial
Atención ambulatoria
Urgencias
Hospitalización

UICARV

Reducción ingresos y visitas a Urgencias

Comparación respecto al período previo a la inclusión	Ingresos IC	Urgencias IC	Ingresos No IC	Urgencias No IC
0-6 meses (n: 633)	-34 %	-58 %	-38 %	-18 %
6-12 meses (n: 464)	-50 %	-64 %	-8 %	-28 %
12-18 meses (n: 296)	-44 %	-54 %	37 %	4 %
18-24 meses (n: 189)	-65 %	-77 %	-16 %	-10 %
30-36 meses (n: 83)	-76 %	-62 %	-61 %	-43 %
36-42 meses (n: 62)	-52 %	-71 %	-36 %	-34 %
42-48 meses (n: 33)	-55 %	-77 %	-76 %	-9 %
Media de los 8 períodos	**-52 %**	**-65 %**	**-27 %**	**- 20 %**

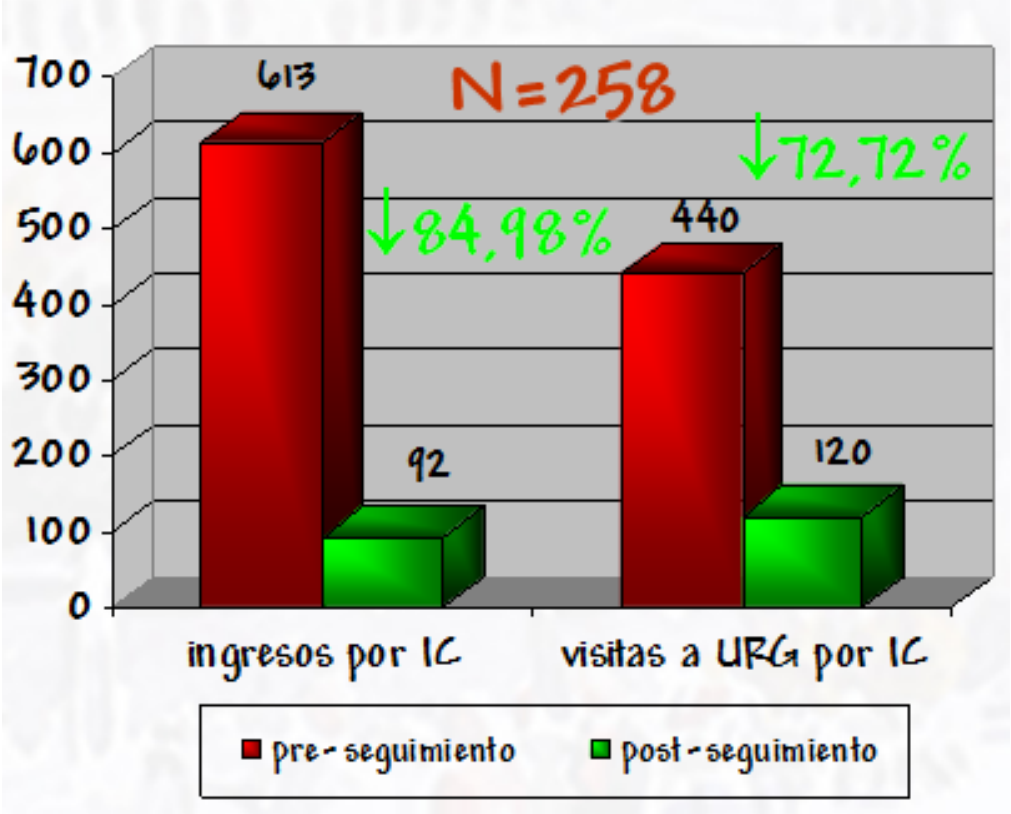
Ahorro entre 200-300 ingresos/año por IC

Difusión del modelo UICARV: Programa UMIPIC (Unidades de de Manejo Integral de Pacientes con Insuficienca Cardiaca)

Programa UMIPIC

(Unidades de Manejo Integral de Pacientes con Insuficiencia Cardiaca)

Resultados



Revista Clínica Española

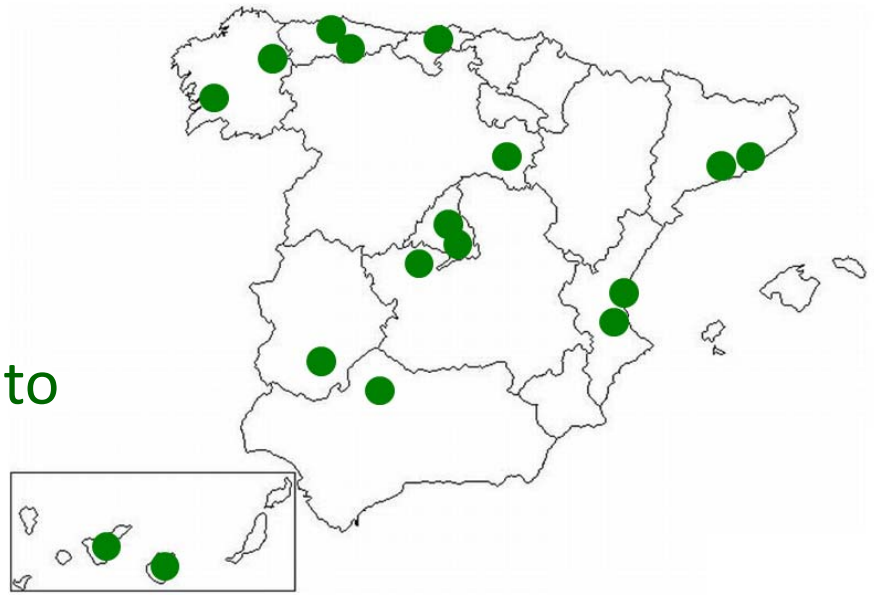
AHEAD OF PRINT | NÚMERO ACTUAL | ARCHIVO | SUPLEMENTOS

Original

Reducción de ingresos y visitas a Urgencias en pacientes frágiles con insuficiencia cardíaca: resultados del programa asistencial UMIPIC

Reduction in hospitalisations and emergency department visits for frail patients with heart failure: Results of the UMIPIC healthcare programme

J.M. Cerqueiro [a,*], A. González-Franco [b], M. Montero-Pérez-Barquero [c], P. Llácer [d], A. Conde [e], M.F. Dávila [f], M. Carrera [g], A. Serrado [h], I. Suárez [i], J. Pérez-Silvestre [j], J.A. Satué [k], J.C. Arévalo-Lorido [l], A. Rodríguez [m], A. Herrero [n], R. Jordana [o], L. Manzano [p]



Estudio comparación

Ingresos pre y post-seguimiento

12 meses

UMIPIC

RICA Registry overview

- Observational study, set up in 2008
- 50 hospitals rising to 70 hospitals, 5500 patients
- Enrolling heart failure admissions aged >50 years, ESC criteria of HF, discharged alive
- Data entered on web based case report form, central checking and analysis
- Sponsored and part funded by SEMI with funding from industry and other sources
- Academically led
- Aim is to understand heart failure demographics and treatments, prognosis and improve care

RICA assessment of impact

- Collaborating centres include a range of health care institutions – increases generalisability, information exchange and quality improvement
- ~ 30 publications at National/ European level
- Insights into patient characteristics and prognosis
- Development of a risk model
- Practice changes: introducing dedicated HF services e.g. UMIPIC, increase in evidence based treatments e.g. anticoagulation for AF

Protocol for a cluster randomised trial to evaluate the effects of a quality improvement programme on outcomes in heart failure

Juan Gallego Galiana

Rafael Martinez Fernandez

Manuel Montero Perez Barquero

Luis Manzano

James Pearson

Marcus Flather

Changing attitudes and behaviour is key to quality improvement

- Quality improvement has to be a core activity
- Incentives for improved performance
- Penalties for poor performance
- Information systems that record information and provide appropriate reports
- Understanding attitudes and behaviours of organisation, staff, patients and families
- Quality improvement needs to be evidence based

Acknowledgments

- RICA study group: Manuel Montero-Perez Barquero, Luis Manzano, and RICA Steering Committee
- Rafael Martinez Fernandez, Juan Gallego Galiana, James Pearson
- Organising Committee of SADEMI

Outcomes

Primary

- Composite of death rate and all cause mortality at or unplanned hospital admission for heart failure at one year

Secondary

- Patient based outcome e.g. Minnesota living with heart failure questionnaire
- Difference in use of quality indicators at baseline and at endpoint within group and between groups

Sample size estimation principles

Sample size estimation for cluster randomised trials is much more complex than RCT's. Two important concepts are:

- Cluster RCT's are randomised at the hospital level even though the outcomes are measured at the patient level
- Need to measure the "Intra-cluster correlation coefficient" – The variability of treatment in a centre

Using :

- Alpha error: 0.05
- Beta error: 0.20

We estimate we will need 100 hospitals enrolling around 10,000 patients to detect a 15% reduction in risk of our primary outcome at 12 months

11. Killip S et al What Is an Intracluster Correlation Coefficient? Crucial Concepts for Primary Care Researchers Ann Fam Med 2004;2:2014-208

Results

JOHNS HOPKINS MEDICINE

- The most promising interventions were piloted as improvements
  - Scaled up based on success and patient interest
- Examples:
  - Patient education materials
  - Evidence-based provider order sets
  - Nursing and provider education
  - Teach back tools
  - Motivational interviewing training
  - Mechanisms for close outpatient follow up
  - Collaboration with home care and local nursing homes

Results

- No statistically significant differences in pre- and post-intervention groups
- Rate of 30-day all cause readmissions for HF declined from 28.4% to 18.9% ($p<0.01$)
- This lead to an estimated reduction in charges of about $900,000 dollars

La Unidad de Insuficiencia Cardiaca y Riesgo Vascular de MI (UICARV)

Fundamento

1. Enfermedades CV. Principal causa de morbimortalidad
2. IC. Principal causa hospitalización > 65 años
3. IC. Prevalencia, 10% de los > 70 años. Envejecimiento
4. IC anciano. Paciente pluripatológico típico
5. Atención fragmentada. Ineficiencia sistema sanitario

UICARV. Consulta

Criterios de derivación

1. Pacientes de edad avanzada (> 70 años)
2. Suficiente capacidad física y mental, o cuidador
3. Diagnóstico verosímil de insuficiencia cardiaca
4. No seguimiento específico por Cardiología
5. Ingreso o visita previa a Urgencias

La comorbilidad es un criterio de adecuación

Pérfiles de pacientes con IC

DIASTOLICA

≥ FE 50% <

SISTOLICA

M. Interna Geriatría y AP

Mujer

HTA

No fumador

> 70 años

Comorbilidad

Cardiología

Varón

C. isquémica

Fumador

< 70 años

UICARV

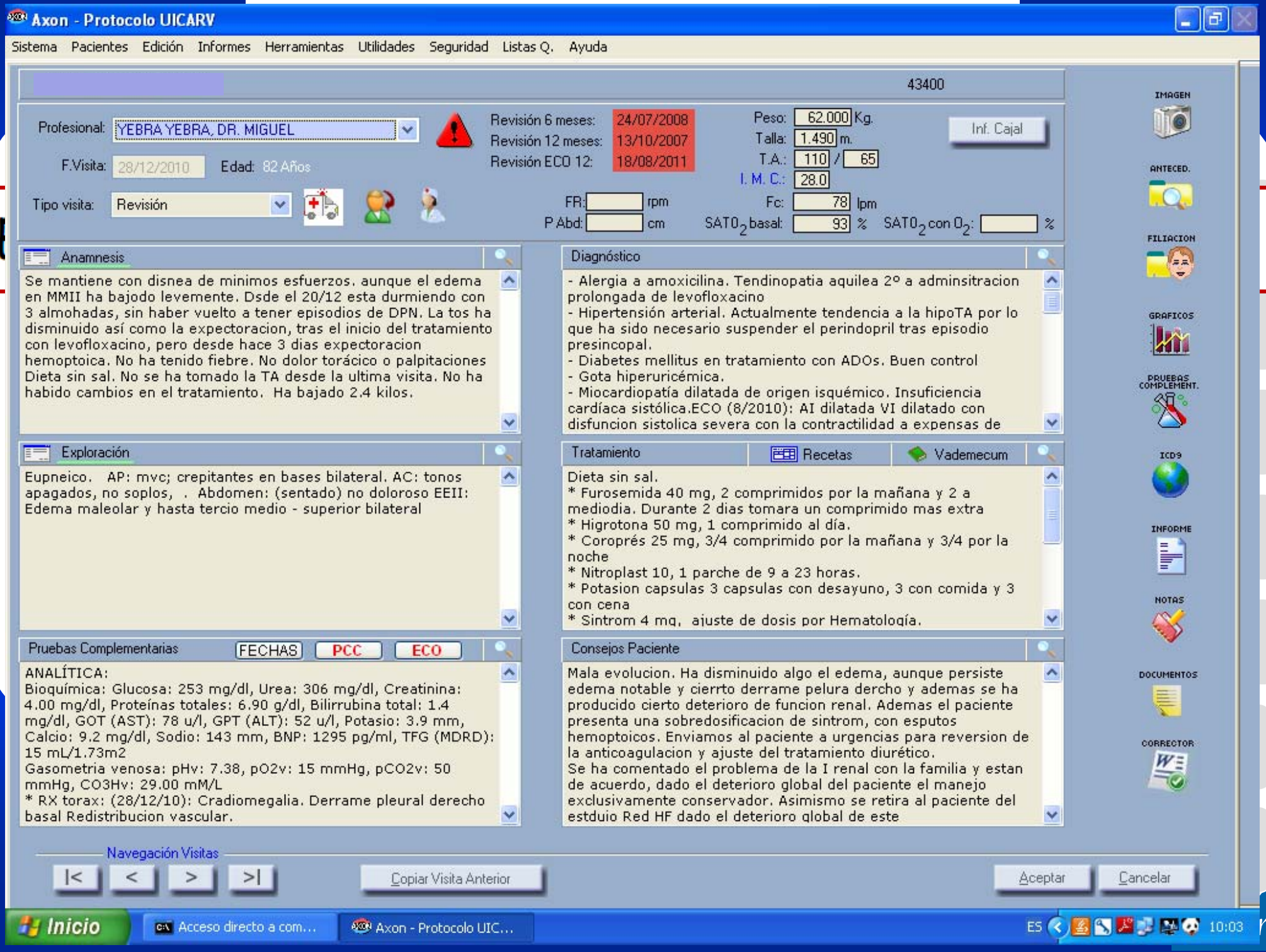
Perfil clínico del paciente

n: 1350

FE preser. 65% IC sistólica 21% Valvulopa. 14%

- Edad 83 años
- Mujer 68%
- DM 40%
- FA 55%
- HTA 87%
- EPOC/asma 21%
- C. isquémica 22%
- Anemia 35%
- Enf. tiroideas 21%
- I.renal III-IV 62%

Seguimiento activo ± 800 pacientes


Axon - Protocolo UICARV
Sistema Pacientes Edición Informes Herramientas Utilidades Seguridad Listas Q. Ayuda
43400
Profesional: YEBRA YEBRA, DR. MIGUEL
F.Visita: 28/12/2010 Edad: 82 Años
Tipo visita: Revisión
Revisión 6 meses: 24/07/2008
Revisión 12 meses: 13/10/2007
Revisión ECO 12: 18/08/2011
Peso: 62.000 Kg.
Talla: 1.490 m.
T.A.: 110 / 65
I. M. C.: 28.0
Inf. Cajal
FR: rpm
P Abd: cm
Fc: 78 lpm
SATO2 basal: 93 %
SATO2 con O2: %
Anamnesis
Se mantiene con disnea de minimos esfuerzos. aunque el edema en MMII ha bajodo levemente. Dsde el 20/12 esta durmiendo con 3 almohadas, sin haber vuelto a tener episodios de DPN. La tos ha disminuido así como la expectoracion, tras el inicio del tratamiento con levofloxacino, pero desde hace 3 dias expectoracion hemoptoica. No ha tenido fiebre. No dolor torácico o palpitaciones Dieta sin sal. No se ha tomado la TA desde la ultima visita. No ha habido cambios en el tratamiento. Ha bajado 2.4 kilos.
Diagnóstico
- Alergia a amoxicilina. Tendinopatia aquilea 2º a adminsitracion prolongada de levofloxacino
- Hipertensión arterial. Actualmente tendencia a la hipoTA por lo que ha sido necesario suspender el perindopril tras episodio presincopal.
- Diabetes mellitus en tratamiento con ADOs. Buen control
- Gota hiperuricémica.
- Miocardiopatía dilatada de origen isquémico. Insuficiencia cardíaca sistólica.ECO (8/2010): AI dilatada VI dilatado con disfuncion sistolica severa con la contractilidad a expensas de
Exploración
Eupneico. AP: mvc; crepitantes en bases bilateral. AC: tonos apagados, no soplos, . Abdomen: (sentado) no doloroso EEII: Edema maleolar y hasta tercio medio - superior bilateral
Tratamiento
Recetas
Vademecum
Dieta sin sal.
* Furosemida 40 mg, 2 comprimidos por la mañana y 2 a mediodia. Durante 2 dias tomara un comprimido mas extra
* Higrotona 50 mg, 1 comprimido al día.
* Coroprés 25 mg, 3/4 comprimido por la mañana y 3/4 por la noche
* Nitroplast 10, 1 parche de 9 a 23 horas.
* Potasion capsulas 3 capsulas con desayuno, 3 con comida y 3 con cena
* Sintrom 4 mg, ajuste de dosis por Hematología.
Pruebas Complementarias
FECHAS
PCC
ECO
ANALÍTICA:
Bioquímica: Glucosa: 253 mg/dl, Urea: 306 mg/dl, Creatinina: 4.00 mg/dl, Proteínas totales: 6.90 g/dl, Bilirrubina total: 1.4 mg/dl, GOT (AST): 78 u/l, GPT (ALT): 52 u/l, Potasio: 3.9 mm, Calcio: 9.2 mg/dl, Sodio: 143 mm, BNP: 1295 pg/ml, TFG (MDRD): 15 mL/1.73m2
Gasometria venosa: pHv: 7.38, pO2v: 15 mmHg, pCO2v: 50 mmHg, CO3Hv: 29.00 mM/L
* RX torax: (28/12/10): Cradiomegalia. Derrame pleural derecho basal Redistribucion vascular.
Consejos Paciente
Mala evolucion. Ha disminuido algo el edema, aunque persiste edema notable y cierrto derrame pelura dercho y ademas se ha producido cierto deterioro de funcion renal. Ademas el paciente presenta una sobredosificacion de sintrom, con esputos hemoptoicos. Enviamos al paciente a urgencias para reversion de la anticoagulacion y ajuste del tratamiento diurético.
Se ha comentado el problema de la I renal con la familia y estan de acuerdo, dado el deterioro global del paciente el manejo exclusivamente conservador. Asimismo se retira al paciente del estduio Red HF dado el deterioro global de este
IMAGEN
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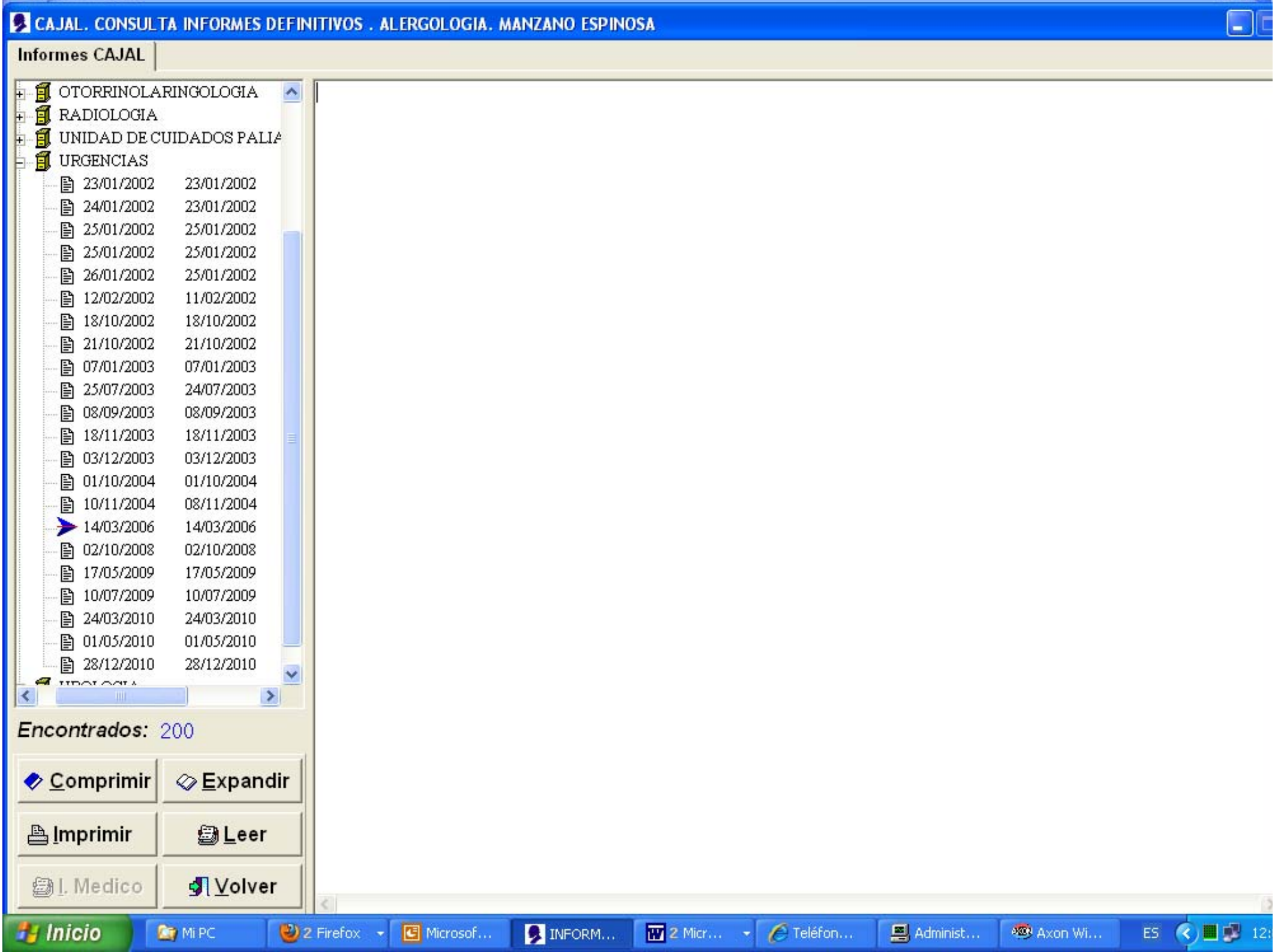
Principles of quality

- Frequently discussed and poorly understood in context of health care
- Principles based on provision of goods and services in commercial sectors e.g. cars
- “High” quality means that the product meets pre-specified standards and expectations:
- Production and delivery are carried out according to accessible protocols
- All procedures are subject to internal and external inspections
- Certification by external authorities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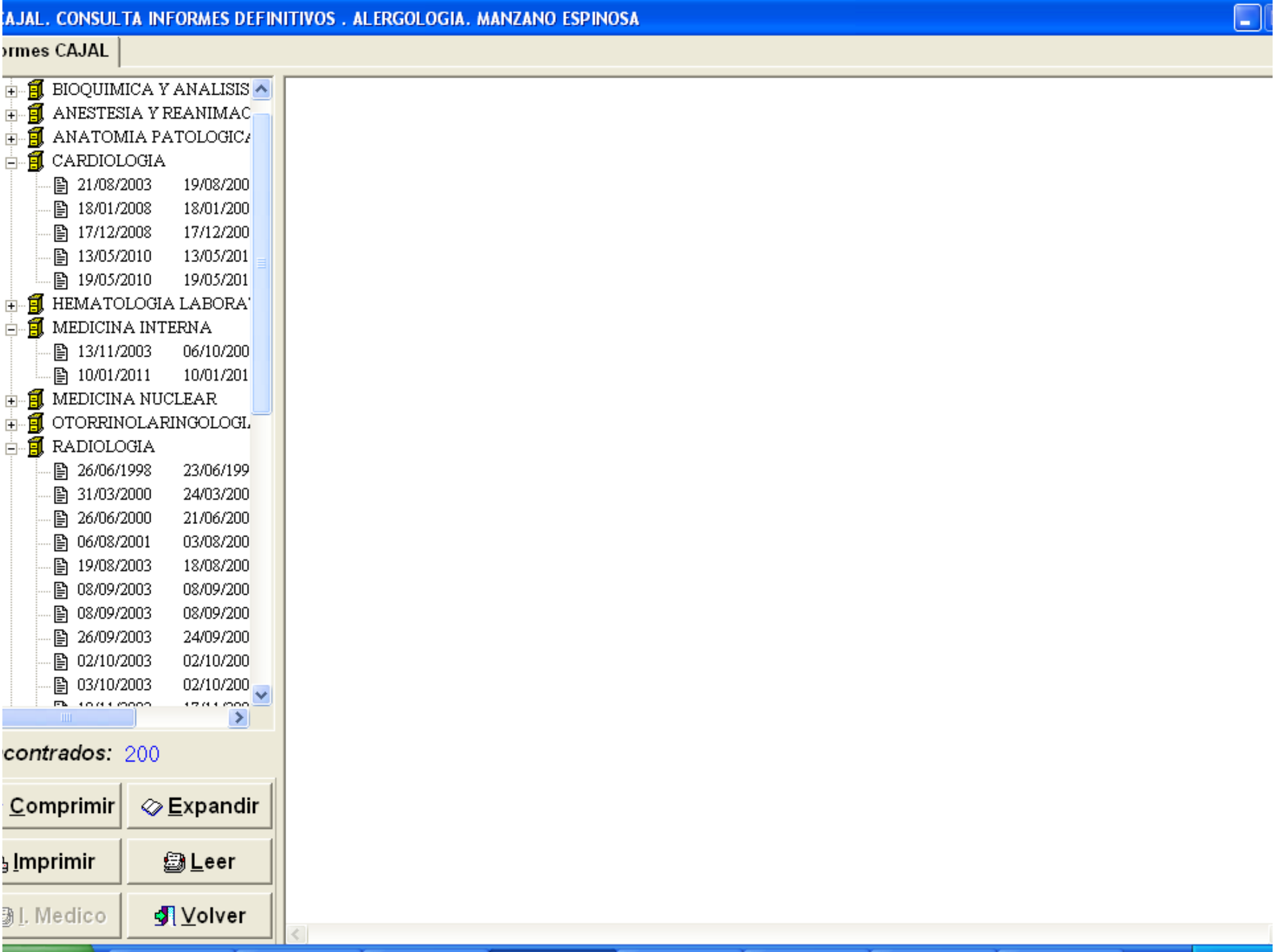
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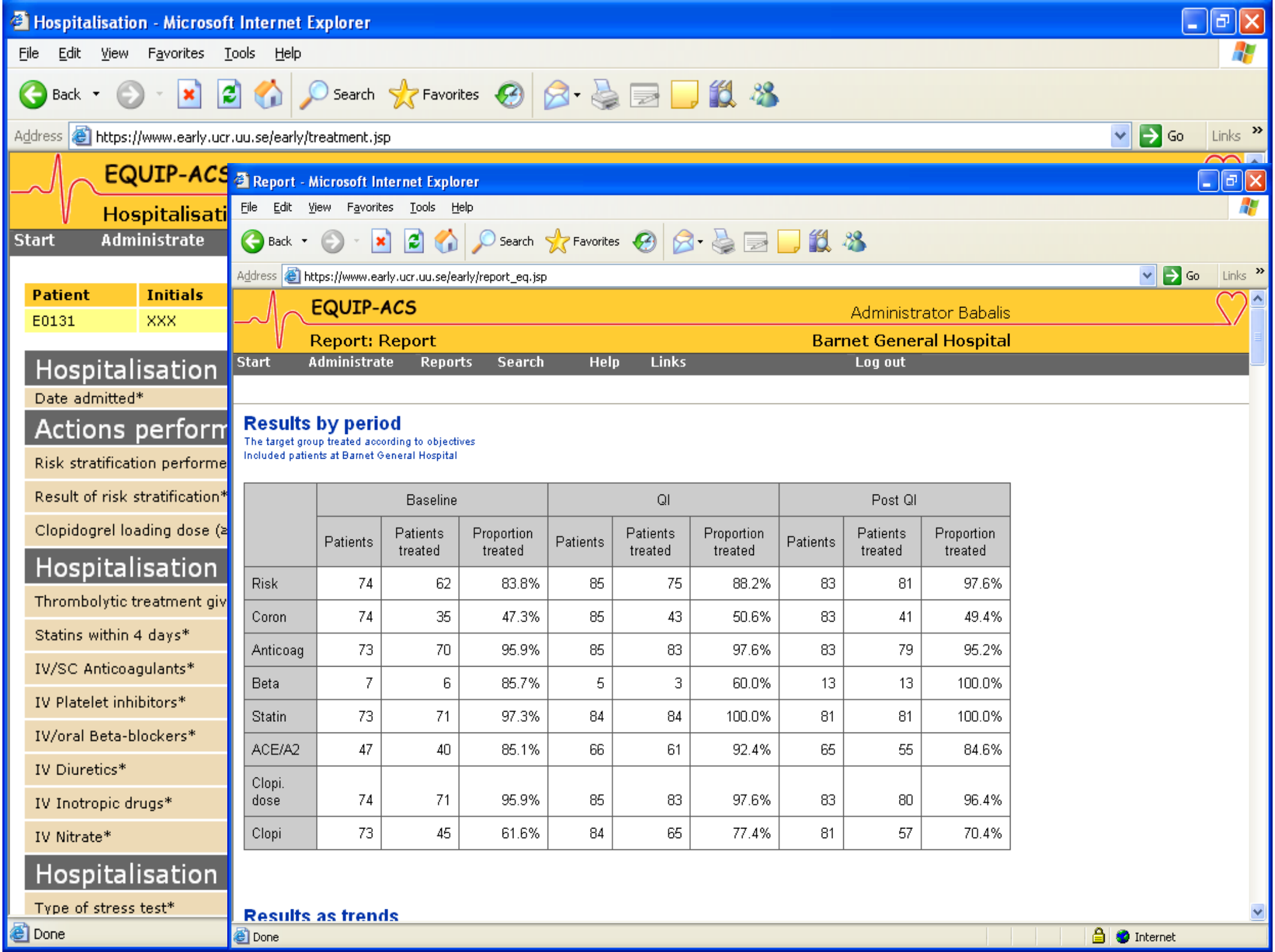
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Result of risk stratification*
Clopidogrel loading dose (≥
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Thrombolytic treatment giv
Statins within 4 days*
IV/SC Anticoagulants*
IV Platelet inhibitors*
IV/oral Beta-blockers*
IV Diuretics*
IV Inotropic drugs*
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Type of stress test*
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Barnet General Hospital
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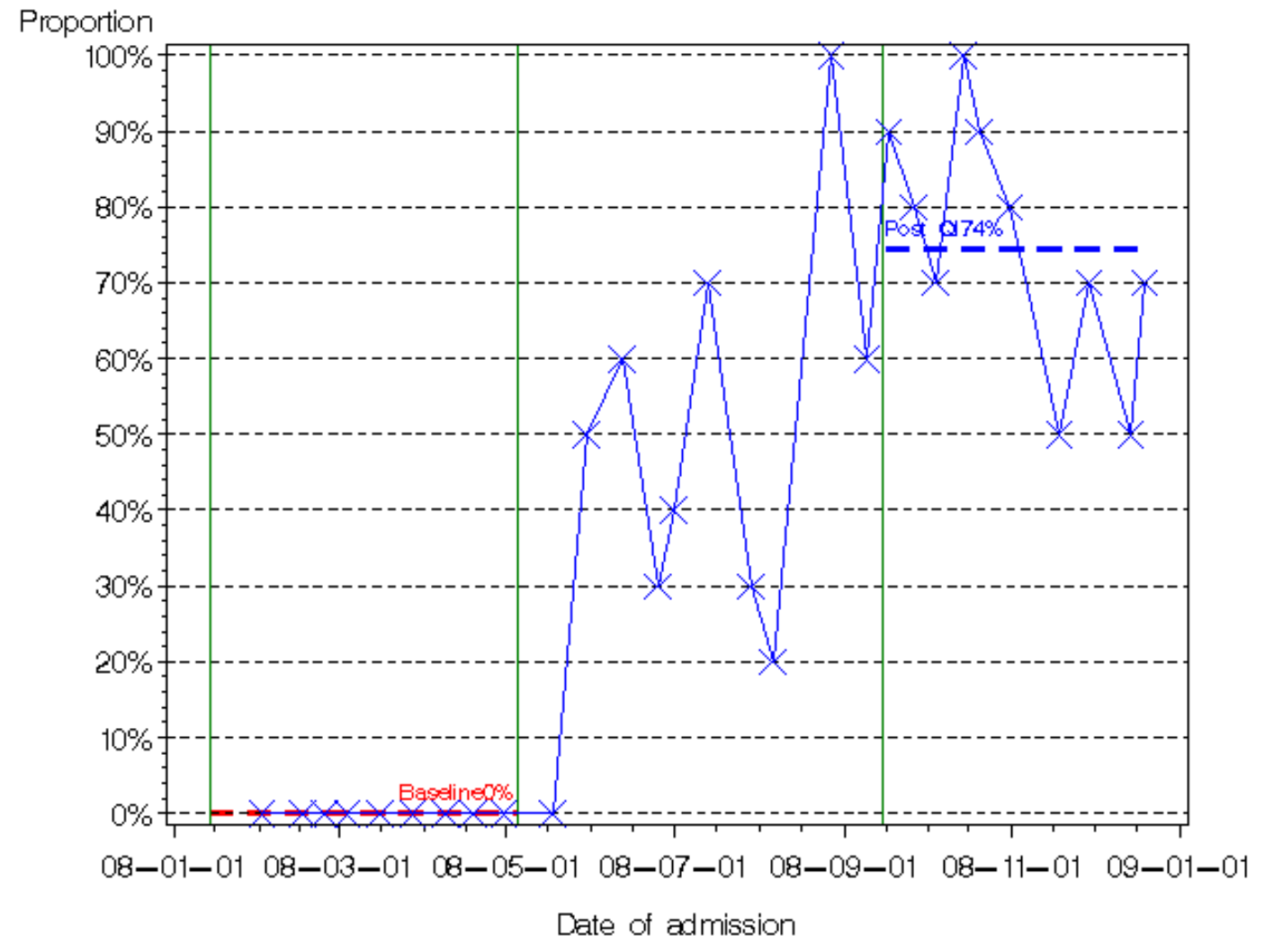
Results by period
The target group treated according to objectives
Included patients at Barnet General Hospital
Baseline
QI
Post QI
Patients
Patients treated
Proportion treated
Risk 74 62 83.8% 85 75 88.2% 83 81 97.6%
Coron 74 35 47.3% 85 43 50.6% 83 41 49.4%
Anticoag 73 70 95.9% 85 83 97.6% 83 79 95.2%
Beta 7 6 85.7% 5 3 60.0% 13 13 100.0%
Statin 73 71 97.3% 84 84 100.0% 81 81 100.0%
ACE/A2 47 40 85.1% 66 61 92.4% 65 55 84.6%
Clopi. dose 74 71 95.9% 85 83 97.6% 83 80 96.4%
Clopi 73 45 61.6% 84 65 77.4% 81 57 70.4%
Results as trends
Done
Internet

EQUIP Primary outcome

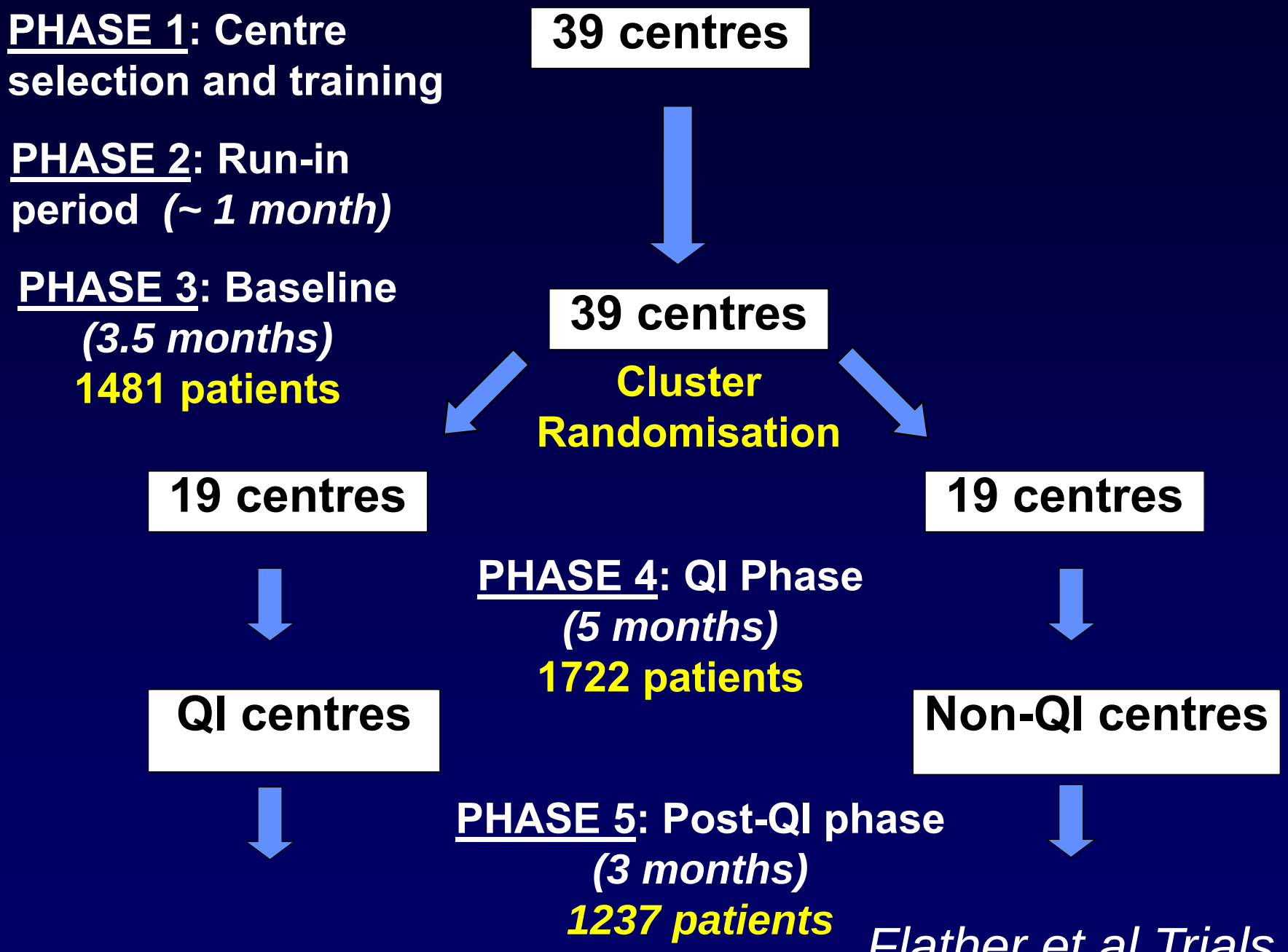
Composite of 8 measures developed from the European 2007 guidelines for non ST - segment elevation Acute Coronary Syndromes:

1. Formal risk stratification
2. Appropriate coronary angiography in intermediate to high risk patients <72 hours
3. Anticoagulation for all patients
4. Beta-blockers at discharge for those with EF<50%
5. Statins within 4 days for all
6. ACE inhibitors at discharge (impaired EF, hypertension, diabetes, impaired renal function)
7. Clopidogrel loading dose on admission
8. Clopidogrel at discharge is confirmed ACS

Use of risk stratification



EQUIP Study design- flow chart



Flather et al Trials 2010

Patient population

- Inclusion:
  - Admitted to hospital
  - Provision of informed consent
  - Diagnosed with Heart failure with reduced ejection fraction
    - Brain Natriuretic Peptide marker >100 ng/L
    - Echocardiogram (<40%)
- Exclusion
  - Cannot be moved from another hospital
  - Other disease that will give <1 year survival

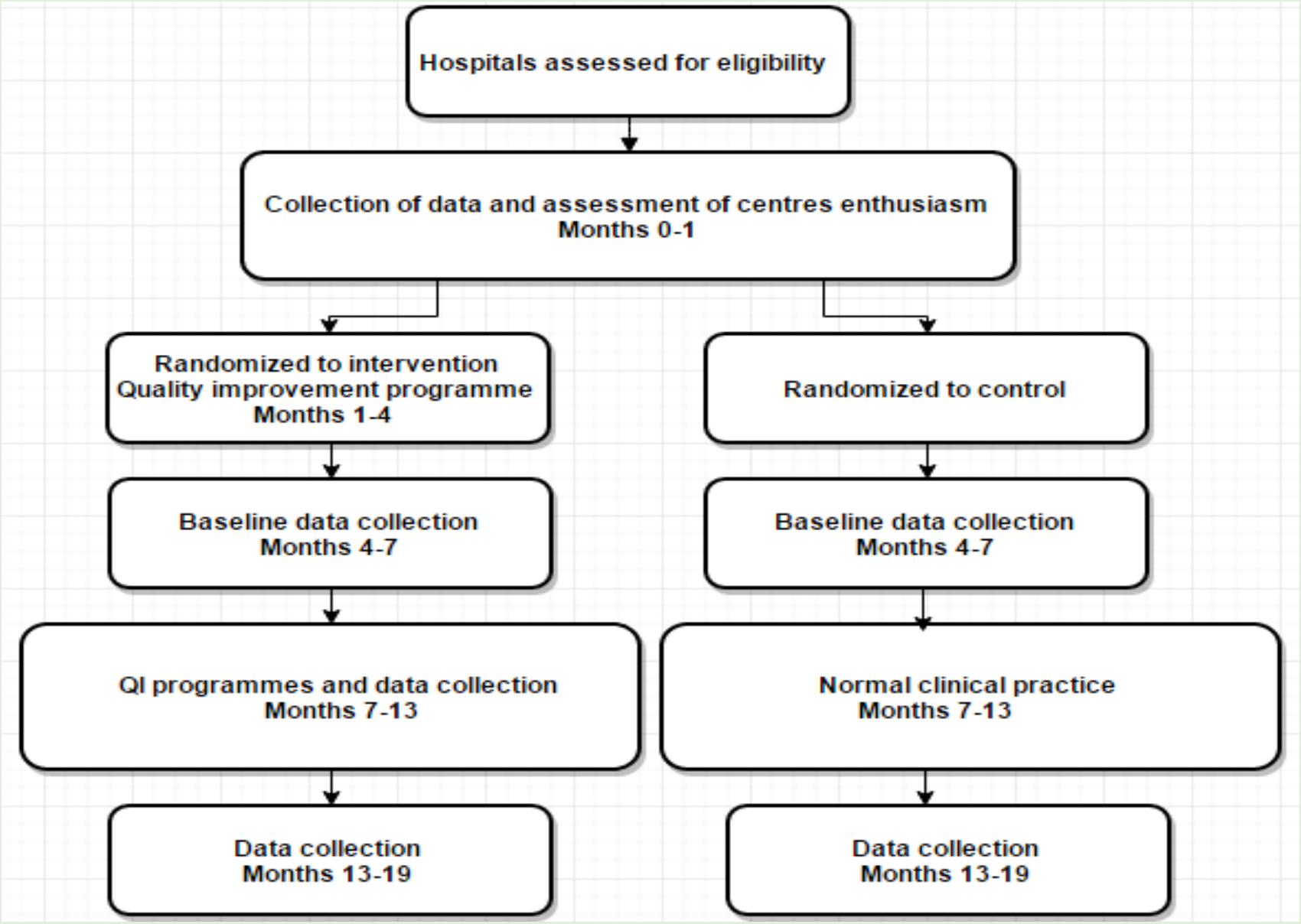
Hospital requirements

Access to heart failure specialist services

Facilities to provide Device based therapy

Institutional approval to participate

Study design



9. Cluster-randomized trial to evaluate the effects of a quality improvement program on management of non–ST-elevation acute coronary syndromes: The European Quality Improvement Programme for Acute Coronary Syndromes (EQUIP-ACS) Flather, Marcus D. et al. American Heart Journal , Volume 162 , Issue 4 , 700 - 707.e1

La UICARV. Modelo de atención al paciente crónico complejo

UICARV

Atención centrada en el paciente IC crónico complejo

UICARV

Difusión del modelo: Programa UMIPIC

Inicio / Grupos de trabajo / Insuficiencia Cardiaca / UMIPIC / Organigrama y Centros participantes

Insuficiencia Cardiaca: Grupo de trabajo

UMIPIC
Unidades de Manejo Integral de Pacientes con Insuficiencia Cardiaca

PROGRAMA UMIPIC

Programa | Resultados | Organigrama y Centros participantes | Lista de distribución | Educación para pacientes | Contacto

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